THE COLLECTION OF AGRICULTURAL STATISTICS
AND THE USE OF DATA IN THE UNITED KINGDOM
AND PAKISTAN; AN OBJECTIVE STUDY TO EXPLORE
POSSIBILITIES OF IMPROVEMENT IN PAKISTAN

Being a Thesis submitted
to the University of Edinburgh for
the Degree of Ph.D.

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<table>
<thead>
<tr>
<th>CONTENTS</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abbreviations</td>
<td>v</td>
</tr>
<tr>
<td>Acknowledgment</td>
<td>vi</td>
</tr>
<tr>
<td>Chapter</td>
<td></td>
</tr>
<tr>
<td>I INTRODUCTION</td>
<td>1 - 14</td>
</tr>
<tr>
<td>II Domesday Survey of England</td>
<td>15 - 27</td>
</tr>
<tr>
<td>Domesday Survey of 1085 - Cost of its Publication - Description of Survey records - Conjecture on date of Institution - Earlier Survey by Alfred - Different motives assigned to the Survey - Opinions prejudiced - Ambiguity due to undefined terms - Influence of the Survey on the development of Agricultural Statistics.</td>
<td></td>
</tr>
<tr>
<td>III PRIVATE AGRICULTURAL SURVEYS BETWEEN 12TH AND 17TH CENTURY IN ENGLAND</td>
<td>28 - 54</td>
</tr>
<tr>
<td>IV UNOFFICIAL AGRICULTURAL SURVEYS MADE BY INDIVIDUALS AND ACADEMIES WITH PRIVATE RESOURCES BETWEEN 17TH CENTURY AND 1866 IN THE UNITED KINGDOM</td>
<td>55 - 117</td>
</tr>
<tr>
<td>Change in the objects of Surveys - Data collected through visitations - Land Surveys in vogue - Down Survey of Ireland, 1655-56 - Cost, method and coverage</td>
<td></td>
</tr>
</tbody>
</table>
of Down Survey – Incomplete reference mislead readers – Petty’s Works reviewed – Royal Philo-
sophical Society, 1684 – Performance of individuals; 
Gramont 1674, Chamberly 1684, King 1696, Campbell 1756 – Pennant 1769, Lucock 1805, Comber 1808 – Wakefield 1812 – Gray 1819, Coaling, 1827 – 
Mclulloch 1837 – Disraeli refuted.

UNOFFICIAL AGRICULTURAL SURVEYS MADE BY INDIVIDUAL 
AND ACADEMIES WITH THE ASSISTANCE OF PUBLIC MONEY 
BETWEEN 17TH CENTURY AND 1866.

Object partly economic – General application of 
Correspondence method – Royal Dublin Society of 
Ireland 1773 – First attempt failed Major Vallency 
vis-a-vis promotion of statistics – Physico-histori-
cal Society, 1744 – Revival of Royal Dublin Society’s 
Project in 1800 – County Survey Reports reviewed – 
Arthur Young (1741-1820) – Annals of Agriculture, 
1793-1822 – Sir John Sinclair, 1754-1835 – Statis-
tical Account of Scotland – Sinclair deprived of 
originality – Mason’s Statistical Account of Ireland, 
1812-1819 – Statistical Account of England conceived 
but not implemented.

SEMI-OFFICIAL AND UN-OFFICIAL CONTRIBUTIONS TO 
AGRICULTURAL STATISTICS DURING 19TH AND 20TH CENTURY

Object mainly economic and defence – Royal Statistical 
Society of England 1834 – Official Collection of 
Agricultural data and statistics – Estimates of 
Agricultural production by members of the Statistical 
Society – Sir James Caird on Agricultural Statistics – 
Experimental plots at Rothamsted – Law and Gilbert on 
results of the experiments – Veen and Vigor contro-
versy – Royal Highland and Agricultural Society of 
Scotland 1853-1857 – Maxwell’s dispute – Journals 
and periodicals – Royal Commission on Agriculture 
1879 – The Times – Royal Agricultural Society and 
Royal Agricultural Economic Society of England – 
Influence of their efforts on agricultural statistics.
## Chapter VII

**Periodical Official Attempts at the Collection of Agricultural Statistics Before 1866**

- Apparent objects of surveys different from intrinsic
- Pleadings for official system
- Earliest efforts made by Board of Agriculture
- Agricultural Returns during Napoleonic Wars
- Civil Defence and Livestock Returns
- Official interest in statistics aroused
- Attempts of County Magistrates of Norfolk 1831
- Board of Trade 1832
- Select Committee 1836
- Bedford Returns
- Resolution for official collection in Commons in 1844
- Berwickshire Farmers Club 1849
- Royal Highland and Agricultural Society 1853-57
- Troubled correspondence
- Norfolk and Hampshire Returns
- Bill of 1856 defeated
- Resolution of 1859 by Caird
- Division on Caird's second Resolution
- Its implementation since 1866

## Chapter VIII

**Annual Official Collection of Agricultural Statistics Since 1847 in Ireland and Since 1866 in Great Britain**

- Collection in Ireland since 1847
- Defence requirements
- Devices used for collection
- Returns made Optional
- Statutory powers vide Agricultural Act 1947
- Organisation for Agricultural Statistics
- Different arrangements for central and field machinery in the three countries
- Coverage in respect of extent, time and items
- Emphasis on sampling
- Limitations of sampling
- Expansion in schedule
- National Farm Survey
- Farm Management Surveys
- Agricultural Statistics not comparable
- Uses of Official Statistics

## Chapter IX

**Origin and Development of Agricultural Statistics in Pakistan**

- Birth of Pakistan
- Indian Statistics since ancient times
- Muslim Period and Statistics
- Main Object
- Land Revenue
- Aina-akhari
- British Rule and Land Administration
- Agricultural statistics a bi-product of Land Administration
- East India Company for Statistical Survey
- International Statistical Conference
- Famine Commission
- Duties of Director General of Statistics
- Frequent re-organisation of Statistical Departments
- Economic Enquiry Committee, 1925
- Royal Commission on Indian Agriculture, 1926
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope of proposed Agricultural Census - Central Statistical Office not responsible for Agricultural Statistics - Directorate of Agricultural Economics and Statistics in the Ministry of Agriculture as Central Office of Agricultural Statistics - Present Coverage and Scope - Recapitulation of problems - Change in field machinery discussed.</td>
<td>453 - 482</td>
</tr>
<tr>
<td>Object of study - Development of agricultural statistics in different backgrounds - Objects of collections dissimilar - Effect of political developments on statistics - Items of enumeration vary - Domesday and Ain-e-Akbari - Expansion in coverage - Visitation method in Pakistan to stay - Basic statistics lacking - Agency of rural school teachers recommended - Current statistics defective - Lack of liaison between Centre and Provinces - Need of an administrative committee - Remedies for major defects suggested.</td>
<td>483 - 500</td>
</tr>
</tbody>
</table>

Bibliography
ABBREVIATIONS

Agr or Agri
Agr Hist Rev
Amsahari
Arch and Nat Hist Mag
B.A.A.S.
C.S.O.
C. St
D.S.R.
Econ
Ed
F.A.O.
Geo Jour
H of C
H.R.S.O.
H.S.
Ind Jour Agr Stat
Int Inst of Agri
J.A.E.
J.M.A.
J.R.S.A.E or JRSAE
J.R.S.B. or JRSS
J.S.A.
M.S.
R.D.
Suss. Arch Soc (Soci)
Trans (Trans) Arch Soc
Trans R.I.A.S.
Tran Royal Hist Soci
Vol
Worcester or Worcest
ACKNOWLEDGMENT

These studies were supervised by Professor Watson and Mr. E.A. Knox.

My grateful thanks are due to Prof. Watson for the kind interest he took in the project. I am fully sensible of the fact that his pre-occupations in the multifarious duties were such that I should not have approached him too often. I respected these limitations, but whenever I went to him for advice, he was always gracious and helped to clarify the issues which I placed before him.

Mr. E.A. Knox was the Co-supervisor and I am very grateful to him for the time he spent with me in discussing the problems, solving my difficulties and for leading me through the maze of extensive literature on the subject. But for his guidance it would not have been possible for me to re-construct the march of progress of agricultural statistics through the last ten or eleven centuries. He introduced me to workers in the same field in various Departments of Agriculture in the United Kingdom. (Thanks to all of those gentlemen who helped) These contacts considerably facilitated my work. Finally, I am grateful to him for reading through manuscripts of my thesis and making very helpful suggestions for improving the presentation.

Mr. Muhammad Afsal, Agricultural Development Commissioner, Ministry of Agriculture, Karachi was very helpful during the last few months when I was completing the last two chapters of the thesis relating to Pakistan. I am grateful to him for his valuable guidance.

I extend warm thanks to Dr. J.E. Gordon, Director of Studies, Mr. Jean de Martini, Chief Fellowship Officer and staff of the British Council for their help in connection with these studies. Thanks are also due to F.A.O. for providing finances for these studies and to the Government of Pakistan for permitting me to undertake these studies.

I spent most of my time in the National Library of Scotland, the Library of the Royal Highland & Agricultural Society, of the Scottish Department of Agriculture and the University of Edinburgh Library. I also worked in several other libraries too numerous to be mentioned. I accord my appreciation for the ungrudging assistance rendered by the librarians of these libraries.
CHAPTER I

INTRODUCTION

Apology is offered for opening this thesis on a personal note. This is, however, given only by way of acknowledgment and explanation. The writer has been engaged in the collection, compilation, analysis and presentation of agricultural statistics and data in the Civil Service of the Government of Pakistan, who very generously agreed to grant and finance one year's study leave in continuation of a year's fellowship awarded to him by the F.A.O. under their Expanded Technical Assistance Programme for the study of Agricultural Economics. These arrangements covering two years have made it possible to submit this thesis for the Ph.D. to the University of Edinburgh which in turn had agreed to admit him on their minimum time requirements in view of his previous work.\footnote{This leave was not availed of because F.A.O. extended their Fellowship for the second year.}

Besides the obvious requirement that the University itself be satisfied with the proposal, two major considerations, therefore, conditioned the writer's work; that F.A.O. be satisfied that the practical training for which the fellowships are\footnote{In November, 1957, the Government of Pakistan asked the writer if in the interest of official work, he could return to Pakistan earlier than 2 years. The University was, therefore, requested for leave of absence. This was sanctioned and the fellow was permitted to submit the thesis for 1959 graduation from Pakistan.}
are usually given was not submerged in the "reading" for a degree; and that his Government be satisfied that in consistence with the Study Leave Rules, their employee was learning about his own job. These objects were found adequately achieved in the selection of this project: "The Collection of Agricultural Statistics and the use of Data in the United Kingdom and Pakistan; an Objective Study to Explore Possibilities of Improvement in Pakistan". This project was reported to, and accepted by the F.A.O. as well as it provided a close affinity to writer's own job.

It may not be out of place to say why the project has been extended to Agricultural Statistics besides Agricultural Economics for which the F.A.O. fellowship was available. This has been done for two reasons; first, because the statistics are tools of economists in all industries and what is true of other industries is also true of Agriculture. It is a maxim that statistics, as such, are anything but an end. They are only a means to an end; subjected to judicious analysis they provide the tools to frame economic policy - so vital for developing agriculture and for improving the distribution of agricultural products. Thus the apparent inflation of this project is in fact only a combination of the inseparably bound up two branches of the same main subject: The second reason is the set-up in Pakistan which combined Agricultural Economics and Agricultural Statistics under one officer the Director of Agricultural Economics and Statistics, and therefore, it has been thought advisable to extend this study to both Agricultural Economics and Agricultural Statistics so as to be of greater service to the directorate to which the writer belongs.
Apart from the foregoing considerations much thought was
given to the importance de-facto of the project. It is hardly
necessary to dwell upon the necessity and usefulness of agricul-
tural statistics and data. This would merely mean beating the
ground so deeply covered! More convincing in favour of this
project than anything else is the argument which Levi advanced.
In his article "On the Importance of a Correct system of Agri-
cultural Statistics", he said that official statistics "come
out with all the credit and eclat of official statements, and
"if they prove erroneous, they mislead a much larger number of
persons (than those collected by individuals) and it should be
a principle of action on the part of the Government, whenever
"it is not in their power to produce strictly correct accounts,
to leave individuals to make them on their own responsibility."

The Government of Pakistan with the help of provincial
governments collect and disseminate agricultural statistics but
they have been far from being strictly 'accurate accounts'. A
large number of blue books that have appeared from time to time
would substantiate the charge of their being less accurate than
desired.

The Government have, however, been anxious to improve them,
as is reflected in the fact that an Agricultural Inquiry Commi-
tee was set up in 1951, and one out of their four terms of
reference was "to consider and recommend 'improved methods of
collection and maintenance of agricultural statistics'."

The committee/

   Journal of the Soc. of Arts - vol. 11 No.70.
committee included various interests both official and unofficial and was headed by Lord Boyd Orr, the first and En-
Director General of the Food and Agricultural Organisation. In
addition to its own eleven members, the committee had the advan-
tage of advice from four experts from F.A.O., one expert from
the Government of Denmark and another from the Government of
Sweden. All these experts were exclusively invited to advice the
committee. The committee constituted so strongly as it was,
unanimously agreed that much improvement was desired in agricul-
tural statistics. They made certain recommendations to achieve
accuracy, but their fate was no better than those made in the
past, a reference to which will be made later.

Soon after that, in 1952, another committee called the
Economic Appraisal Committee of Pakistan was set up by the Govern-
ment "to review the economic conditions prevailing in the country
in order to determine the measures which should be taken to
reinforce its economy". It was a nine man committee, excluding
its Secretary, and was headed by the then Cabinet Minister for
Economic Affairs. On it were represented official and semi-
official interests. They made a thorough survey of the situation
and in their voluminous report recorded that "the lack of reliable
agricultural statistics particularly of food production etc. has
proved a great handicap in the foundation of policies and planning
of programmes, and improvement is urgently needed". It will be
noticed/

3. Govt. of Pakistan Resolution No.2(21)-PG/52 dated 21.9.52,
Karachi.
4. Report of the Economic Appraisal Com., Govt. of Pakistan, March,
1952.
noticed that both the Committees agreed on the desirability of improvement. They were also unanimous in their general recommendations which envisaged wider coverage and better co-ordination besides timely collection, but they differed on the central co-ordinating agency. The former recommended the Ministry of Agriculture while the latter suggested the Ministry of Economic Affairs. The reason for this disagreement is not far to seek. It is in the nature of official organisation to cut more than it can chew. And merely on that account the recommendation uising in favour of the heavier weight between the two Ministries represented on the two committees. Much could be attributed to this disagreement by way of hampering implementa-
tion. But the less said here the better. Nevertheless the problem of improving the national statistics continued to be stressed.

During the latter part of 1952 the Government called a "grow more food" conference with two main objectives in view, one to take measures for increasing the production in the immediate future, and, two, to prepare a 5 year agricultural development plan. The conference emphasizing the important role that reliable and complete data plays in the formulation of plans and policies, observed that in Pakistan "satisfactory statistics in certain sectors, at any rate, are not available." This conference did not, however, suggest any remedial measures. Their observation was/

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was rather an apology for making broad estimates of food supply in their working paper. Still it indicated what was suspiciously lacking for formulating satisfactory plans. More could be said to justify the importance of the subject. The Government of Pakistan in their 1951 Annual Report to the U.N.O. confessed that in Pakistan "the statistics suffer from incomplete coverage, lack of accuracy, "uniformity and comparability."6

Meanwhile, services of four experts from F.A.O. were also secured to prepare plans with a view to improving the collection and use of Agricultural Statistics, and promoting their dissemination. They included Dr. Schelte, Dr. Targast, Mr. Rauterberg9 and Dr. Teen. Besides them quite a few were also invited from the United States under their technical aid programme, for advice on almost the same subject. Mr. Miller of Ohio University, for example, had been in Pakistan for about four years he also submitted a cyclostyled report emphasising the necessity of Farm Survey data.12 All of these experts urged the necessity of early collection of information on their respective pieces of study. Inspite of all that improvement since 1947 was stagnant at zero.

The First/
The First Five Year - 1955-60 draft plan of the Central Planning Board again pointed out the weakness of the present statistical information and made a provision of 35 lakh rupees to expand and improve the agricultural statistics. The recommendations in plan include nothing new. It is the writer's fear that the plan has not been looked up to in quarters intimately concerned. The reasons for that, unfortunately, cannot be safely adduced. Nevertheless, the plan upheld the importance of the subject. And that is the only point here being made. Hardly had the ink of this plan dried up than the Government of Pakistan called another Agricultural Conference in August, 1956. The Conference "agreed that reliable statistics must form the basis of all Planning" and "decided that a sub-committee be set up for examining the whole question of Agriculture...... as to the most suitable methods, as well as the organisation needed, for getting more reliable statistics of acreage and yield of agricultural crops."  

It is interesting to notice that little attention has been given to livestock all through. This is so because, the very concept of agriculture in Pakistan is only half formulated, and not that livestock statistics are in any way better than those of crop statistics. This is perhaps not the place to enter into that line of discussion. The truth must be accepted that official statistics need improvement.

Another /

13. The First Five Year Plan, 1955-60 of the Planning Board, March, 1956, P.82.

Another proof, if that were needed, of the unreliability of statistics is the statement made by the Pakistan Finance Minister in the National Assembly during their session held at Dacca on October 15th, 1956. Giving an account of what the Central Government had done to solve the problem of food shortage in East Pakistan, he said, "in September and October last year (1955) the East Pakistan Government estimated that they would be short of foodgrains by 100,000 tons.....But their estimate was wrong because the statistics on the basis of which the estimates were prepared was not reliable." The foregoing review brings out clearly that the need for improving agricultural statistics has been urged by various committees, conferences, reports and individuals. The fact that it continues to be urged even at present supports the view that implementation has always been shelved.

The problem of getting over the defects of agricultural statistics has become chronic. Going back to its history one cannot fail to ignore the presidential address of Professor Abul Hussain, in which he reminded the 53rd Indian Science Conference held at Bangalore in 1946 that the non-availability of reliable statistics was the fundamental handicap in the foundation of food policy in India. He recalled that "the importance of agricultural statistics was emphasized by the Indian Famine Commission of 1880 and since then the necessity of accurate statistics has been stressed by every committee and commission that has dealt with agricultural production." He quoted that the

15. Daily Dawn, Karachi dated 16.10.56 - Proceedings of National Assembly as reported in this paper.
Indian Royal Commission on Agriculture, 1928 had said i.e. "the whole basis of statistics in India urgently required broadening" and also the observation of the Famine Inquiry Commission of 1945, who according to Professor Hussain recorded "problems arising out of the production and distribution of foodgrains during the war, have emphasised the need of accurate statistics ........ 16

To the Professor's review could be added the observation of the Economic Enquiry Committee 17 of 1925 which was set up by Indian Government to examine the availability and adequacy of statistics and which made various recommendations including the establishment of a central co-ordinating agency for improving statistics and that of the Food-grains Policy Committee of 1943 which was set up by Indian Government to "examine the past policy and present position in India in relation to supply, distribution and price of food grains ... and to make recommendations both for policy and administration for securing .... maximum supply, equitable distribution and proper control of prices in relation to food grains".

About agricultural statistics this committee remarked that "not only are the figures imperfect, but they relate to crop years which in most provinces run from 1st July to 30th June, and this neither corresponds to calendar year nor the financial year". 18

The collection of agricultural statistics commenced since about early sixties of 19th century in the Indo-Pakistan Sub-Continent. The cry for collecting them correctly and completely started to be raised from various sources including official ones since/

since 1880. It may, however, be wrong to say that things have remained unchanged since 1880, but it would be equally wrong to assume that a satisfactory stage has been reached or even reasonably approached.

An attempt has been made to prove that the project selected for this thesis is important, and that the problem of improving agricultural statistics, although widely emphasised in Pakistan, has been only partially solved. A further study with a view to investigating into its causes and suggesting remedies therefore seemed essential.

We now specify the limits of the proposed study. It is intended to suggest what agricultural information should necessarily be collected, and to recommend how it could be collected accurately, effectively and officially. A historical study beginning with the origin, passing through developmental stages, and finally leading to the present day methods, mode and techniques employed in the collection and use of agricultural information in the United Kingdom, will be made. A parallel but brief review of Pakistan will be added. The aim is to improve, if possible, in Pakistan the now-in-use method, machinery, coverage and use of agricultural statistics by means of adopting any of the techniques, ancient or present, with or without certain modifications that may have been tried and found successful in the United Kingdom. Needless to say that the items of enumeration will differ in the two countries because what may be important in one may not be in the other and vice-versa. Pigs, for example/

for example, are an important item of enumeration in the United
Kingdom, but they are practically unknown in Pakistan. The re-
relative importance of various commodities is, however, a matter
of great detail and can be very well appreciated in view of the
contrasting climatic conditions under which the two countries are
situated.

Before the introduction is finished a few clarifications of
the terms used in the wording of this project may be acceptable.
While canvassing the origin and development of agricultural
statistics and "data" there is likely to arise some confusion.
These two terms or words — call them whatever they are — are
commonly but loosely used as synonyms. Less frequently will
many writers be found to bother about their literal meanings and
exact concepts. Such a broad disregard may have its own point
the one that immediately occurs is the fact that both imply material
for investigation. 20 But by definition "statistics" construed as
singular is that branch of political "science" which deals "with
the collection, classification and discussion of facts." In
modern usage it also implies that "department of study that has
for its object the collection and arrangement of numerical facts
or data" and as plural it is defined as "numerical facts or data
collected and classified." 21 The word "numerical" will however
lose its emphasis but not the significance, if Encyclopaedia
Britannica's explanation be accepted. It says that the two

schools of thought, one once refusing any place of descriptive statement in statistics and the other declining to admit the great usefulness of numerals in political investigations, have coalesced. Both now realise the importance of the others point of view. The term "data" on the other hand denotes "something known or assured as fact and made the basis of reasoning or calculation; and assumption or premises from which inferences are drawn." It is not proposed in this thesis to dwell on the difficult task of definitional dissections particularly because according to Engel the term statistics had no less than 180 definitions. Nevertheless a reference was thought necessary to off-set possible accusation of abysmal ignorance in observing linguistic niceties. After all "literary presentation" is one of the conditions for a thesis to be approved! It may be sufficient to say that the use of the two terms will be made in their commonly understood concept as far as practicable, but the work practicable is emphasized. Even after that clarification the problem arising out of the use of terminology remains at best, half solved. It is not the construction alone, but it is the use of terms themselves which also present a problem. The term statistics is of relatively recent origin in the English language. Perhaps/

Perhaps its meaning was conveyed by words like information and intelligence before it was introduced. The other term data is also sparsely used in old writings. To quote an instance, Dr. Johnstons's dictionary published in 1755 does not contain the terms statistics and statistical, although the word "statist" meaning "a statesman" is found in that dictionary. The issue as to when and who first introduced the terms statistics and statistical is interesting but controversial. The tie is between Sinclair and Zimmermann. Sinclair himself appeared to have given the impression in one of his writings by writing that he was using the new words. Many other writers including his son followed that appearance and declare that Sinclair 'introduced' or 'engrafted' these words. But in one of his own writings, the earlier:

the earlier use of these terms by Zimmermann had been acknowledged by Sinclair,\textsuperscript{28} which Yule\textsuperscript{29} apparently had not noticed although he does "reach" Zimmermann on other evidence, and several other writers \textsuperscript{30} -\textsuperscript{33} support his conclusion. This does not of course extend the use of the term statistics by more than 3 years i.e. instead of 1790 when Sinclair used it, it will come to be regarded as in use since 1787 by Zimmermann. It remains, however, that while making a study of the origin of statistics, as far as agriculture is concerned, the word information or intelligence will denote the concept of statistics prior to its introduction in the English language or alternatively "statistics" will replace them in this review although it was not used as such.

\begin{itemize}
\item \textsuperscript{28} Sinclair, Sir John, Specimens of Statistical Reports etc., London 1793 P.viii.
\item \textsuperscript{29} Yule, U. "The Introduction of the words "Statistics" and "Statistical" into English Language" J.R.S.S., 1905, PP.391-396.
\item \textsuperscript{30} Zimmermann, E.A.W. A political survey of the Present State of Europe, London, 1787, P.vii. This was published in English and was not a translation.
\item \textsuperscript{31} The Monthly Review, No.78. London 1787, P.324. It supports date of publication of Zimmerman's Book earlier than Sinclair's letters where he first used the terms.
\item \textsuperscript{32} Baines. A., A History of Statistics etc. etc. New York, 1918, P.367. A direct support to Yule's conclusion.
\item \textsuperscript{33} Murray, Sir James A.H. A New English Dictionary of Historical Biography.
\end{itemize}
CHAPTER II

DOMESDAY SURVEY OF ENGLAND

The earliest known attempt in historic times on a kingdom basis to collect agricultural information was made by order of William the Conqueror in 1086. His kingdom was confined mainly to that part of the United Kingdom which is now known as England. The information then collected has been preserved in two manuscripts in Latin, which are of two different sizes and appearance. One embraces the account of thirty counties and the second of three counties. These two volumes are popularly known as Domesday Book. In his Domesday Studies Dove has taken some pains to compile an exhaustive bibliography on Domesday Book, which he has added at the end of his Domesday Studies Volume second. Birch has also appended a list of useful literature on the Domesday Book at the end of his Popular Account.

The Domesday Book remained in manuscript form for about seven centuries until in 1767, in response to an address by the House of Commons, the King ordered their publication along with several other official documents. The actual publication of the folio edition with types made "expressly for the purpose" was completed, after about 16 years, in 1783 at a very high cost of £35,000. The type with which it was executed was destroyed by fire which broke out in Nichols Printing Office in 1808. By 1855 photographic printing was invented when the Government reproduced the part relating to Cornwall for the first time in 1861. The convenient approach which

3(a) James, Col Sir H. - Domesday Book of Warwickshire, Southampton, 1862.
cheap and published material affords to research students resulted in the appearance of a large number of reviews and analysis of Domesday Book since 1861.

It is curious that the precise time of taking this survey is a subject of great diversity of opinion. According to Kelham it commenced in 1080, a few other dates are discussed by Birch, but it is generally accepted that this was instituted in implementation of the decision reached at the "Christmas Council (held by King) of 1065." It is sometimes but probably erroneously believed that a similar inquest was made by king Alfred about 150 years before William occupied the throne of England.

Sir Ellis in his General Introduction to Domesday Book has refuted this belief by saying that "the most diligent investigation has not been able to discover........that such a survey was ever known." Kemble in his "Saxons in England" has even denied the common belief that we owe the institution of "shires, tithing, and hundred divisions" to Alfred, let alone the undertaking of survey.

The Edinburgh Encyclopaedia, on the other hand, published about 18 years earlier than Ellis' Introduction states that

King Alfred/  

5. Birch, op. cit (1).  
king Alfred divided the country into Administrative Units. This statement lends strength to what Rectory maintains in his Translation of Domesday Book: that the Domesday Book was "formed upon the model of kind Alfred's Dom-Boo, made about 150 years before. This work (he refers to Alfred's work) which is now lost, was deposited at Winchester, and was "considered at its season a work of great usefulness and "importance."

A very similar statement is also made by Kelham in the opening sentences of his book. Chamberlyne in his Anglia Notitia has provided or perhaps given birth to these statements. He observes "... and in the year 630 it was for "better order and Government distinguish into parishes by "the care and pains of Homaries Archbishop of Canterbury, "about 200 years before it was divided into counties and "shires by king Alfred ......" None of them has, however, quoted any source or authority of earlier times in support of their conclusions. The only point that could be counted in their favour is their knowledge of Latin, which may have enabled them to get some clue about Alfred's supposed survey. It is, however, within the limits of possibility that latter writers only borrowed the idea of the former. Much confusion would however, have been avoided if original source of information had been mentioned by them, if any. What could reasonably/
reasonably be inferred from these works is the conclusion that Alfred did divide his kingdom into administrative units. He may well have made a register to record these divisions. The possibility is also not discounted that he called this register "Dum-Boc". It is, however, less likely that he was able to undertake a survey so extensive and so planned as to become the "model", as Rectory said, for William's Survey. The truth seems, therefore, to be located in the middle of the two divergent views held by Ellis and Kemble on the one hand, and Rectory, Kelham and Chamberlyne on the other. What apparently may have caused misunderstanding could be the use of Alfred's register which may have been found useful by William's surveyors as a source of basic information about the divisions of the kingdom. It is, however, interesting to find that Birch has also discussed this topic, and after taking into consideration the works of Dr. Pauli, Kemble and others, arrived at more or less similar conjectural conclusions. In any case, however, the Domesday Inquest is the earliest information of this kind now available and makes a useful starting point for a student of the subject here under study. The discussion that follows here should of course be gauged.

13. James, op. cit. (1) P.P. 7-9
gauged in the background that it is translations from the original Latin that have had to be referred to. There is a wide diversity of opinion on the why, how, and what content, and what use, of the Domesday Survey, and the answers to these questions are not simple and straightforward.

It is a well known historical fact that William the Conqueror was regarded as an intruder, whatever his own convictions to the contrary — and the vanquished English of that time can reasonably be expected to have suspected the intentions of their unwelcome king. It may be that writers even of the late nineteenth and twentieth centuries, taking their line from early comment, concurred in what would probably have been the popular belief that the survey was undertaken only for tax purposes. Row, Warner, Tout, Ramsay and Rias to mention but a few — conclude in different words but all with the same purport that it was a "Royal desire for revenue ...... rather than the passion for statistics" (Row). Certainly

Maitland/

15. Warner, G.T. — Land Marks in English Industrial History, Glasgow, 1930, P. (9)
Haitland and Jones tempered this outright comment, the one saying that it was an 'unsuccessful' attempt to correct 'scandalously' incorrect rating between estates and the other that it was ordered by the king to ascertain the resources which could be used as defence against external enemies. Jones in fact advanced several factors other than fiscal which could have been responsible for the survey although, in the present writer's view, conspicuously withholding the guess that one of the reasons could possibly have been the royal desire to improve the land conquered. Blackstone in his Commentaries and quoting Anglo-Saxon material also, says that the survey was conducted as a military necessity, which may have some truth as an attack was apprehended from Denmark about that time. Tait and Airy follow the "Commentaries" however. Amongst all the now generally well known questions asked on "land classification"—such as—"how much meadows, how much pasture and the changes in them, and their allocation between sokermen since 1061 and 1066, comes the question whether any advance could be made in their value." Although different writers give or imply almost as many:

25. Stenton, op. cit. (6) and (24).
as many different meanings on the word value in this context, and although it may have been linked only with the possibility of increased taxable capacity, the omission of general discussion of the importance of this question seems to the present writer curious and unfortunate. It may even hint at prejudice against the Royal intentions. Some writers like Warner26 omit all record of this question, most27 make no comment even when they record it. Stenton seems to have given some thought to it, and thinks that survey was "made from the standpoint of estate management rather than public economy". While his comments are not invariably perspicacious, — he accepted the loose contemporary opinion that the survey was undertaken "to know more about England — how it was peopled and with what sort of men."28 Vern writes that the "victorious sovereign desired to compare after 20 years reign the condition of his new territory with that pertaining in the last years of his predecessors rule."29(a) and added that "main object was taxability". Obviously there can be no finality now, the present writer, however, puts forth the hypothesis — that at least one of the main factors that called for the survey was the king's desire to effect improvements.

27. Maitland, op. cit. (19), (20) and (21).
improvements in the conditions of the lands he had conquered and of which he was now in safe control.

The next question to be answered was: how the survey was carried out? This will require the study of the machinery that was employed for the survey. Bulk of opinion inclines to the view that the matter of this survey was collected through the specially appointed commissioners, then called Legati-Regis. There seem to be different views as to how the Commissioners actually conducted the inquiry and whom they actually interviewed—whether in "each hundred within each shire" or in "each of the shires" or only "at various important places". A fairly careful examination of various references has failed to yield some useful idea as to the method of collection of the statistics, although such idea would have been of little significance in that the present day world presents means of approach and communications not available in Domesday-Survey times, and if a circuit of "Commissioners" was today required in Pakistan for some ad-hoc inquiry the centres of inquiry should appropriately be the villages, around which all the cultivated lands lie and the boundaries of which enclose its livestock wealth.

In the/

29. op. cit. (7), P. 18
32. Taylor, op. cit. (34) PP.21,22.
In the foregoing an attempt has been made to see what necessary collection of agricultural information, the coverage of, and the modus operandi of the survey. It is now suitable occasion to investigate into what matter was collected and how it was used. As regards the former question, according to Vern "Domesday set-forth the lands held in each "Manor", the numbers of different grades of society in the "comunities, of their livestock(not for all places), of their "ploughs (the term plough is ambiguous), of their mills (the "term mills is also not clearly defined)." Definite information on the latter point is grossly lacking. It is supposed to have been used for assessing land taxation. A proof of it is found from the Book of Ely commonly known as Inquisitio Eiensis and the Book of Ebor which is also known as Ebor Domesday. Both of these books are supposed to have been compiled from the original returns of the survey and by far the largest part of information is the same as given in Domesday Book. The most striking difference is the inclusion of livestock information which does not exist in William's Domesday. These two Books as well as several other "Domesday Books" compiled in later times have since been published and their contents support the assertion that these Books were made for tax assessment. Looking at their form and content it is reasonable to accept that they were prepared for purely fiscal purposes. It is very probably mainly on this account that/

33. Anonymous - Libri Genesalis Vocati Domesday Book, House of Commons, 1816. During later times it was primarily useful as a reference book.
that the main Domesday survey is alleged to have been conducted with purely fiscal aims. Thus the general opinion would be found to have originated from the end use of the original survey, rather than the objects. Everyday experience would however bear testimony to the fact that the aims and ends of such undertakings are not always identical.

As a record as we would now like to know of conditions as they were then, the Domesday Survey, as opposed to Vermes (Op. cit.) opinion that it was "extra-ordinarily complete and accurate", is far from "complete and accurate". This arises partly from entire omission of data which we would now like to have had, and which may or may not have been a serious omission at the time, and partly from our present ignorance of matters which would be clear enough then. These gaps in our knowledge have been the subject of considerable debate and speculation: some of them are noted here with two objects in view. One, as a warning of the types of omission and uncertainty which could still creep into modern statistics and surveys, and, two; as an appreciation of the wider ground which the modern surveys are expected to cover. Domesday Survey was incomplete in its overall coverage of what is now known as "land resources of the kingdom". How useful it might have been to have known why Northumberland and

Durham in their entirety and parts of Yorkshire, Westmoreland and Cumberland were left out; what the extent was of waste land as distinct from "uncultivated land", and of forests and parks. The exclusion of numbers of livestock, and of certain groups of population which leaves the total population unknown, are, each in their own direction, instances which make "statistical data" of the modern times impossible or at least uncertain, although not a few writers have attempted it. According to Henry Baring, "no two computations of "any set of Domesday figures for a county have ever exactly "agreed, and one who has tried to make such a computation can "be astonished at that." 35

The confusion that now arises from changes in boundaries and races is perhaps wholly due to the lack of continuous or even continual record of these things, but one is also hopelessly uncertain now as to the 'present value' of the money measures then used. Ellis, for example, has devoted a full chapter of his work to "different Denominations of Money" without reaching any precise numerical ratio. Moreover, "Thirty times" 1062 values (Jones) hardly square with "Eighty times" 1062 values (Aisy) 37 Even worse in many ways than the obscurity of money standard is the ambiguity about land area standard.

35. Waite, op. cit. (19) and Baring, P.H. - Domesday Tables of the Counties of Surrey and Berkshire, etc. 1903. P.94
37. Aisy, op. cit. (7) PP 161-177
38. Aisy, op. cit. (23).
standard. During the survey the areas were recorded in "Hides", "Carucates" and "Virgates" and the value assigned to a hide varies from 90 modern acres according to Airy to 100 to 220 acres according to Shirley. But majority of writers is found to agree with what Deighton & Co. have observed that a hide is "supposed to contain 120 acres" but "the exact extent of the measure is much disputed". Similarly other measures remain ill defined. If these measures did in fact vary from district to district, which is now being commonly accepted, and the Travelling Commissioners did not note that fact then the survey is to be blamed, but if they were standard measures the fault may be found in the non-continuity of the record. Does it not suggest that the modern standards should be more clearly defined than they are, for posterity? It is not unlikely that nine centuries hence people may wonder just how much land an "acre" was! The weaknesses of the survey must not be over emphasized, nor should this first survey be judged in terms of what one would like the modern survey to cover, nor mix white and black into undistinguished grey. The Domesday Survey suggests the type of machinery (to be discussed later) that could be geared to:

38. Airy, op. cit. (23).
to produce statistics; it sets precedent in many ways and, not least, still reminds, by inclusions and omissions, of the facts needed about the biggest-in-the-world industry. It seems, therefore, fairly safe to remark that although modern statistics are not faultless, what followed the survey was an improvement on what the great survey, albeit vaguely now, demonstrated so well.
CHAPTER III

PRIVATE AGRICULTURAL SURVEYS BETWEEN 12TH AND 17TH CENTURY IN ENGLAND

In one sense the Domesday Survey takes us forward as well as backwards. It is a starting point for wading through the twelfth-century descriptive estate inquisitions, mostly ecclesiastical, and the state surveys. These two sources, and perhaps only these two, are the source of material for the study of - put in present day language - statistics and data until they were supplemented by thirteenth and fourteenth century records, such as the Manorial Accounts prepared by bailiffs and other officials and the records of itinerary Royal Courts. These were further supplemented by the detailed inquiries made as a result of the 15th century agricultural revolution, which brought in its wake a change from arable and fallow to pasture. To these can be added the returns of Poll Taxes - a byproduct of crown levies - sprinkled and scattered over centuries, as well as the occasional parliamentary Surveys, which became frequent towards the seventeenth century in consequence of accelerated sequestration of ecclesiastical properties as well as the commencement since 1692 of 'property tax' which lately took the shape of 'land tax'. Measured with the long yard stick of centuries the collection of agricultural information would appear as a continuous process. But the opposite is the truth. The local surveys were occasioned by special circumstances, and as such the chronological gaps are as wide and numerous as the times they
do cover. While it is quite definite that there was nowhere any consistent conscious effort to record statistics as we now regard it, it must be appreciated that the gaps in part will arise only in the extant record of material: at the time some material may well have been regularly recorded for current use on individual "estates" and which may since have been lost. These gaps may also be more apparent than real because one is obliged to omit minor inquisitions that might be within one's knowledge or some larger ones which might have been worthy of mention but which are unknown to the writer. Completeness of picture is, therefore, not claimed, because it would have been scarcely attainable, but if this review fulfills its main intentions completeness will be unnecessary.

During the period here under review the study and comments are confined to England, which until the rising of 17th century was a separate kingdom in the present Great Britain. The counterpart information in respect of other parts of the United Kingdom before and immediately after their accession to English throne until about the end of the period here being reviewed is either wholly lacking or hardly worth mentioning or is being dealt elsewhere for reasons specified at appropriate place. The study for this chapter therefore pore over numerous but important surveys of the types mentioned above with the main purpose of questioning what agricultural information had been collected, what machinery was used, what necessitated its collection, for this work and what use was made of the matter
so collected. A comprehensive answer to the first question would have been of much interest had it been possible to summarize it: it is unfortunate that much of the available information is too obscure for a brief and definite reply. However, it was found that much of it in any case would have been inapplicable to modern conditions either in the United Kingdom or Pakistan. The answer to the second question, on the machinery of collection, can be appropriately generalized, and it is that unless otherwise mentioned the machinery used was the same as that of the Domesday Survey, namely the collection of sworn evidence from local juries. The third question, namely the object of these surveys and the use of their matter has been dealt with separately although mention of the "coverage" and machinery is not altogether excluded.

For the convenience of reader it must be stated that the state and estate surveys as well as other records have been dealt with in a chronological order rather than following through the separate records of individual institutions. Its justification being the close objective affinity and common coverage, which renders them round enough to pass through the same hole. The chronology is, however, disturbed when some areas were repeatedly surveyed, reference to other surveys elsewhere at intervening dates then coming "out of order". 

Between /
Between the years 1107 - 1136, King Henry I caused the survey of Winchester with the object of "ascertaining what King Edward the Confessor held in Winchester as his deemes". Hilton ascribes one survey definitely to the year 1135, and attributes to the occasion of "taking of the Peterborough Abbey lands into kings hands". It is not known whether or not he refers to the same survey, but he thinks that "a number of other surveys may have been made in an attempt to take "stock of the situation" about these periods. Hilton, writing about three times mentions the system of Pipe Rolls which contained information about the stocking of royal manors and which survive for time as early as 1130. From the type and contents of information which these surveys and Pipe Rolls of sheriffs contained, one is invited to believe that the use of the matter was for fiscal purposes. The survey of Winchester was, however, repeated in 1162. This time the object, as stated in the rubric of original record known as Liber Winton or Book of Winchester, was not only taking stock of the property but also it was an assessment of revenue and services due to the king. As the object suggests it is difficult to resist the conclusion that the use of the matter was again fiscal.

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1. Anon. -- Libri Centurialis Vocati; Domesday Book Vol. 1, House of Commons; 1816. PXX.
3. Anon, op. cit; (1) PXX
The next important inquest known to have been made was that of the manors of the Chapter of St. Paul. This was also repeated: how often and at what intervals is, however, uncertain. The earliest, of the year 1129, is mentioned by Davies. The subsequent three made during 1181, 1222 and 1279 by Ralph de Diceto, Dean Robert de Watford and Dean Beadak respectively are discussed by Hale in his Domesday of St. Pauls. According to Hale the first inquest of "formal kind" into manors of St. Paul was that of 1161. Hale's omission of the inquest of 1129 could be either due to his ignorance or that he did not consider it of "formal kind", but the fact remains that the surveys of this property commenced as early as 1129, if not earlier. Two more inquests of the same manors made during 1297 and 1459 are discussed by Simpson. Davies and Simpson dilate upon the material description and historical importance of the matter whereas Hale goes much beneath the surface. "The chief object", he says, "of the inquisitions was the identification "of persons by whom the services due were to be paid" to St. Pauls as their feudal lord. He also writes that these inquests covered only 16000 to 24000 acres; the big difference in the limits being the absence of an absolute value of the hide; and that the "names of the tenants, "with their rent, ranks and services" were inquired. His observation that a new survey "was not a prelude to any fresh emotion; it was rather a renewed declaration of rights between the owner and the "occupier" is a favourable indication to the inference that the

the matter was used as a rent inventory. The exclusion of those manors which earned no income for church probenemies would support this inference, at least by implication.

The reign of Henry II, 1154 - 1189, covers several royal inquests. Contemporary with St. Paul’s Survey of 1181 was made what is called “Assize of Arms 1181”. This was ordered as a military necessity when the king was “organising the defence of his whole dominion against “the yearnings of Phillip II” with a view to imposing military liabilities upon all landed interests “according to their capacity”, so the object of this inquest was to ascertain their “capacity” which was done through the machinery of “lawful men of the hundred”. It is, however, not clear as to what was actually collected and how it was exactly used. Earlier to this Henry II issued a Commission in 1163 to ascertain the means of increasing the revenue from feudal resources. In 1168, another Commission toured the kingdom under royal directions to access the capacity of various people for aid to the marriage of the daughter of the king. In 1170 an inquiry into the conduct and behaviour of sheriffs necessitated another inquest with the object of finding if through illegal means the sheriffs have/

have acquired some lands. A few years later came the "Forest Assize of Wood Stock in 1184". The object of this was better forest administration with a view to preserve them, perhaps, for the "Wooden Arms" of the Kingdom. In addition to these several special inquiries, appearances suggest that some type of information was annually collected for fiscal and legal uses. Further search into all these inquests does not promise results which could possibly be of the to-day here or in Pakistan. But one should not close the review of the reign of Henry II without referring to one very important inquest of 1135. It has been skilfully described by Round in his Rotuli De Dominabus. Round thinks that "somewhat similar" records were also made in earlier years of 1166, 1177 and then again in 1194. The former covered only Norfolk and Suffolk while the latter embraced all the twelve counties later included in the inquest of 1185 to which he confines his discussion. The object of this inquest, he writes, was to ascertain, "the rights of the crown over widows, minors and heiresses, "and whether they have been infringed" with the ultimate aim of utmost profits from widows "and land of wards" and from this standpoint he correctly describes it as a "quo-sarranto inquest". Perhaps as a byproduct, the survey revealed that low income from many "holdings" was the consequence of their being inadequately stocked. There is evidence that on such holdings stocks were provided at what in the modern phrase.

phrase we can call, "state expense" which "obviously diminished by that amount "its net revenue from the land at the time, although it added to its "value for the coming year". The application of the result of that inquest might be an event, pecuiliar and circumstancial, but it is a good precedent for Pakistan "fodatory" to attempt a compromise with the profoundly felt and clearly expressed wishes of the Government to abolish "landlordism" If the "Feudal" landlords compromised in the form of investing some money in the better equipping of their resourceless tenants it would not only bring them increased returns from their lands but would advance the regretably slow implementation of Government measures designed to help the tenants. Unfortunately this is not the study to admit of dwelling on the subject of "Land Reforms", but it may not be out of place of strike a note of warning that no "reforms" will be a practical undertaking - so much stands proved - without a thorough possession of facts and figures. However, there is nothing to suggest that the use of matter collected in this particular inquest of 1185 was any other than fiscal.

In 1193, the inquest of St. Edwards property was made by Abbot Saxon, immediately after his election as Abbot. This inquest was necessitated by the high debts standing against /

10. ibid.
against the monastery which Samson inherited from his predecessors. The available evidence suggests that unlike other ecclesiastical surveys when more than one person was appointed to do the task, Abbot Samson in this case alone visited "in person each of its numerous manors in turn," and "obtained an accurate "knowledge of its resources." This inquest was an individual assessment of the situation. A magnified application of the personal method of collecting information will be found in the days of Arthur Young (his Popular Tours of the 18th Century) and William Cobbett (his Rural Rides of 1830). They will be dealt in detail later.

In this case, however, it is not known what information was actually collected and exactly how it was used. The reason that financial liabilities were responsible for this inquest invite us to think that its use was identical with other contemporary surveys enumerating revenues and services.

The well known Hugh Pudsey Survey was made in the year 1133. The matter collected has been preserved in the M.S. since published, known as Boldon Book. The name originates from the name of place - Boldon to which repeated reference has been made in the record. The object of this survey was to describe "the revenues of his whole bishoprick" (Bishop of Durham implied) as they then were .... and formerly had "been." It was conducted through "Commissioners"/
"Commissioners" and used for fiscal purposes. The omission of Durham from the Great Domesday Survey adds much to the value of this survey because leaving aside the fact that the space of a century divided the two surveys it provides a useful supplement to the Great Survey.

An inquest into the lands held by Templars in England was made in 1185. Lees has described this record with a masterly skill.13 The object of the survey was to assess the revenue at the time of new mastership, and the information collected was, like several others, a rent roll which was used as inventory. Like similar other inquests, the inquests of the seigneurs of Templars were occasionally repeated until, in the beginning of 16th Century, they were sequestrated by the crown. The last inquest was, perhaps, that of 1307-9 mentioned by Lees, which coincides with the time of sequestration.

Similar inquests into Glastonbury Abbey14 in 1189, Ramsey Abbey in 1231-52, and the Elysham Cartulary in 1269 and many others were also made but struggling through all of them seems unnecessary.15

In addition /

15. Hilton, op.cit. (2) see for more references.
In addition to these special inquests that served as data for administrative and legal purposes were the deeds which are believed to be of pre-conquest times and deal with land sales, gifts, divisions of property, composition of estates, rents, tenures etc., etc. Besides them there are continuous records known as Memorial Accounts and Inquisitio Post Mortem. The generalisation may be rather broad but these records are somewhat analogous to the present day "Farming Management Surveys". Both of these records are their origin to 13th century, at least in their importance if not commencement. The Inquisitio Post-Mortem definitely began to be made since 1242 (36 Henry 111) by persons officially deputed. They included a detailed evaluation of the estates of deceased tenants in chief, including its extent, utilization of land under crops, pastures, woodlands, their value, rent and the income and expenditure accounts in reasonably comprehensive details, both for deceased and holdings separately. The number of such enumerations was fairly large. There were as many as 69 Inquisitio Post-Mortem records prepared between 1242 and the end of 13th century in Worcester alone, and they extend over a long period of about four centuries. These records would have been an interesting source of economic studies, at least for the localities and the periods they covered, had there not been serious absence of continuity and uniformity to a degree

a degree beyond even that which still presents obvious
difficulties in modern statistical matters.

These records had been used for estimating "the
relative progress of the Computation of Labour Services"
during fourteenth century." But, very broadly speaking,
there is little to encourage the optimism that Inquisitor
Post-Hortens records furnished anything except the inventories
of increased levies to which the crown was entitled in the
event of "escheat, wardship and marriage."

The Manorial Accounts analogous in some respects
with Inquisitor Post-Hortens were dissimilar to them in as
such as they were formed annually and sometimes even bi-
annually. Their general object according to Fox was "to
enable the higher estate officials "to know whether lord's
"lands and rights were yielding him the minimum income"

The machinery producing those records consisted either of
"a professional bailliff placed "in charge of one or more
manors ....... or a peasant reeve chosen from "among the
customary tenants of the manor". It is interesting that the
machinery now employed in some parts of the United Kingdom
and in Eire for "fara survey" accounts closely corresponds
to that of old Manorial Accounts. The information contained
in these records had a fairly wide coverage. For example,
the produce along with its quantity and time of sale for
each manor - grain being the chief product - was carefully
recorded. The rate of wages at various seasons, the
expenditure /

17. Hilton, op.cit(2) P14
expenditure on minor farm equipment repairs, threshing, harvesting, sheep shearing etc. etc. was also separately accounted. The utilization of grains for seed, fodder and kind payments as well as production and utilization of livestock and livestock products was not lost sight of. Does it not contrast with the singular conception of Pakistani agriculturists who conveniently disregard livestock even today while dealing with agriculture? The superiority of these accounts is further reflected in the fact that they extend over a long period and are the records of the same estates which even after they "fall into the hands of the crown" continued to be "administered as (separate) units rather than to be absorbed into "general body of crown lands". Moreover, they were fairly uniform and "changed remarkably little" due to "the great elaboration" of "technique of estate management in the thirteenth and fourteenth centuries". Although they never seem to have been used as economic data, inspite of the fact that they were more reliable for computation of peasant labour services than Inquisitorial Post Mortem records and furnish a remarkable precedent for those now made.

With these

18. For i.e. (chief editor) Ministers Accounts of Yorkshire Estates of the Duke of Clarence, 1469-89, by R.H. Hilton, Bagdale Soc'y. Vol. XXI, PPM to XVI, Oxford, 1952, The introduction describes the general features of the accounts although the general contents of this publication cover only some particular instances. For extent

19. Ibid. records reference should be made to the original reference
With the passing of time the functions of monarchy, especially administrative and fiscal, became wider and more involved. They gave impulse to the development of further surveys and inquests with comparatively greater uniformity and wider coverage. Worthy of mention among them to start with are Hundred Rolls of 1274-75 and those of 1279. The latter have been described as "far superior "to a Domesday Book in detail and accuracy" by Kosinsky, although this comparison is "unkini" if not unfair, because these Rolls weigh in the balance against the Domesday Survey neither in the scale of coverage nor that of "time": the Great Survey covering larger areas and preceding the Rolls by centuries. But it will hardly be a violent conjecture to assess their value next only to the Domesday Survey. The object of the survey of 1274-75, the year on which Hale and Hilton differ, the former attributing it to 1275 (3rd year of King Edward I) and the later ascribing it to 1274, was to ascertain feudal rights of the crown, their usurpation by individuals and to see if officials have committed some "excess". The execution was made through the especially appointed Commissioner as against the usual practice of getting information through Itinerary Justices.

The object

21. Hale, op. cit; (3) P viii.
The object of the "Hundred Rolls" of 1279 was to produce a record of landed property in the Kingdom. According to Hale it covered five countries, Bedford, Buckingham, Cambridge, Huntingdon and Oxford, but Hilton makes this seven by adding Warwick and Leicester omitted by Hale. Kosminsky who mentions Suffolk also has given better details of the areas covered by this survey and says that it included the description of 750 inhabitants localities. His work also admits of reaching the source of mistake for Hale who called it a record of "five" and not more counties. Hale only reached the published part of the inquest which includes a description of 640 localities in 5 counties and excluded a book of 126 pages containing account of 110 localities which according to Kosminsky was discovered by Vinogradoff from the Record Office. It is interesting to observe that Kosminsky in one of his articles published in 1931-32 counts the number of pages of this book as 120 as against 126 in 1956. Should we blame time for pushing towards bottom the accuracy of numbers? Even Kosminsky does not know exactly the number of counties surveyed when he says:

"I am not clear what was the practical application of 1279 survey, nor whether it was completed for all the counties of England and why, if so, the greater part of it has been lost."

The material collected related to tenurial relationships rather than economic. The method followed was that the sheriffs were enjoined to
present a Jury on the appointed day and at the appointed place from each hundred to the Commissioners specially appointed for the survey, who would give them the list of questions, and after some time the Jury would give answers to those questions on oath. The Commissioner’s own part in the survey consisted in instructing the Jurors, hearing their answers and taking measures in cases where information was refused. The actual work of collecting the information was the responsibility of Jurors. It is probably an improvement on this method that in the United Kingdom, the central offices now take the place of the Commissioners, the individual farmers that of the Jurors, and penalties instead of oath for deliberate suppression of information. As to the use of the matter collected; Kosinsky, who has made a thorough study of these Rolls, says: “It is impossible to say what use the Government afterward made of the extensive and complicated record that had been executed at its command.”

Kosinsky has brought up two important points in his discussion. One that the people were afraid of the new inquiry as a prelude to fresh exactions and, two, that there was tendency to minimize the revenues in an attempt to keep the new demands at a low level. Is it not curious to see these tendencies?

23. Ibid
25. Kosinsky op. cit; (20) P. 9.
tendencies survive until to-day? Surprisingly enough, such attention has never been given to over-seeing them in Pakistan where the collection of agricultural statistics is still directly connected with land revenue and water charges. In the United Kingdom, however the direct impact are separated, and some records have been entrusted to university departments further to counteract these tendencies or suspicion of them.

Most of the foregoing inquisitions, surveys, inquisitions Post-Mortem and Memorial Accounts were undoubtedly the crop of "revenue necessities". All of them at their own times must however have bridged the gulf between statistical availability and requirements, albeit very crudely. A similar source of identical material is the poll tax returns. A reference to these returns will be of interest to a student of early statistics and data. Closely related to agriculture among the important taxes were the Danegeld tax chargeable on hidage or scroage and a similar tax called Carucage, the former finishing by 1163 and the latter by 1224, and the short lived Saladin's tithes of 1161. Then came the Poll tax levied for the first time in 1377, which lasted for over three centuries with frequent breaks but occasional continuity and ended with 1698. It was followed by other taxes on sheep in 1549, on property in 1693 (modified in 1697), on horses in 1734 which exempted agricultural horses from 1821 onwards. It continued up to 1879, and the tax on persons keeping carriages during/
during 1747 and 1832. All these taxes being direct, either uniform or graded, did require some estimate of the extent of area, or of the number of persons or that of animals as the case may be.

It would be tedious to rehearse all the tax returns, which would really be an independent work on its own. The point can be made that agricultural facts - be they called "statistics" or "data" - about agricultural industry have been the concern of "authority" for centuries for one reason or another. These returns included a variety of subjects, but in view of their general limitations a mere glance at those of 1377 (population) and 1549 (sheep) will suffice as indications of a source of agricultural information for the time to which they relate, or of hints applicable to later times.

In 1377 a capitation tax, popularly known as Poll tax, was levied for "military expenses" on this population in England. During its first year the uniform rate of tax was 4d per head with the further provision that "the sum of each township was to be as many shillings as it contained residents over the age of 15 years" with some maxima and minima further provided. This first "age-group" division

(28) Powel, B; The Rising in East Anglia in 1381, Cambridge 1896, P.4
and the very nature of the tax suggests how minute details of the number of persons, their number in different towns, hundreds and counties would have been recorded. The same tax, on a graduated scale, was repeated in 1379 and again in 1380. A fiercely defiant attitude on this latter occasion suspended this tax until 1513 when it was revived on the "general" population and when the graduation of different professional classes of population viz. "labourers, artificers, and servants" were separately treated. This would have brought in its wake the census of population according to their professions. Whether any one bothered to use otherwise than for taxation all these details which had been investigated is a big conjecture one could make. Nevertheless, poll tax was imposed during 1641, and on "several occasions" during the reign of Charles II, and again between 1688 and 1689, which marked the end of the poll tax. Admittedly their object was wholly fiscal, but the fact that they were repeated several times and spread over three centuries coupled with their scaling of professions and age groups of the population, one would have hoped that their returns would provide/

would provide an interesting census. Its results if available would excite the interest of those concerned in the study of changes subsequent to the agricultural revolution which in itself necessitated several Government inquiries "such as those of 1549, 1563 and 1607" in order to find the number of house destroyed and extent of fields enclosed. 31 Two other inquiries of 1517 and 1549 could be added to this list which are treated in detail here. Unfortunately, neither of these hopes is upheld by these returns, nor, unless the writer is mistaken, by any returns of other similar taxes. This is because: 1) in this particular case the Northern and Southern parts of this kingdom were exempted or perhaps excluded from the tax because of "savage incursions of Scots" and "French descents"; 2) the "collectors" were found "guilty of gross negligence and favouritism in the performance of their duties"32 during early years and; 3) all through its history the tax had been "a political grievance"33 which must detract much from accuracy. It is not difficult to evaluate these returns made by "negligent" taxers for only a/

(31) Beresford, N.W., The Lost Villages of England, London 1954, p.142. It is useful for further references to these inquiries.
(32) Bowell, op. cit; (27) PP 2-4.
only a part of the kingdom and respecting an unpopular tax loudly protested by all sections of opinion including politicians. The worst still is the disappearance either in part or in whole either through time or ill-usage or both, of whatever was collected and which might have admitted of painting of a general picture with a broad brush. We can fairly infer that like other sources of information for the period ending with about 15th century the value of the statistical by-product of tax returns remains uncomputable. These returns were obtained, almost always, through the taxmure, a similar institution to that of Commissioners who prepared an inventory of liabilities and those liable by going from place to place. Their coverage due to some known and many unknown reasons had been incomplete but their object and use is undisputed.

Before poring over the sheep poll tax returns the exposition of its background will be found of interest which Leedman\(^{34}\) has plainly described.

The middle of 15th century witnessed new developments in agriculture. The centuries old procedure of

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\(^{34}\) Leedman, L.S., "The Inquest of 1517" Published in Trans. Royal Hist. Soc., 1902, PP 157, et. seq.
arable farming began to give way to pasture farming under the high pressure of soaring prices of wool. This brought in its train a number of problems. A large number of agricultural labour was rendered unemployed. The scarcity of food grains became acute and migration of population from rural areas to cities accompanied. The Government passed an Act in 1489 (4 Henry vii) prohibiting the destruction of houses on farms of 20 acres and more with a view to disallowing new enclosures. The measure proved imperative. The proclamation of 1514 followed by two acts passed in 1515 directed to achieve the same had also proved futile. In 1517 an extraordinary measure became irresistible when a Commission was set up to survey the country. The terms and conditions of the Commission were as follows:— (Translated from Latin).

"We therefore delegate you and two of your men to "make inquiry through the institution of upright and men "versed in law from the organisation of Oxford, Berkshire, "Warwickshire, Leicester, Bedford, Buckingham, and "Northampton how many liberties of the following kind and "of others by other ways and fashions and means by which "you say better know or are enabled to be informed which end how/"

(35) Anon. The Statutes of the Realm, Vol.11, House of Commons 1816. Mr. Leckman (op. cit 34) calls it Act of 1488, the reason for his mistake is that the parliament met during 1488-89. His (4 Hen.vii) should also mean 1489 and not 1488.
"and how many towns, how many houses and buildings from
the aforementioned feast-day are laid low and which and
how many lands which were then under arable are now
converted into pasture and how much and many fields for
feeding wild animals before that feast are included in
this....." 36

The Commissioners marked the scope of inquiry, but no forms
or schedules specially arranged, after the modern fashion,
were given to jurors for filling up. This imparted a
considerable variation to the information received from
various counties and even from different parts of the
same county. It reminds us forcibly that a precise schedule
is a pre-requisite for obtaining uniform information.
However, it is possible to compile as Leesman has done,
statistical tables from these returns showing the extent
of areas enclosed, and then further split up into those
inclosed for parks, pastures and inclosures; the number of
pleasants put down, number of persons ejected in consequence
of inclosures, number of churchyards decayed, date of
inclosure etc. etc. The decade immediately preceding this
inquest saw the largest areas being inclosed. Perhaps
it was not as much the tendency of inclosing lands itself
as was its rapidity which necessitated this survey. The
extent returns/

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(36) Leedman op. cit. (34) P.174.
extant returns now in Record Office relate to the whole or portions of Northants, Oxon, Worcestershire, Bucks, Warwickshire and Berks. Although the survey revealed the facts yet nothing is heard how they were used. They may possibly have become the basis of the Act of 1533 which prohibited the keeping of "above the number of two thousand sheep at one time within any part of this Realm". But there is no evidence of sheep having been enumerated at any date earlier than 1548 when a Commission was issued to see if violation to the Act of 1533 had taken place. This Commission may have enumerated sheep flocks but there is nothing to prove that they did.

Government attempts to check the spread of sheep at the expense of arable land continued until in 1549 a Poll Tax on sheep and cloth for a period of 3 years was imposed; although the reason of the imposition of the taxes was said to be "necessities of defence" and "rising expense of the Royal household", it was in effect designed to be a deterrent. An assessment of these taxes pre-supposed the counting of sheep, and the same year census of sheep of was undertaken.36

One of/
One of the provisions of Act providing for sheep census was that those who were already paying the tax on personal property (Relief on goods) more than what would become due under Poll Tax on sheep would pay nothing and the rest only the difference: "A man whose sheep-tax totalled 10/- would pay nothing unless his relief on "goods had been assessed at less than that sum"; if it was 11/-, he will pay 1/- only. It also provided three different rates each for the following three categories: 39

(1) Ewes kept on enclosed grounds "not Common nor "Commonly used to be tilled" for the greater part of any year. The rate was 3d per head.

(2) Whether sheep and other sheep-sheep on the same fields were levied at 2d per head; and

(3) All sheep kept on enclosed tillage grounds were taxed at three halfpence.

A clause of the Act provided the taking of sheep census annually in June through Commissioners who could "empedal the parish priest and other honest villagers to "help them". The first census was "appointed for 25th "June, 1549"; the date is interesting as it remained operative for some years after agricultural statistics began to be collected officially since 1856. According to Beresford/

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to Beresford the surviving returns for the Poll Tax on
sheep did not cover the whole county nor the whole of
that part of the county which abounded in sheep. In Public
Record Office survive accounts for five counties; Devon,
Hunts, Herts, Oxon, and Yorks, but it is only Hunts that
the records are anywhere near completeness. The accuracy
even of these returns is doubted because "nowhere did the
"Commissioners report flocks near the prohibited size of
"2,400, although from other sources we know that flocks
"of that size existed."40

The completeness of the returns is further adversely
affected on account of "exceptions" granted by the Act to cer-
tain persons and institutions.41 Beresford's saying that
"neither sheep nor men could be numbered by the passing
"of an Act of Parliament" is more than true but this
contention that the "first successful census of sheep did
not come until 1866" is perhaps based on an exaggerated
appreciation of the returns received in 1866. This subject
is however, left to be dealt at its appropriate place.

Before this review is closed a mention of the
Parliamentary Survey of 1649 is thought useful because it
represents another class which is a possible source of
agricultural data in earlier times. The English Parliament
pressed by/

(41) Anon. The Statutes of the Realm, Vol. IV, House of
Commons, 1819, PP. 123 and 124; King Edward VI 3rd
and 4th years.
pressed by the need of money for defence purposes sequestrated several civil and ecclesiastical institutions during 17th century. In April 1643 for example, an ordinance enabled the confiscation of property of such persons whose movements were derogatory to King's army. In October 1646 another ordinance providing "abolition of Arch-Bishops and Bishops" was passed with similar objects, and then in March, 1649 came "the ordinance for abolition of Deans and chapters". The property confiscated as a result of these ordinances was vested in Trustees who appointed "fit and able persons" as surveyors in England and Wales for compiling detailed information on oath in respect of these properties. The survey of 1649 in respect on lands and possessions of the Dean and Chapter of Worcester has been described by Cave and Wilson who appraised it, perhaps optimistically, as "far superior to any survey which has (since that date) been made by public authority". The survey embraces an account, partly descriptive and partly statistical, of "tenures", "agricultural organisation", "woodlands", "rents and values" and "Prices". The use of the matter seems to have been made in the assessment of revenue and lately as "evidence" in the "Courts of Justice".

In the preceding chapter the developments in the field of agricultural information have been reviewed until about 17th century. In this and the succeeding chapter we continue chronologically until 1866 which marks the beginning of the collection of Agricultural Statistics officially and continuously. It might be stated that the 17th century, whatever broad and overlapping sense it may involve, has been purposely drawn as a line between the two chapters, not only to impart uniformity in breaking down the material but also, and mainly, to review attempts of different nature separately. To elucidate the later point; the period on the back of 17th century was rich in surveys generally fiscal, always initiated and at times even executed by those concerned with tax, revenue or both, and not infrequently covering only a part of the Kingdom but always omitting certain territories of varying size. The times that followed brought in their wake, speaking generally, a tendency of departure from this subjective outlook, narrow scope and incomplete coverage. We shall deal here mainly with learned academies and individuals who played a great part in the collection of agricultural information until they were successful in goading the Government to shoulder the entire responsibility of their undertakings.
Individuals naturally proceed academically but when the individual activity did start is hard to say. According to McDonald, surveying in early times was an "occupation being similar to that "now called in England an agent, and in Scotland a factor". At the same place McDonald writes about some surveys, of unknown coverage but most probably for use as guide to act as "agent" between the tenants and lords, made by one "Syr Richard Benes, 1500-1546". These surveys can be regarded as the first of its kind as Borden (1546-1625), who also casually writes about Bensene's work in his Surveyors' Dialogue writes that if you had "time and experience to look into, and to understand what hath bin done concerning this matter (Surveying implied) long ago, you should find in the records of the Tower even before the Conquest, matter to satisfy you, that this profession was then in use, and ... that it is not ....... a new invention". McDonald, however, opines that "inspite of the "several authors" who "appeared about this time (seventeenth century roughly implied) upon surveying and measuring land, John Borden seems to have been held in the greatest repute". John Borden, he continues, "was the first English man who designed a complete series of County history and maps ....... in 1600 he was acting as Surveyor of Crown .... in 1607 he surveyed Windsor ..... later on he held the surveyorship of the "Duchy of Cornwall" ....... and lately, ....... was authorized by his Majesty to travel through England and Wales to make more perfect descriptions, charts, maps etc.".

John Borden's aforementioned work was consulted with a view to find the purpose and method of survey. But, to our disappointment, it is silent on these points. It mainly dilates upon advising the lords and tenants to appreciate the importance and usefulness of surveys. Besides that it contains statistical tables, laid out technically, on pages 153 to 172 and again pages 177 and 178.

1. McDonald, D; Agricultural Writers from Sir Henley to Arthur Young 1300-1800, London, 1908, P.32.
2. ..... next page
which are not readily understandable. That verbiage was the
vogue during the time this book was written is amply shown by its
language. Although definite information on topics of our interest
remains unknown, yet this book admits of some fairly reliable
inferences. On page 145 is "shown" the manner of casting up of
"sundry fashions of land foals and compasses." Similarly an illus-
tration reproduced from Surveyors' Dialogue by McDonald in his
Agricultural Writers on page 65 suggests the use of "chain and
staffs" having been made. This illustration, however, does not
appear in the first edition which we consulted. The importance
of Norden's work lies in its preceding Sir William Petty (1633-
1687) definitely in time and, if this inference is accepted, in
the use of chain, however crudely, for measuring and plotting of
lands. We are however inclined to acknowledge Petty at top
because of his employing "scientific" methods, invention of suit-
able equipment and selection of right type of personnel to handle
it as well as for extending and admirably accomplishing the task
of unprecedented magnitude. His "Doen Survey" of 1655-56, and
the survey of the lands of adventures in 1656 coupled with his
contribution in the formation of Royal Society of London in about
1660, and the Philosophical Society of Society of Dublin in 1664,
London, 1607, p.22
For Benefe see p. 152.
of which he was also the first president earns him a well deserved respected place. According to Craig he was an "anatomist, musician, economist, inventor, shipwright, statistician and man of "business". The D.N.B. describes him a "political economist", Encyclopaedia Britannica as "Economist and statistician" and the Chambers Encyclopaedia "Statistician and Economist". Neither of these sources, however, disparage his versatility. In 1652 he was appointed physician-general to the Army in Ireland (General Dictionary Historical and Critical makes this date as 10th September, 1651), when the Government of Commonwealth was engaged in the resettlement of estates forfeited as a result of doubted loyalty to English throne. These estates were proposed to be distributed amongst the Army in lieu of their arrears of pay, the adventurers in payment of debt they advanced for equipping the army and certain other "miscellaneous claimants". The plan necessitated the measuring and mapping of the estates to be distributed. Worsley, Surveyor-General of Ireland, commenced this Survey, but Petty soon after his arrival in Ireland impugned it. According to Lecouc the main objections to Worsley's Survey were irrationale expense, absence of provisions to check the accuracy of work accomplished, employment of untrained staff, use of instruments of unestablished merit, defective mode of payment which discouraged "more pains" namely "the noty"


Petty is also regarded as the first "theorist" of the science of statistics — See J.K. Weiss' "The term statistics" in JRSS Vol. 46, 1933, P.663.
not paying for the measuring of including (in this survey) unpro-
fitable land was "such a bynea to the surveyors Judgment" as
attempted them "to returne the same for "profitable". Some sections
of opinion against Worsley's survey became so loud that the
"Commissioners of Commonwealth" had to appoint a committee, in
September 1656, to "consider how the survey most expeditiously
"and cheaply be done". On this committee, among others, Worsley
and Petty were also to work. The Committee in their report
upheld the objections raised against the work. They also commen-
ded and enclosed Petty's proposal in which he, in the main, had
suggested that the measurement of forfeited lands should be done
through the machinery of "indifferent persons", and according to
their Civil bounds, and that they should be distinguished into
wood, bog, mountain, arable, meadows, and pasture besides making
such sub-division lines for allotments as would do away with re-
admeasuring. His method was accepted as definitely superior by all
but there were views questsing the time that its implementation
would entail. Petty assured that the entire work could be com-
pleted in 13 months time. It is unknown whether or not he appro-
priated the superstition that 13 was taken as unlucky number. For
him however it was both lucky and unlucky. We do not know how he
looked at it! His assurance however, made it clear that Petty's
proposals were designed to accomplish the work quickly, cheaply
and/

called the "Down Survey", Dublin, 1851, PP.3-6.
and thoroughly. These proposals were subjected to usual official vetting and after a considerable correspondence between the Committee, the Commissioners of Commonwealth and the Surveyor-General a contract was finally entered with Petty on 11th December, 1654. The rate of payment was agreed at £7. 3. 4d per 1000 acres surveyed. The church and crown lands were to be surveyed at 23. 0. 0d per 1000 acres. It is creditable to officials of the time that despite of the official red-tapism it took only 100 days between the appointing of a committee and the implementation of their recommendation which involved an estimated expenditure of about £30,000. It is also noteworthy that in view of the nature of the work the Committee agreed to pay an unprecedented rate, because Lorens tells that the cost of Strafford Survey of Tipperary made in 1639 and finally included by Petty in his survey with certain modifications was only about £2/-/- per 1000 acres and the one Barcley was carrying cost £2. per thousand acres. Let us hope that Committees of today will gather the courage to make bold recommendations where the importance of work warrants. Nowhere is its need more urgent than in Pakistan where high expenditure and recommendations of unorthodox nature have constantly stood in the way of conducting an agricultural survey.

Petty/

7. Supra P.7 and P.314

Pettie started his work with new staff which included "artists in the office, comptors for calculations... and foot soldiers" for field work. His reason for employing foot soldiers was that they were accustomed to hard life. They could reach odd places besides meeting the fierce opposition from "native Irish" who would go to the length of killing the surveyors because they considered the survey derogatory to their interests. Although the reorientation of field machinery had genuine reasons, yet the wholesale removal of Worsley's surveyors created a hail of opposition against Pettie. Possibly it was an unsuccessful attempt to eradicate or even to ease the situation that Pettie agreed to compensate discharged surveyors for the part of work they had done during this abortive survey. Such a compensation was to cost him £1,558.9.6d. Apart from others he also met some technical difficulties in the clauses of his contract with Worsley (for the Commissioners), which he could not to the letter carry out. The consequence was that a Committee had to be set up to decide incidental obstructions as and when they arose. Initially, the consideration whether or not to omit small estates of less than 40 acres caused some confusion and the Committee, to the advantage of

9. Supra, P.52.
10. Supra, P.60.
of Petty but in all fairness, agreed for contract purposes to
count 13 months from 1st February, 1655 instead of 11th December,
1654. In fact, however, the survey which extended to about
11
5 million acres was commenced in December and was completed in
about 15 months and not "in thirteen months" as Craig and certain
encyclopaedists maintain. It should, however, not be taken to mean
that the delay was either extraordinary in dimensions or singu-
lar in occurrence, although "in 13 months" or even "in about 15
months" are optimistic countings because the last touch was
not given until "June, 24th 1657".

The results of the survey were submitted to a Committee for
check up. Their report on the work in general was satisfactory
but they did point out that the personnel employed were inex-
perienced. Little seems the justification in this comment in
view of the Committee's general satisfaction with the results.

Probably the Committee was influenced by dismissed surveyors
and Morsley's supporters. Morsley also examined the matter of
survey as "chief examiner" and pointed out certain lacunae. But
Petty succeeded in showing that Morsley's objections were minor
and practically unavoidable. In fact, as could reasonably be
expected.

11. op. cit. No. (6) P.346 - Land Surveyed for Army(exclusive of
adventures) was 3,531,481 acres. See op.cit No. (8) P.60
The figure of 5 million acres is only arbitrarily correct.
Similarly Lorcen and Fitzmaurice differ at the number of
settlers which were to be settled, the former making it
32,000 while the latter 35,000 but these are of little impor-
tance here. P.27 and 55 of op.cit. No.(3) and P.338 of
op.cit. No.(9).
expected, they were the outcome of personal jealousy (one might call it professional jealousy as Worsley was also a "member of medical profession") which had developed due to Petty's objections to Worsley's work. Much credit should go to Petty's survey, popularly known as "Dean Survey of 1655-56" which, notwithstanding vicious and wide opposition, being first of its kind, was recognised by an Act "as the document for the purpose of settlement and claims ....."\textsuperscript{13} The same recognition suggests that the use of the matter was made as an aid in the distribution of land and later it was used as a legal document.

The best recognition of Petty's work will be found in the truth that the adventurers entrusted the survey of their land to Petty along with Worsley after he had finished with Army lands. Fitzmaurice commenting on this undertaking writes, "Thus (in September 1655) was begun the second great survey (of adventurers' lands) which was carried out on the same lines, and by the same persons as the first, and proceeded with equal regularity and speed."\textsuperscript{14} It is believed that it was also completed in about 13 months but the final touches were given by about 1659. Probably the counting of period excludes the time taken in recording and mapping of material in case of both the surveys. In that case the statements of time would be nearer the truth.

Evaluating it as statistical information, the survey has its merits and demerits. It covered only 3 out of the 4 provinces of Ireland, Gonnought being left out, and at the same time it extended...

\textsuperscript{13} Lorcom, op.cit. (6)
\textsuperscript{14} Fitzmaurice, op.cit. (6) P.56.
extended only to the unevenly scattered forfeited estates, whereas a survey of the whole country undertaken concurrently would have cost little in proportion. It is a pity however, that the survey did not meet more general approval, although looked at through the screen of circumstances under which it was conducted—the opposition and reflections on Petty’s honesty, are understandable. True also that such are the lights and shadows of every great work, compare with Domesday Survey, for example; yet his enthusiastic attempt to undertake a pursuit so remote from his professional routine is open to varying interpretations. The survey on the other hand, approached the problems from the right angle i.e. from measuring, mapping and classifying of lands which make subsequent surveys easy and dependable and also because nothing deterred Petty from showing that adversities can be ignored in conducting agricultural surveys without adversely affecting their accuracy. There is much to be learnt from this survey which at all of its stages created fresh and bold precedents, and to which Craig’s praise that “it was the first survey of Ireland to retain its value till the present day (1952) is well deserved.” Incidentally Craig’s statement about Petty that “he was knighted and became the Surveyor-General of the Kingdom” is only half correct. That he “was knighted at White hall” is rightly supported by Lorcom, but that he became the Surveyor-General of the Kingdom

15. Supra. P. 326
17. ibid.
18. Lorcom, op. cit. (6) P.349.
Kingdom is sharply refuted by D.N.B. which says "It should be borne in mind that Petty never actually held the appointment of Surveyor-General of Ireland to the Commonwealth." 19 The mistake seems to have resulted from the fact that Petty worked for long on various settlement committees but mostly either under or with Horsey who always retained the title of the Surveyor-General. However, the point for us is of little significance.

Petty's additional contribution towards the collection of agricultural information was his undertaking to survey and map the whole of Ireland by counties and baronies for which he had an unfulfilled official promise to be paid.

This map, according to the D.N.B. was published at Amsterdam. This source does not give the year of publication but the fact is, however, supported by General Dictionary that "Maps of Ireland, being his (Petty's) actual survey of that whole Kingdom were published in folio in 1635." 20 The D.N.B. further states that the map "was declared by Evelyn the most exact map of the kind which had yet appeared"; the reference being to "Evelyn, Diary, 11.96" 21 Having gone to this simple reference which is mixture of old English and Latin, and having consulted one of his friends who is a Latin scholar the present writer had very strong reasons to believe that neither this nor any other contents of Evelyn could relate to the map of Ireland because Evelyn wrote this page of his Diary on "Lond: 25: April, 1652" 22 whereas according to D.N.B. itself the map was not complete even by/

19. D.N.B. P.1000 Vol XV.
by 1673 (and it was published in 1685 as mentioned above). Petty had not even finished the past survey of Ireland relating to Army and Adventurers' land until about seven years after the date on which according to the face value of the reference that particular page of the Diary was written. Thus it seemed that Evelyn's acknowledgement of the quality of work of a "Great Philosopher" - even if it did refer to Petty, did not relate to, nor mean what the D.N.B. appeared to suppose. But having written the above criticism and comment on the Dictionary of National Biography the present writer made still further search, it being hard for him to understand how the Dictionary would make such an apparent blunder! It was actually discovered that two more editions of Evelyn's Diary, the one in 1827 in five volumes and the other "corrected, revised and enlarged", extended and differently laid out by the same author had appeared in four volumes in 1850. The latter edition (Vol. II P.96) did directly refer to the matter dealt with in the D.N.B. It reads as "the map of Ireland made by Sir William Petty is believed to be the most exact that ever yet was made of any country. He did promise to Publish it; and I am told it has cost him near £1000 to have it engraved at Amsterdam". The Diary is dated 22nd March, 1673-5, (underlining is ours).

The present writer is sensible of the impression his readers might form about him if he allows his invalidated criticism to stand. It might have been thought better just to have taken it out altogether. But his reason in not concealing his "fault" is to show how the incomplete "reference" is so misleading. Had D.N.B given an indication of the edition and year of publication
of the Diary such time and labour would have been spared. We have, however, doubts if D.S.B. has correctly reflected Evelyn in replacing the words 'believed to be' by 'declared'.

Petty also published a large number of books and articles containing interesting facts and figures. His posthumous *Political Anatomy of Ireland*²³, for instance, is an able description of land and people of the country and an intelligent analysis of the means of developing its resources. For us, however, it is of little interest as it conceals all that we would have liked revealed. All else apart, the method of compilation and the use of matter that it contains is unknown. Moreover, many of the figures it includes have been arrived at by tail-end calculations and are based on questionable assumptions. We have little justification to go into further details of such works here.

Among academies the Royal Society of London ranks first. It was formally established in about 1660, although its embryonic existence goes to earlier times. The Royal Society in itself did not contribute directly towards the collection of agricultural information. Its indirect influence is, however, very great. It was in imitation of this society and primarily on the same lines that the Royal Philosophical Society of Ireland came.

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²³ Petty, Sir. W.; *Political Anatomy of Ireland*, 2nd Ed. 1719.
come into being in 1661. Again the latter Society, constituted to study natural sciences, was never designed to be instrumental to the production of agricultural information; still its influence as well as contribution to the subject comes to be recognized. It is interesting that Petty played an active part in the creation of both of these academies; of the former he was one of the promoters, and of the second he was the first president.

Craig's (op. cit. 4) statement that Petty was succeeded by Viscount Mountjoy "on death" is incorrect because according to Gilbert (op.cit. 25) PP176-177 "Mountjoy was elected president in November, 1686, whereas Petty died in December, 1687. So the correct position is that Petty was succeeded in life and not "on death". It might be assumed that had Petty remained in close and continued association which does not mean that he had wholly lost his contacts with Royal Society before his death for Fitzmaurice in Life of Petty (op.cit. (9) P. 309) writes "notwithstanding his serious illness, Petty attended annual dinner of the Royal Society in December, 1687 which was the last flicker of the expiring lamp." It might be assumed that had Petty remained in close and continued association with the Royal Society of London, it may have stretched its activities beyond its bylaws as possibly through his influence, happened in the

in the case of Royal Philosophical Society which engaged itself in the study of land and of the people in spite of the absence of such provisions in the rules of business. Although there is no definite proof that Petty's influence was responsible for the latter undertakings yet his versatility combined with his continuous engagements on such work placed parallel to his contacts with the Philosophical Society favour this inference.

The present writer has examined two Manuscripts belonging to the decades connecting the seventeenth and eighteenth centuries, made by the Philosophical Society, which he found in the Library of Trinity College, Dublin, during a visit for purposes of this study. One of the Manuscripts carries the heading Hiberniae Notitia. Its first chapter is "of the names, climate and Divisions of Ireland." This chapter mentions "Pretta" map and Sir W. Petty's work and presumably the calculation of acreage has been based on these maps. About area it reads as "it contains 1,000,800 acres...... Yearly ground besides houses 900,000 pounds "sterling". The language is obscure and does not clearly indicate what is really implied. "Chapter 2" "of the Bishopricks of Ireland" and "Chapter 3" "A Description of the Several County's of Ireland" contain incomplete information on the topics to which they relate.


27. M.S. 1.4.17 in Holmnaux Papers called Hiberniae Notitia or The Present State of Ireland, Trinity College Library, Dublin.
Except for Dublin, Wicklow, Wexford and Kilkenny the place for figures of their size is left blank. Similarly "Chapter 4" of its Ayr and Sceyl" is incompletely written and there is an abrupt end to the Manuscript. It appears that the work intended has remained unaccomplished due to unknown reasons. The lay-out of incomplete tables however, suggests that had it been completed, the Manuscript would have become an invaluable statistical document. Its intentions and its preparation, nevertheless, are as much a delight as its incompleteness is a regret for any student of the subject. It also remains unknown how and why its preparation was undertaken and what rendered its completion impossible. That the Society was aware of the importance of agricultural information is, however, amply supported by this project.

The other Manuscript is "The Natural History of Ireland". It is partly descriptive but gives the population figures for the counties of Armagh, Louth, Meath, City of Dublin separately and the estimate of population "in the Kingdom of Ireland Ye 10th January 1695/6" is given at 1,034,102 (Page 75 of the M.S.); an estimate which is closely near to contemporary estimates. Its tabulated contents of parish-wise population, number of houses and hearths, enumeration of sexes and ages present it as a document prepared after modern fashion. Like the first Manuscript it lacks enough aspects of information of our present interest here and

38. M.S. I. 1-2 : The Natural History of Ireland - Trinity College Library, Dublin.
and devotion of more space to these Manuscripts is perhaps not justifiable. It may however, be stated that Westropp\(^{29}\) has published the contents of this Manuscript in detail and a casual reference to it has also been made by Craig, but the latter has wrongly referred it as "1. L.1-2" instead of "1.1.2" although he has correctly appraised it "of great value" as a "topographical account of Ireland"\(^{30}\). Although there is little in these Manuscripts that could illuminate the path of our present study, yet they are the glowing account of the awakening of general interest in the collecting of information relating to the industry of agriculture.

Before proceeding further the name of John Graunt (1620-1673) may be mentioned here appropriately. In his Natural and Political Observations, the authorship of which has, of late, wrongly been attributed to Petty by some writers, urged as early as 1662, the desirability of ascertaining "geometrical content, figure and situation of all lands" and estimating production of grains with a view making "trade and government more certain and regular". His work however, does not primarily deals with agriculture.

Another/

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30. op. cit. No.(4) P.56.
30(a) Graunt, J: Natural and Political Observations; mentioned in a Following Index and made upon the Bills of Mortality, 5th ed., London, 1674 P.396-397. First edition was published in 1662 we examined it in "The Economic Writings of Sir William Petty (1899)" Its first part discusses the question of disputed authorship and concludes in favour of Graunt. In 2nd volume (396) is the demand for agricultural statistics.
Another contemporary of Petty who contributed towards the
promotion of the development of agricultural statistics and data
was Gregory King (1648-1712). Chalmers in his "Notices of the Life
of King" writes that King carried "this practical science to
public usefulness far beyond Sir William Petty"31 and D.H.B. observes
that "as a statistician he (King) surpassed Sir William Petty."

This study does not allow controversy on personalities, but a
comment on the foregoing observations seems appropriate. After
examining the works of Petty and King, one feels that King is
justifiably being credited but most unjustifiably at the cost of
Petty. The correct position seems to be like this: Petty excelled
King in the actual collection of basic information, but the
position is reversed at the stage of their presentation. Petty's
statistical writings such as Political Anatomy, mentioned else-
where, added to his surveys would tend to offset his inferiority
to King. True that Natural and Political observations of King
are far superior to Petty's Political Anatomy, but one must not
forget that it is easier to improve than to produce.

King's "Natural and Political Observation" which brings him
to our study, has been based on several sources of information.

In the opening paragraph he writes "whereas the ensuing treatise
depends, chiefly upon the knowledge of the Number of People in
England (and Wales), and such other circumstances relating
thereunto/"

1804. P.23.
*thereunto, as have been collected from the affequent on
Marriages, Births and Burials Parish Registers (which have been
maintained since 1536) and other Public Accounts.*

This clearly reveals how King obtained his information. We now pro-
ceed to see what did he obtain and to what use it was employed.

He intelligently calculated on the basis of "inhabited
houses" the "number of the People of England" (and places), making
it 5.5 million souls in 1695. It included an account of "transi-
tory" and "affequent caiffions". He categorised it into age
groups, marital groups and professional groups. He also estimated
the area of England and Wales at 39 million acres. This figure
is higher than the actual, probably because he worked on the
basis of 69.5 miles to a degree co-efficient. The acreage was
further classified into Arable land, Pasture and Meadows; woods
and Coppices, Forests, Parks and Commons; Heaths, Moors, Moun-
tains and barren lands; houses and homesteads; gardens and orchards
churches and church yards; rivers, lakes, acres and ponds; roads,
ways and waste lands. The method followed for this classifica-
tion, however, has not been stated. The grouping of some of
the "sub-headings" such as "Houses, homesteads, gardens and
orchards, churches and church yards" is very haphazard as it
groups lands (Gardens and Orchards), and buildings. But being
one of the earliest, though not the earliest of its kind because
Chamberlyn/

32: King, Gregory; Natural and Political Observations and conclu-
sions upon the state and condition of England, London, 1696,
P.33. This work is appended to Chalmers' "Estimate of Compa-
33.
Chamberlyn and Petty gave lead, it would have been a greater surprise if this classification had been more scientific than it is. King then proceeded to assign values to each type of land as well as the rent. He also estimated separately the production of various grain crops, viz.: wheat; rye; barley; oats; peas; beans; vetches; etc., which taken together stood at 73 million bushels, the value of which he assessed at over 28 millions. This, according to King, was the production of 10 out of 11 million acres of arable land, the other million acres being under minor crops. We do not know how he arrived at production figures without attempting an estimate of acreage and yield under each crop. Probably he reached production either through "out-of-the-air" calculations, or proceeding on broad assumptions he may have made some rough estimates which he did not publish. He did however, take into account minor crops like "hemp, flax, wood, saffron, dying weeds etc."

On the animal husbandry side he estimated the number, the annual increase and the value of each of the several species of livestock and then the value of whole stock of livestock and livestock products. Among them he included "beavers, fterkes, calves; sheep and lambs; swine and pigs; deer and fawns; goats."

33. Chamberlyn; Anglia Notitia mentioned in the Introduction appeared in 1694.
"Goats and kids; Hares and leverettes; Rabbits and conies". The estimates of the value of horses, asses, "tame fowl" (fowl) which included turkeys, hens, ducks, pigeons, "fowes" and peacocks and "the whole stock of wild fowle" were also made but their number, even if estimated, was not shown in the tables.

We are not sure how highly King himself thought of these estimates, which include, at least in parts, several figures only as authentic as personal guess. But the fact that he proceeded to calculate minuter details of meat consumption and the distinguishing of population into vegetarian and non-vegetarian classes, which baffle the statisticians, suggests that he was fairly confident of the accuracy of his estimates. His work has been held in high esteem, and we do not intend to challenge its respectable place, because it is one of the best works of the kind and of the time to which it relates, but judged on statistical standards, apart from the fact that items in the estimates relate to different years, 1688, 1695 and 1696, it is at best a diligent compilation of tables with many blanks filled with conjectures. Much credit should, however, be given to King for obtaining statistics from administrative and public records and apparently filling the gaps intelligently.

We do not know precisely what use this plausibly presented information served. It might not, however, be an entirely erroneous supposition that it stimulated, in general, an urge for statistics, and as such, one might not be grossly mistaken to think that the contemporaneous establishment of the office of/
of Inspector-General of Imports and Exports to record foreign trade statistics in the year 1696, owes something at least in implications, to Petty and King rather than to mere coincidence.

In 1744 Smith in collaboration with Harris published a treatise on the Irish Co. Down. This treatise, as stated in its Preface, was the consequence, but not the result, of abandoned efforts of a precursor Society, who proposed to collect material for bringing out a book titled "Hibernia" or "Ireland Ancient and Modern." The aim was to remove "mistakes and misrepresentation" about Ireland through its publication.35

It is surprising that the authors of this work have suppressed, and possibly deliberately, the name of that Society; while referring to it they write, "we are not at liberty to name" the 'Gentleman' who patronised it. Our anxiety to find the name of the unnamed Society originates from our desire to locate the institution who introduced the method of obtaining information through general correspondence from different parts of the whole Kingdom. It is clearly stated in this treatise that that society "sent Circular Letters to many Curious and Learned Gentlemen in their several counties."36 The same information about the said Society is repeated in the Introduction to Smith's state of the Co. and City of Waterford (1746) that "towards the end of last century" a Society of Dublin (name again not mentioned) "endeavoured by correspondence to make "inquiries into the Natural state of the Kingdom", but the "Toheme/"

35. Smith, G; and Harris, W; — The Ancient and Present State of County Down, Dublin, 1744. Evii.
36. Ibid.
"Scheme dropped" either because this corresponding method was "not universal .............." or that the Society "began to cool in their inquiries for want of proper fund", and that the few and incomplete collections of the Society "are still preserved in "Manuscript in the (Trinity) College Library". The allusions like the "end of last "Century", incomplete execution of the work, and preservation of Manuscripts in the Trinity College coupled with the similarity of name of Manuscripts of the Philosophical Society with the proposed book lead to a safe deduction that Smith's reference was to the Philosophical Society of Dublin, the Manuscripts of which were examined by the present writer, and which were discussed in the earlier part of this review. On this hypothesis we can remark that the honour of introducing the method of collection-through-correspondence in place of personal application in the United Kingdom goes to Ireland, and was initiated by the Philosophical Society of Dublin (as we deduce) towards the closing years of 17th century. The importance to our study of this treatise is, therefore, more as a revelation and approbation of this method than of its contents, which are encumbered with much irrelevant matter. It was through the later application of this method that Young and Sinclair made outstanding contributions to the treasures of Agricultural information. Moreover, one might say that it was the progenitor of the "postal", as distinct from "visititation" method which is in operation throughout the United Kingdom today, though unfortunately such is not, and because of lack of literacy could not, be the case in Pakistan.

37. Smith, G; The Ancient and Present State of the County and City of Waterford, Dublin, 1746 P.vii.
It derives added importance for successfully advocating the revival of the abandoned plan for preparing "Hibernia" (series of County histories as Smith called it) in 4 or 5 years time through the establishment of another Society. In essence it was the revival of the Philosophical Society not only because of close objective affinity but also because of adopting their list of queries which are annexed to the Preface. They are grouped under fourteen headings, each further inquired several particulars.

The descriptive aspect of Agriculture is amply covered by headings such as 'Earth, or Soil, the qualities of it'; 'Plants'; 'Animals'; 'Water'; and 'Air', but the particulars likely to raise numerical replies are relatively few and unstressed, although some scattered but not frequent, numerical facts did ultimately appear in the final works compiled in the light of these queries; their specific mention being left to the following parts.

Smith's suggestion was, however, implemented in the formation of Physico-Historical-Society in April, 1744, the same year that his treatise appeared. The preparation of county histories, which constituted the main part of his suggestion, seems to have attracted great enthusiasm. The unpublished minute book of this Society, now in Manuscript preserved in the Library of Royal Irish Academy Dublin, discloses that in contrast to the normal procedure, it was not the name of the Society itself but its business which formed the proceedings of its very first meeting held.

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held "Dublin April 14th, 1744". It is interesting to see the
minute of the meeting held on 15th May 1744 which for the first
time records the decision about the name of the Society as Physics
Historical Society, although the actual business commenced right
from the first meeting when, interalia, the following two reso-
lutions were passed:-

(1) "Ordered - that the Isa and Bpbe be desired to recommend
this scheme (the collecting of topographical and historical
"data) to several clergyman and other Gentlemen in their
"several Diocese".

(2) "Ordered - that Gentlemen Harris and Dr. Jankins be
"desired to collect material for the description of the
"City of Dublin and County of Dublin". 39

The two resolutions suggest that both correspondence and
personal application methods were to be applied, but only the
latter seems to have succeeded. However, the approach and zeal
of the Society to accomplish their design is upheld by the
frequency and deliberations of the meetings of the Society. Harris
seems to have been the moving figure and within three weeks from
the first meeting he prepared instructions to accompany the
queries to be sent to different persons in the country. These
were approved by the General Board, and three thousand copies
were ordered to be circulated "thro the Kingdom". This minute
book also divulges that the Society's own part in obtaining the
material was not confined to academic discussions and wordy
recommendations. They went ahead, through advertisement, re-
questing the general public if they would send to the Society
any old/

39. ibid.
any old records bearing on their undertaking. That was not the
all they did. The Society also provided finances to persons
who travelled for obtaining pertinent data. It is, however,
unfortunate that Society's success did not correspond with
their hopes.

The two, or perhaps the only two works that were published
under auspices of this Society were those on Waterford (1746)
and Cork (1750) written by Smithy, one of the founders of the
Society. Another similar compilation undertaken with the
approval of the Society, again by the same author, but
published after the Society had ceased to function, was that on
Kerry (1750). One feels great disappointment that Harris
(1735-1742), joint-author of the State of Co. Down (1744),
who supposedly much influenced the idea of forming a Society,
and who probably associated or at least acquainted himself
with the

40. Smith, C: The Ancient and Present State of the Country and
City of Waterford Dublin, 1746.

41. Smith, C: The Ancient and Present State of Country of Cork,
Dublin, 1750.

42. Smith, C: The Ancient and Present State of the country
of Cork, Dublin, 1756.
with the activities of Philosophical Society and was, as the
minute book would testify, a very active member of the
Physico-Historical Society did not contribute even a single
volume. His posthumous work on Dublin (1766) appeared long
after his death, and longer still after the cessation of
Physico-Historical Society's operations.

These forementioned works, although written, either partly
or wholly, by the same authors, and three of them under the
auspices of the same institution, do not exhibit a uniform plan
even in their general lay out. Nor do they specifically
correspond to each other in their approach to common aspects.
For example, taking agriculture as a case, the treatise on Co.
Down points out that the largest area sown under barley during
1741 was by one Mr. Schilling to the extent was 100 acres.
Corresponding information respecting other crops, or regarding
the same crops during subsequent years in the same work or in
those published lately is wanting. Similarly one full chapter on
"Some Hints Relating To Agriculture" in this treatise on
Waterford contains some interesting data on yields per acre,
seed rate, time of sowing and maturity etc. etc. of some major
crops including Potatoes which was not an important field crop
in Great Britain about those times. But the same chapter
does not/

43. Harris, W: The History and "Antiquities of the city of
Dublin, etc. London, 1765.

44. Smith, op. cit. (40) Chapter vii (For Potatoes see pp.229-231.
It is stated that they were introduced in England from Ire-
land and that "they are much cultivated" in Ireland. It is
also said that they succeed in the weather which adversely
affects oats and wheat.
does not appear in any of the other works including the two
which appeared later. The chapters on "Boundis and Extents" etc.
which are included in all the works do contain some useful
statistical information, but such is lost in them because of their
being scanty and strictly speaking, incomparable. Favourable
comment, however, can elevate these treatises to the dawn of
statistical light.

We have little information about the matter collected through
correspondence, and its use, if any, that might have been made.
The probability is that this method again failed, and the result
only to personal application bore fruits. It is perhaps on
this account that Smith's plan, envisaged to be completed, in four
or five years, could only fractionally be implemented in over ten
years of the Society's life. The Society's small and partial
success would not belittle its achievements when compared with the
time consumed in bringing out Sinclair's Statistical Account of
Scotland which was to embrace a smaller country and with the
additional knowledge and developments in communications which the
following half a century must have placed at latter's disposal.

Eulogy is pronounced upon the Physico Historical Society of
Ireland on account of its experimenting with apparatus of Philo-
sophical Society of Dublin, namely the method of correspondence
and machinery of clergymen, which later on crowned Sinclair with
admirable success in bringing out Statistical Account of Scotland.
Sinclair did refer to some other Irish attempts but no acknowledge-
ment appears to have been made by him to this experiment, but
there/
there is evidence to suggest that he had fairly good knowledge of what had been accomplished, and how, in the field of collecting material in Ireland.

If the Society failed it did but confirm what Tennyson once said - The many fail, the one succeeds.

Dr. Campbell (1708-1775) wrote several treatises of prodigious nature. His "Present State of Europe" and "Political Survey of Great Britain" are important writings on political economy. Both are apparently based on the then available facts and information and conclude with certain recommendations. Commenting on the former, Kippis in the Biographia Britannica writes that "it will ever command attention and admiration even though some of Mr. Campbell's conjectures and reasonings concerning the future views and interests of European powers should happen to be overturned by the late surprizing revolutions in the politics of the world." We do not intend to struggle through this publication because its larger part relates to areas not covered by our present study, and particularly because we have from the same author a similar work relating exclusively to the "Great Britain". But the phrase Conjectures and reasonings used by Kippis, is of great significance. It unveils the truth that Campbell's "Present State of Europe", although remarkable for its affinity of fundamental suggestions and a testimony of sagacious ideas, is not, at least entirely, founded on authentic information/

information. The word "Conjectures" assumes greater importance because even the "Political Survey" which we intend to discuss here is not without them. The Political Survey is a series of reflections on situation, lands, inhabitants, revenues, colonies and commerce of Great Britain. It teems with plausible recommendations on all industries including Agriculture.

In reference to agriculture it made the very interesting suggestions: 1) a long term tenure as a prelude to extend timber cultivation; 2) determination of "proper size of Farms" with a view to attain higher efficiency. 3) the purchase "at the public expense (of) (those) Tracts of Heath, Moors and other Waste Lands" with a view to develop their latent resources; arable and pastoral, and thereby accomplishing "extension of ........... cultivation". The implications of such an original, far reaching and bold recommendation would demand a surer base of information than Campbell is at all likely to have had. Even himself complains about the paucity of existing data and the great difficulties which arise in the obtaining of reliable information. In his own words, "sometimes necessary materials are wanting, sometimes those that had been procured are defective, sometimes they lie at a great distance, and often depend upon others, which of course occasions frequent disappointments and unavoidable delay". One may also be very doubtful if Campbell had considered or even could have considered/

48. Campbell op. cit. (46) Vol.II. PP731-732
considered - the implications of its execution. Sir John Sinclair in his Analysis of Statistical Account (1826) writes of Campbell's Political Survey that it "is a judicious and laborious compilation, but unfortunately its intelligent author Dr. Campbell had not materials sufficient for completing such a work in the manner in which it ought to have been done." Our presumption that he made the recommendation for the purchase of all "waste" lands without having a fuller grasp of implications also gets implied support from that part of his work where he tried to justify this suggestion as "practicable" and "profitable", but although referring to other matters to the position in Great Britain as a whole restricted his discussion in this particular matter to England and Wales leaving in the back ground other parts of the Kingdom, which had definitely larger quantities of such lands. Let us wonder whether, if he had known the cost involved he would have suggested "forfeiture" instead of "purchase"! Similarly it again seems to be the lack of statistics that he desired "the reviving of the practice of using oxen instead of horses", the superiority of which he did not attempt to explain. Leave aside these particular aspects, even the general picture is painted with a very broad brush. Whether he did it for lack of proper appreciation for correct statistics or due to his pessimistic conviction of "irremediable incertainties of the Material" is a matter of opinion, but the fact that the present writer has found that on page 6 of the second/

51. Campbell op.cit. (46) Vol. II. P.733 (see footnote on this page)
52. ibid.
second volume he credits One Templeman for computing "with Industry and Care" the area of England and Wales as 31,640 million acres and that on page 732 of the same volume he praises King for his estimate of 39 million acres with the remarks that "accuracy of which (King's estimates) have never been questioned" is an unfavourable reflection on his care about statistics. His entire dependence, and confidently, on King's estimates about agriculture which were as old as 36 years by the time he used them, and his dilution upon cultural and descriptive side of agricultural industry hardly elevate him from the position of a "politician" to that of a "statistician", if the latter is accepted to be higher. All the same he was a political economist, and with that label should his statistical flaws be well veiled. Neither it is our role to search the dark corners merely to tell others that the corners were dark. Our concern with Campbell was to see if he contributed towards the promotion of development of agricultural statistics and data through these writings, and the appearances are that he did. Their direct influence might not have made much impression, but that "there was not production....... "that hath not better reception" and that there was no book that better deserved "the close and constant study" of people of all walks of life coupled with Campbell's repeated allusions to the lack of information and the difficulties to obtain it must not fall in their indirect influence, breeding an urge for being better informed. One might remark that Campbell's Political Survey and Arthur/

53. Kippis op. cit. (47) P. 212.
Arthur Young's Writings on Agriculture may well have had a joint impact that neither might have achieved alone.

What proved to be a rather misleading reference to early statistical attempts was met with in Sinclair's Analysis of Statistical Account (1830) where he mentioned the name of P. Thomas Pennant (1726-1798). Pennant no doubt, wrote several treatises, and those to which Sinclair seems to have alluded are the Accounts of his tours through Wales, Scotland and Ireland. He toured extensively on horse-back and collected vast mass of material on manners, customs, and natural history of the places visited, and published them in his tours of Scotland54 and Wales.55 For Ireland, however, corresponding publication does not appear to have ever appeared. These tours, entirely descriptive, are a day-to-day account of visits. They are concerned more with birds than with agricultural animals; castles than agricultural cottages and parks than agricultural lands. In truth the omission of observing agricultural conditions breath much to be regretted. Had Pennant cared, some useful data on agriculture could have been collected during these journeys. As his Tours now stand there is little of our interest. It might, however, be stated that the obtaining of information on various subjects by travelling around was not invented by Pennant, nor did he make as best use as was made by Young, Couling and Cobbet in reference to agriculture. Leading Pennant by a couple of decades as a traveller in search/

54. Pennant, T.; A Tour in Scotland; 1769, Warrington, 1774.
in search of information was Richard Pococke (1704-1765) who travelled 3391.25 miles in 30 weeks through Ireland, Scotland and England and Wales. Pococke arranged the matter thus collected and at death left it in Manuscript which was lately published. Like those of Pennants, and for the same reasons these works do not deserve further space in the present study. Pococke and Pennant, it will perhaps be more correct to remark, have produced a diary rather than a statistical account or even an account of any industry let alone agriculture.

The Scottish Society of Antiquaries was founded in 1780 with one of its "statutes" reading as "The principal object of the Society shall be the ancient compared with the modern state of the Kingdom". Should the interpretation of this principal be made by a statistician, the Society would have produced a series of statistics on all industries including agriculture. But this does not appear to have happened. In fulfilment of this "statute", "Accounts" of one or two parishes like Haddington, Uphall, Liberton etc. had been prepared and published in the transactions. In those accounts statistics have received little attention by the compilers, and the inclusion of a few of population and acreage figures here and there appears rather incidental.

Two tables

57. Kemp, D.W.: The Tour of Dr. Pococke ..., through Sutherland and Caithness (Sutherland Association), 1888.
61. Supra.
Two tables, one, on the prices of wheat, barley, oats and peas appended to the account of Haddington and the other on "valuation of the Several Lands in the Parish of Liberton" included in these accounts do testify that it was not for lack of taste or of appreciation for statistics but the attention that the material collected formed an "Account" rather than statistical Account of the Parishes.

Extreme care in the preparation of first table has been exercised. The conversion of existing currencies into current currency has been made to niminitest figure running to one quarter of a penny; true, of course, quarter penny in those days represented more than mere chicken feed. The tabulation and pattern of presentation admits of comparisons of prices conveniently. The data extends over 1637 to 1739, but the complete data for three grades of each grain becomes available only since 1651.62

The second table is rather vague because it gives the valuation of lands in various baronies without indicating their extent either in the table itself or in the context, although some rough idea of acreage could be made, but not for all the baronies, from the context. The real value of this table lies in providing the exchange ratios between Scotch and sterling currencies at the time it was made.

These Parish Accounts were prepared by individual contributors and under their names they appear. The pseudo-statistical activities of the society do not appear to have gone such further.

62. Supra P.91 et seq and P. 397.
farther than these accounts, and its late concentration on antiquaries rather than statistical studies makes it unnecessary to deal more with it. The cessation of preparing accounts of parishes could have been due to the society's failure to find contributors in various parishes, while it may also not be unreasonable to associate it with Sinclair's active undertaking of the same project in an improved form a few years later. It would be an optimistic view to regard these accounts as being of much help in the development of statistics, particularly because of the time at which they appeared, the time when Campbell, Young and Sinclair had echoed their importance. The period preceding the institution of June returns witnessed notable advances being made at framing production estimates besides those of the acreage and the number of livestock. Those previous to 1866 not already discussed may be mentioned here. About 1800 Incecock, a wool merchant of Leeds, in "The Nature and Properties of wool" (1803) estimated the number of acres, the number of long-wooled and short-wooled sheep and lambs, proportion of sheep to acreage, yield and production of wool and its valuation. The estimates were made on the basis of counties and related to England and Wales only. These estimates were based on earlier works such as Cary's Atlas and Middleton's View of Agriculture of Middlesex (1798). The "extent" assumed was as low as 26 million acres although Incecock knew that earlier estimates placed this figure between 34 and 47 million acres. Middleton whom he himself had consulted had given/
given the latter figure in his work. The number of sheep in England and Wales was placed at 26 million head and production of wool 94 million pounds. He criticised earlier estimates of wool production without particularly mentioning their authority and wisely added that "let it ever be recollected, that while the mistakes of others are pointed out the author does not suppose that his own estimates are most likely to be accurate." Their specific object appears to be Luccock's professional interest in wool trade, and the use of this data is to be found in its employment in a voluminous work. It was a new field of agricultural statistics which Luccock entered.

Twenty eight years later Hubbard, a wool stapler, Goodman, a wool factor, and Luccock brother of James Luccock who estimated wool production in 1855, on the request of Leeds Wool Committee prepared fresh estimate as a sub-committee. They raised it to over III million lbs. The object again, seems to lie in professional interests. This estimate, like that of Couling's may have remained inaccessible and the Select Committee of the House of Lords on the State of the British Wool Trade not obtained and printed it in their Report, along with the evidence of James Hubbard. The estimate was reached on 'personal observations' through trade records. Hubbard in his evidence claimed to be the 'better judge than anyone grower' of wool in making the estimate.

63. Luccock, J.: The Nature and Properties of Wool, London, 1869, P.343. Section III and V include one table each. It is assuming that the first table is numbered as "Table No.II" and the second as "No.I".
64. Please see next page......
because he said, "I take the result of the whole." This estimate relates to England alone, and hinges on the assumption that the number of sheep was the same as estimated by Hucceck in 1800, whereas yield of wool had increased.

In 1845, Prof. Low made an estimate of wool production for the whole of United Kingdom. He did not state details of his calculations, but in a small table in his big descriptive Domesticated Animals of the British Islands, he assumed that the population of sheep in the United Kingdom was 35 millions of all ages. Assuming further that the per head average yield would be 4.5 lbs. per annum he made the production as 157.5 million pounds. As this work was not primarily intended to be statistical, more estimates do not appear in it. In 1851 Southey made extensive inquiries and took the average for the United Kingdom at 5 lbs. (cf. Hamilton).

About thirteen years later Baines in his presidential address to the F Section of the British Association in 1856, increased earlier estimates of wool production to 175 million pounds. Like Prof. Low, Baines has also depended on the "authority" of others and accepted whatever seemed to him a "balance of authority".

Estimates/

63. Report from the Select Committee of the House of Lords appointed to take into consideration the State of the British Wool Trade together with the Minutes of Evidence (House of Commons Papers) 1829. It contains data on prices of wool as well as its trade statistics for several countries besides England. PP. 209 & 233-235.
64. Low, Prof. D: Domesticated Animals of British Islands, London, 1845.
65. Baines, E: "Address to the F Section (Economic Science and
Estimates of yield of livestock products such as milk, meat, wool etc. were also made by Culley, and given in his observations (1807), and Johnston who embodied them in Lectures on Agricultural Chemistry and Geology (1847). Both of them base their results on insufficient premises. None of them, however, draws any conclusion with regard to production.

On the suggestion of the Society of Arts Morton estimated the production of milk in 1865. He collected data from wholesale and retail dealers and consumers, cow keepers and health authorities. Prevalence of cattle plague which was largely responsible for the official commencement of the annual livestock enumeration greatly facilitated his enquiry, but at that time his study had been restricted to the City of London. Moreover the following discussion on his paper ‘On London Milk’ coloured it as an attempt on quality-study rather than quantity. Although this effort was of local interest and of comparatively little statistical importance yet it was the beginning of estimates widely accepted as authoritative which Morton later framed for the whole country. Since those were attempted after the commencement of official returns their discussion is being left out for the time being.

An important/

An important contribution to the development of agricultural information was made by W.T. Comber. His "Inquiry into the State of National Subsistence", (1808) mainly dilating upon the trade aspect of Agricultural Industry, comments, discusses, comments or criticises various theories and works produced by several writer's including Petty, King, Malthus, Smith, Sinclair, Young and Chalmers. Himself he does not appear to have attempted the actual collection of any information or the making of many estimates. But he has compiled and appended many interesting statistical tables at the end of his work. Those are on "Prices of Wheat from 1202 to 1804" in terms of the then existing currency and its equivalent in terms of current currency; "Account of the exportation of Grain from 1701 to 1764" which also includes an "account of the average annual bountys on Corn exports; Account of Importations and Exportations of grain from 1770 to 1800", and imports during 1803 and 1807; monthly quotations on the Price of wheat for the period of November 1800 to December 1801, and "The proportion of Land, cultivated for different purposes in England and Wales" which gives area under Wheat; Barley and Rye; Oats; Beans; Clover; Rye grass, &c.; Roots and Cabbages cultivated by plough, Fallow; Hop ground; Nursery grounds; Fruit and kitchen gardens; Gardens cultivated by the spade; Pleasure grounds; Land depastured by Cattle; Hedge and Woods, etc.; Weys and Water, etc.; Commons and waste Lands - these taken together makes the area of England and Wales as 38.5 million acres. Comber has quoted the sources of all of his tables except this last one on "the/
"the Proportion of land cultivated for different purposes". This table has come to be regarded as his own estimates, although he does not profess, even tacitly, either in table or in the context, to have made these estimates himself. His classification is different from that of King and Young, so also are his statistics. There are, therefore, reasons to regard this table as his own production, without disregarding the fact that he might have consulted earlier writers. In an anonymous article published in the Journal of the Ministry of Agriculture Comber is believed to "have applied Middletone proportionate figures to "this area". The silence about the source of these figures in his work, however, goes to credit Comber. Henry Raw seems sure about the issue when he writes that "In 1898 Mr. T. Comber and in "1927 Mr. H. Coeling made estimates, the former giving the acreage "under various crops with an appearance of precision which the "data available to him would scarcely warrant. We have no means "of testing the accuracy of these estimates, but it may be said... ".... they are plausible". The truth is, however, uncertain-able, and for the present study, Comber's work although undoubtedly an acute analysis of numerous topics, is therefore not of great importance. By the time these estimates appeared, it was no more a novelty, still less an originality. The only importance, by no means small, that this work assumes is the display of facts which must create general interest in statistics and data. It will not be a great presumption to suppose that the best use that Comber's work/
work was a stimulus administered to develop a system of statistics. Among the trio, Petty excels; the other two in the collection, King surpasses in their presentation and Coaker in analysis.

Edward Wakefield (1776-1846), a "statistician" and "well known as an authority on agriculture", at the instance of John Foster, Ex-Chancellor of the Irish Exchequer, was engaged in the survey of Ireland in 1806. About four years later he published, in two big volumes, the first mainly on agriculture, the Account of Ireland, Statistical and Political in 1812. This Account was regarded by McCulloch, the "best and most complete work that has appeared on Ireland since the publication of "Young's Tours". 73 Seemingly Wakefield is much influenced by Young's writings. Commenting on this aspect the Edinburgh Review writes "his (Wakefield's) manner is that of the Tours of Arthur Young - lively, dogmatical and disorderly." 74

Explaining the object of this undertaking Wakefield writes "A knowledge of natural situation, the political institutions and the local advantages (produce and the sources implied) as they respect the greatest division of that empire of which we are ourselves subjects is of much higher importance".75 He justified his rather descriptive style of compilation by saying that "statistical tables consisting only of figures unaccompanied by reasoning and observations would be a "dry" presentation particularly at the time when the extent of Ireland and its population had not been precisely ascertained. Much to reader's disappointment the descriptive side rather than Statistical tables of his work became a "dry" presentation.

As we learn, the matter of this Account was "collected chiefly from papers annually laid before the Parliament" but the pleasure also contains in a considerable part the information he personally procured by travelling "over the greater part of Ireland" besides what he extracted from numerous publications. The more frequent reference among published works has been made to Young's Tours of 1779 and The County Survey Reports (N.B.) published at the rising of 19th century by the Royal Dublin Society, notwithstanding the fact that Wakefield had certain reservations about the accuracy of the Survey Reports. But his suspicion about their authenticity might have cautioned him to consult them judiciously. Wakefield also apprehended that some "persons in Ireland enjoyed the pleasure of misleading" by giving erroneous information to "the inquirer". We may suppose that this apprehension made him very careful in accepting the truth of information he finally included in his work. It was perhaps on the strength of "caution" and "care" that he said that his Account was "to be found in general to be correct". If certain people of Ireland really had the habit of "misleading" the "inquirer" and, as Edinburgh Review tells us, if really Wakefield was "sometimes suspected of being an emissary of Government", A big question, however, arises here as to what extent that "habit" and "suspicion", both having adverse bearing on the

N.B. Wakefield has given the list of counties for which survey Report had been published. They were only twenty at that time. Four more had been surveyed soon after.

(76) ibid.
(77) op. cit. No. (77) P. 367.
accuracy of information, were counteracted by Wakefield's supposed precautionary approach? It seems better to leave this question unanswered.

Before proceeding to peruse the contents of the Account, it appears interesting to observe that Sir John Sinclair is far less quoted or acknowledged by Wakefield than one would have expected in view of the former's contemporary pursuits in the field of statistics. What is more curious is Sinclair's failure, on his end, to make any mention of Wakefield's Account in his Analysis of Statistical Account of Scotland (1828) — published fourteen years later — in which he reviewed the past "efforts" made on statistical compilations in different countries of the world including Ireland. Sinclair, however, also omitted Young in his review, and one might therefore, associate the omission of both Young and Wakefield to their works not being regarded as statistical by Sinclair. But if this be the truth, one wonders why Campbell, Mason and several others producing more or less similar "stuff" should catch Sinclair's eye. One should better not, however, accuse either Wakefield or Sinclair for playing anything like "personal politics" in "Political Economy" without having specific grounds for doing so.

Wakefield made estimates of the area of Ireland, which he had based on Arrowsmith's map. It placed Ireland, including inland lakes at 20,44 million acres. This area, according to Wakefield, was divided into 4 provinces, containing 32
counties, sub-divided into 253 baronies and 2,436 parishes. The area of each province is separately given. The aggregate area of four provinces is concordant with the total area of the country. The extent of each county is also indicated, but their aggregate does not tally with the provincial totals. The largest difference of 176 square miles is found in Ulster, the total area of which is stated as 5,375 square miles, whereas the aggregate of its nine counties makes it 6,199 square miles. Even in the case of other three provinces some discrepancy, in the same direction, but to smaller and varying degrees, may be noticed. Possibly rounding of figures would account for that discrepancy; as Dr. Johnson once said, "Round numbers are always false".

About one hundred pages of Volume One (Chapter VI) are devoted to climatology, which contain some interesting data on rain, wind, temperature, etc. The data is mostly tabulated, and is accompanied by lavish, rather redundant, observations and explanations. Criticising the padding aspect of this chapter Edinburgh Review correctly remarks that

"An Account of Irish climate does not require twenty references to Roman historians and poets......which so needlessly add to the size of an immense book......"78

The following Chapter (VII) of this volume is on Landed Property, Rental and Tenures. It is pregnant with data

(78) op. cit. No. (67) P. 345.
admitting of several useful deductions. For example, information on the size of estate and yearly income therefrom, would allow calculating, though roughly, the relation between the size of "holding" and its income yield. Similarly the average size or the usual size of estates, price of land, rate of leases, scale of rents could also be calculated.

"Absentee Property" i.e. absent landlords, condemned in Pakistan is, on the whole, discouraged, regard however, having been made to certain estates belonging to this class which were "as well conducted as any other in the country". Emphasis has been laid on a good understanding between the landlord and the tenants, without which it is said "his "land would be useless and unproductive". There are several other fundamental issues, of great importance to present day problems in Pakistan discussed by the author but we could not dilate upon them without unduly stretching our limits.

The next Chapter on Rural Economy bear information on the current mode of employment, prices of several agricultural and livestock products, current charges for pastoral grazings, mode of wage payments. Besides that a revelation that the author did not favour the grant of premium to the landlords on the plea that it did not bring much good to agricultural development assumes added great importance because he maintained that a better expense of the money which the "farming society" (Royal Dublin Society) was giving as
premiums would be to use it in obtaining "statistical return of the rural economy of Ireland," this benefit he thought "is well worth the expense," a thought pleasing the development of Agricultural Statistics. In addition to the foregoing description of numerous species of livestock, and lands, which it includes seems to be industriously prepared, although neither the number of livestock nor the extent of any type of land nor acreage occupied by any crop except hemp 80 (even this does not relate to the whole of Ireland) is given.

Many tables included in the following part of this volume contain, descriptive as well as numerical, information about the time of sowing and the time of harvesting of crops, the seed rate and the yield per acre of crops. The averages of this data are based on fairly large samples. Tabulated data on the cost of various operations for Potatoes and hemp in different localities is also available. 81 But similar data in respect of other crops has not been attempted.

We are not familiar with any specific use which this information might have served, but appearing as it did, soon after numerous similar publications respecting other parts of the United Kingdom, and being at that time, as it was, "the best and most complete work on Ireland" from the pen of a politically influential author, it should not fail to strengthen the case for collecting agricultural information

(79) op. cit. P. 392 Vol. I.
(80) op. cit. P. 454.
(81) op. cit. P. 369-371; 376-378; 384-387; 391-394; 396-399; 402-407; 411-413; 421-425.
which was being pleaded in other parts of the Kingdom. All else apart, it was an authentic supplement to contemporary information, because with all adverse criticism on its details the work as a whole has been held as illustrative of the "probity and candour of the writer".

Fragmentary allusions tacitly suggested that Gray's "Happiness of States or An Inquiry etc." (1819) was a statistical production. This impression seems to have rooted from the event of its being addressed "to Sir John Sinclair and promoters of Statistical Inquiries", but it is neither a statistical inquiry nor a statistical compilation. It dwells upon formulating certain fundamental doctrines, and this writer thinks it redundant to go beyond making one remark on this publication, and that is that by the certain rise of 1819 when this book appeared, "statistics" and "statisticians" had acquired a place respectable enough in scenes where neither of them could give a performance. If this remark is in reality upheld by Gray's work thanks must go to Sinclair and his predecessors who set the stage.

A reference to William Cobbett's Rural Rides (1821 onwards) may be appropriate here. Cobbett was a politician primarily. He was opposed to Peel's Act, 1819 which provided the revival of gold/
of gold standard abandoned in 1797. This Act because of its deflationary tendency depressed agricultural prices which had already reached a low mark following the culmination of Napoleonic Wars. Agricultural distress became acute and as many as 159 petitions were presented to Parliament during 1820, another 187 during 1821 and the total number had rocketed to 475 before March, 1822. The Government appointed an Agricultural Committee in 1821 to inquire into "...... the depressed state of Agriculture of the United Kingdom and to report their observations to the House"83 as well as suggest remedies. The landlords as a class pleaded before the Committee that low prices were due to the foreign competition and suggested tariff protection as the remedy. Cobbett did not agree with this view. He threw the cause of distress on the Act, war debts and heavy military expenses. He maintained that the best remedy of distress was to be found through domestic financial reform, by reduction in taxes rather than by raising prices, and this, according

83. Amos. (House of Commons) Second Report from the Select Committee appointed to inquire into the allegations .... complaining of the depressed state of the Agriculture in the United Kingdom List of Petitions in the same Volume (Vol. V, 1822) - London 1822.
to him, could be attained through an overhauled Parliament.84

The genesis of Cobbett’s Tours or Rides (he toured on horse-
back like Pennant already discussed) was to see things for
himself and authenticate and advocate his views. But he did
not restrict his undertaking to the narrow limits which its
origin may suggest. Writing about his tours, the authors of
Rural Rides85 remark that "Cobbett may have started out as
a politician, but he rode as a Pocono farmer...that he
really cared (to observe) was the condition of crops
whether it helped his case or not and the look and feel of
the countryside." It will, however, be wrong to get the
impression that he ever lost sight of observing for what he
had set out. For instance, in his tour of 26th August, 1821,
that is, as long after as about five years of riding, he
paid tribute86 to the Morning Herald, London, for publishing
an article. Commenting upon prices of agricultural commodi-
ities with a reference to currency standards, it clearly shows that
Peck’s Act was constantly in his mind.

84 G.D.H. and Cole, Hs — Rural Rides by Wm. Cobbett etc.

(84) G.D.H. and Cole, Hs — Rural Rides by Wm. Cobbett etc.,

etc., Vol.I. London, 1832. (8 Vol.) P.XIII et seq.,

This is the latest enlarged and improved edition of

Rural Rides issued by Cobbett himself during 1821 and

at irregular intervals thereafter in periodicals and

published as a book in 1830 and 1833. They were

enlarged and revised by different authors several
times since then. It also includes, for the first time,
an account of the Irish Tour as well as several Rides
which had never been committed to press before.

85 Ibid.

86 op.cit. (77) P.355 Vol. II.
The Rural Rides are not statistical treatises, nor, as their origin would suggest, were they undertaken with that aim in view. They, however, abound in useful data about prices of agricultural and livestock products, usual extent of acreage under different crops in different parts of the Kingdom, cultural practices like plant to plant and row to row distances of certain crops, yield per acre and the like. Cobbett's discussion of certain aspects of his observations is a testimony of his skill as an economist: For instance, his emphasis on the importance of forest, livestock and their products, as also the analysis of prices of certain agricultural commodities are undoubtedly the productions of a hand with brain behind it.

Cobbett's long and tiring journeys on horse back for ascertaining facts, whatever be their nature, is a commendable undertaking. But it is a pity, that gifted, as he was, with a politically audible voice, he did not raise it in favour of a systematic collection of facts. And as such his contribution in the development of Agricultural Statistics falls far short of our expectations.

By 1833 came into existence another academy called the Society for the Diffusion of Useful Knowledge. Its main object was to spread knowledge on all aspects except theology and/
theology and politics which were deliberately left out because they were likely to prove explosive. A perusal through the catalogue of its publications and a look through the Address of 1846 announcing the suspension of operations of the Society) which detailed its activities during a period of 20 years, reveals a multiplicity of subjects and topics to which the Society devoted itself. The chief contribution of this Academy to the subject of statistics came in 1837 (first edition) in the form of McCallum's "Statistical Account of the British Empire." Since part of our interest in these early accounts is that of how and by whom they were originated and supported, it would have been useful to have had these points in this case but it is not precisely known as to how the Society aided its compilation. The author, however, acknowledges in the preface of his work that he submitted a proposal to the Society to draw a statistical account and it agreed to this proposal. He further states that his account was the fruit of that arrangement. Even the Address mentioned above is vague on this issue. It only says that "in such productions..." and the Statistical Account of British Empire, etc. the Committee (of the Society) have endeavoured to help those "who were engaged in profound researches of different kinds."

(90) Supra. P.17.
The Statistical Account of the British Empire\textsuperscript{91} has been prepared by several authors, but by far the major part flows from the Pen of McCulloch, who in addition to acting as the chief author was also responsible for contributing the section relating to Agriculture which occupies 128 pages in Volume I of the two. The object of its preparation, as stated in the preface, was to examine "numerous treatises of various merit" and "to illustrate the statistics of the Empire" that should give a "pretty fair representation of the present condition of United Kingdom."\textsuperscript{92} Besides "numerous treatises" they drew upon reports of Parliamentary Committees and Commissions appointed by the Crown to investigate into "Industrial, Political, Commercial and Industrial" departments. The section on Agriculture is mainly derived from Young's Tours and Political Arithmetic, General Report of Scotland and Wakefield's Account of Ireland. Numerous other writers including Petty, King, Middleton, Comber and Coaling discussed elsewhere had been consulted. Crop yield statistics have been deduced from county Survey Reports of the Board of Agriculture issued between 1793-1815.\textsuperscript{93} It is a creditable effort, and unless we are/  

\textsuperscript{92} Supra. P.VI.  
\textsuperscript{93} cf. op. cit. No. (64)
We are mistaken first of its kind to embrace the whole of the United Kingdom, and to compile and analyse data from so many sources; official and unofficial. Similar productions of the past related either to England or England and Wales or Scotland alone or not frequently to Great Britain but rarely did they ever extend to Ireland except British Topography which in fact is not a similar work.

94. Coaling (op.cit.No.93) was the first to embrace the whole of United Kingdom in making estimates. McCulloch is first in the field of analysis and compilation of facts from available records.

95. Cough, R: British Topography, or, An Historical Account... of Great Britain and Ireland, 2 Vols. London, 1768. It is an improvement over his Anecdotes of British Topography (1768). It illustrates topographical antiquities of Great Britain and Ireland and contains a detailed description of public records, Chronicals, heralds' visitations, charts, maps, engravings and other materials which could be used to elucidate antiquities of Great Britain and Ireland. Its bearing on statistics is shown by Sinclair's remarks who writes that in Cough's works" many useful facts and materials are contained, and they furnish material which may be of services whenever statistical survey of that kingdom, on a proper system, is undertaken", op.cit. (50) Page 67.

b. Timothy Pont "Topographical Account of the District of Cunningham, Ayrshire, compiled about 1600". Edited by Fullarton, J. Glasgow 1653 and Walter McFarlane edited "Geographical Collections Relating to Scotland edited by Mitchell, B. Edn. (19 6-1908) 3 Vols. belonging to 16th to 18th century cover parts of United Kingdom. They contain some curious facts. For instance according to Pont 'Introduction of lime to soil is as old a practice as 16th century. McFarlane obtained some of his parochial account from ministers School Masters and persons of good social position. They do not contain much of Agri. information, however,
work. Much care and thought seems to have been given to various aspects discussed but a minute examination of the comments offered on some of the earlier works leads one to think that their object was hardly higher than a desire to chip in. As an instance, the adjustment of estimates of tillage land in England and Wales framed by Middleton and Comber were fuss over a great deal in the text but his own estimates, except that of gross area showing wide difference, are essentially the same in detail. It might be pointed out that McCalluch erroneously attributed Comber’s estimates to the year 1812 instead of 1809.96 However, the slight changes ultimately made in these estimates, may be as much due to the time lag as to any inaccuracy. Moreover there are no definite means to check that the latter were an improvement over the former, and even if they were, there is no reason why they should not be, because by the year 1837 when this work first appeared statistics as a science was a baby well up on its knees. Nevertheless, McCalluch did not add any statistics of his own except what he could arrive at through the available fore-mentioned records. This aspect of his touch on the

\[96\) op.cit. (84) P.531.\]
on the subject is rather clumsy. It restricted discussion and presentation to the extent already available material instead of a better treatment according to the importance of topics. For example, thanks to Young's numerous publications, much was included on English Agriculture; he did not go on his own venture far with Irish and Scottish Agriculture. Again within Ireland and Scotland the importance of topics appears ignored by keeping animal husbandry less than desired in the thesis. The only charitable view one could take about this indeterminate dealing is to accept McCulloch's remarks as his apology. He wrote "notwithstanding the "magnitude of the material from which we have drawn, we have "had to regret the extreme scarcity, and sometimes indeed "the total want of all authentic and trustworthy information "on various points....and we have not infrequently been "compelled, from the total want of experience and information "to decline drawing any conclusions."97 The work on the whole is an acceptable presentation on the subject of economics and statistics, and it supports what Say maintained that "McClatchy's place is rather among statisticians than "economists".98 It is, however, possible to see, how far the "hopes" of the authors that "the circulation on this work" would draw public attention to "the deficiencies of statistical "information and would thus contribute to advancement of the "science" (of statistics), were materialised. In April 1844, when for the first time a motion was moved in commons by Gibson/ 

(97) op. cit. (94) P.viii. 

(98) Say, J.B.; Oeuvres Diverses, 1848, P.381 et seq. 
(The original reference could not be seen. This is borrowed from D.N.B.)
Gibson for the collection of agricultural statistics, to emphasize their urgency, he quoted among others McCulloch for lamenting 'the total absence of information'. The House in general, was favourable to the motion, partly supported by McCulloch's work. Besides that McCulloch wrote several other treatises and articles, which have been, and shall always be appraised differently by different readers but the consensus of opinion shall acknowledge McCulloch as one of the promoters of the subject here under study.

William Coaling, a civil engineer and surveyor, made estimates, in 1837, of the extent and agricultural utilization of land in the United Kingdom. He seems to have been the first individual to make estimates for the whole of the United Kingdom which he presented during his evidence on 13th May, 1837 to the Select Committee on Emigration From the United Kingdom.

It is curious that no specific object has been mentioned for making these estimates, nor did there appear any private work based on them. One is at a loss to see what use these estimates would have served, had a mere combination of circumstances not given birth to the Select Committee which used them, and published them in its report.

They/

(99) Hansard's Parliamentary Debates 18th April, 1844 P.34
They separately on countywise basis relate to England; Wales; England and Wales together; Scotland; Ireland; British Islands and are classified under four headings; One; Cultivated two; Uncultivated, three; unprofitable, and; four, Summary. Each heading has been defined. For example, by "Cultivated" is meant that "arable lands, gardens, meadows and pastures", by Uncultivated, the lands capable of becoming "cultivated", and by Unprofitable, lands occupied by rivers, lakes, roads, inhabitants, mountains etc. etc. and "woods and plantations", the inclusion of last item under Unprofitable is, rather curious. The "Summary" contains the superficial area of the country, which is, of course, a total of the three columns. Another seven-head table, without separate county figures and titled "A General Statement", gives (Countywise) classification of acreage. These headings are: i) Territorial division, ii) Arable land and gardens, iii) Meadows, pastures and marshes, iv) Uncultivated waste capable of improvement, v) Annual Value of these lands in their present state, vi) Surface incapable of any kind of improvement, vii) Summary of each territorial division.100

Culling apprised the Committee of his method of obtaining/

(100) Anon. (House of Commons) -- Third Report From the Select Committee on Emigration from the United Kingdom, London 1827, PP. 356 et seq.
obtaining these estimates. It was obtained from numerous excursions made from various parts of the empire, and amount to an aggregate distance of upwards 50,000 "miles" which embraced "the greater part of 106 counties, and 11 others which" he had, "partially travelled over, "from 1796 to 1816, and from 1824 to 1837". In all he made estimates for all the 140 counties. This excluded "British Isles" (offlying islands) which he did not visit at all but did make estimates for them too. Out of the 140 it is reported that he visited 106 counties mainly and 11 partially. That leaves 23 counties for which he "consulted "the best authorities to which I could procure access", but from the table one could find only 11 of 23 counties which are distinguished with a star mark but the other 12 counties not visited by him were not pointed out. There appears to be some mistake in the statement. Most probably he visited 106 counties to the extent of "three-fourths", and those marked with a star were the 11 which he visited "partially", (cf. 34). The rest of the 23 not visited by him being left undistinguished. Thus, his note that star "mark is made against these districts which have not been "travelled over by myself". The "best authorities" consulted for counties not visited are also not revealed and it is, therefore, not possible to assess the difference in the value of two sets of estimates, one based upon personal inspection.

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(101) Supra. P. 361.
(102) cf. Q. 3713 P. 362.
(103) Supra. P. 358.
and others on "best authorities". Nor is it clearly
understandable what did he mean by "Inspected three-
fourths", as the figure of "aggregate distance of upward
50,000 miles" will be incongruous to the supposition that
he visited all fields within that limit. One evaluating
the importance of these estimates my safely remark that
it was an energetic attempt to "make" statistics rather
than collect statistics. And if it be argued that they were
"collected" a statistician would wonder how far were they
reliable, particularly in view of the time over which
their collection was spread as well as the coverage. Their
accuracy, therefore, could be challenged both from the
point of view of statistician's cruse for too precise an
approach in respect of time and coverage, and the computers
apparent disregard to what must have been the quite
phenomenal changes, that took place between 1796 and 1827 --
with the Napoleonic Wars intervening. Porter (1839) in his
paper read before British Association On "Suggestions in
Favour of the Systematic Collection of the Statistics
of Agriculture" said that "the only" agricultural statistics
"available for further calculations is contained in the
"estimates of an individual, Mr. Couling,...such an estimate",
"he continued, "is manifestly beyond the power of any
"Individual to make with the requisite degree of accuracy".

The time demanded for its "accomplishment", he said, "would
"necessarily be so great, that changes continually going
"forward would render it impossible to present a true result
"with regard to earlier surveys and the whole would consequently be incorrect". The use of "the only" excludes any appreciation of earlier estimates. Possibly this exclusion was due to these estimates being confined only to parts of the empire. This assumption would substantiate our earlier supposition that Coolings was the first to make estimates for the whole of the United Kingdom. While Porter did not bluntly question the accuracy of these estimates, the use of clauses like "if even be conceded that Mr. Coolings's estimate was accurate at the time it was offered......" and "allowing further, that not only the estimate was "correct" would express any statisticians comments on them. The fact that Coolings estimated the number of arable acres in Sutherland as 150,000 as against the actual of enumerated in 1853 can not be entirely attributed to expansion in acreage by about 22,022 in less than 30 years. 104a

Coolings in reply to one of the questions of the Committee /

(104) Porter, G.R. - "Suggestions in favour of the Systematic Collection of the Statistics of Agriculture" in J (B) S.S. Vol.II, London 1839, PP.291-296. (The Paper was read before British Association on 28th August, 1839). Porter also emphasised need for agricultural statistics in his popular work. The progress of the Nation, London 1847 in which he wrote "It is much to be regretted that.....we are almost wholly Uninformed with regard to the statistics of Agriculture".

(104a) The Courier Newspaper dated 25 August, 1853 in an editorial note commenting on agri. returns obtained in Scotland by the Highland Society commented on Coolings estimate.
Committee stated that he made these estimates "in my private capacity" from "minutes of my own" and from my own inspection which he had been collecting for over a quarter of century.

On the request of the Select Committee Couling also prepared estimates of expenses for locating a family consisting of man, wife and three children on "waste lands" in Great Britain. His calculation placed it at £75. The same Committee also obtained an estimate from another witness, Benjamin Willis who made it £60 only. We have no direct means to test the superiority of either of the two estimates, but the fact that Committee was "decidedly of the opinion, that the evils of superabundant agricultural pauper population......, may be, if not removed, materially palliated by a system of Emigration on an extended scale" would credit Couling's estimate, because the estimated expense for settling a family of five in North America in which Emigration was strongly recommended was not less than £60. If Willis' estimate of £60 for Great Britain was accepted the Committee might have recommended, at least as a part solution of the problem, the settlement of pauper families on "waste lands" or "good" uncultivated lands" within the Great Britain instead of sending them abroad.

(105) op.cit. (93) Q 372 & 3718 P. 362
(106) op.cit. (93) Q 3726. P. 363
(107) op.cit. (93) P. 374.
(108) op.cit. (93) Report P. 5
(109) op.cit. (93) P. 22
As regards the use of data, there are unmistakable indications that Couling's estimates provided a reliable working paper for the Select Committee faced with the huge problem of agricultural distress, and consequent Emigration. Had this Committee not favoured Emigration in their Second Report published in April, 1827 i.e. a month before Couling was examined, one could have assumed that the Committee was led by the nose by Couling who had concluded his evidence by saying that "I think that it admits of no doubt whatever that the location of persons in Canada would be much cheaper than locating them here; I think that may be considered as finally settled". Still, the courage and confidence with which the recommendation appears in the Third Report might have acquired strength from Couling's estimates and evidence and if this was allowed, there would be no grounds to entertain doubts that his estimates proved instrumental in putting the panthers of Great Britain on a prosperous life in North American Colonies. When this use of Couling's statistics is established one will be in a position to rebut Bismarck for placing statistics only on the wrong side of "damned lies".

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(ii) op. cit. (93) p. 3769. P. 368.
CHAPTER V

UNOFFICIAL AGRICULTURAL SURVEYS MADE BY INDIVIDUALS AND ACADEMIES WITH THE ASSISTANCE OF PUBLIC MONEY BETWEEN 17TH CENTURY AND 1866

The present chapter is in continuation of the preceding in as much as individuals and academies continue to be the subject of discussion. It is true that many of these with unquestionable if not equal, appropriatenesses could have been dealt with in the former chapter. They were carried forward. One of the intention of this treatment is to break down the matter, as far as possible in convenient form. Besides that there is the logic: the individuals and academies brought forward to this chapter applied "Correspondence" method, either in the whole or in part of their work, as distinct from "Visitation" or "Personal application" method which had hitherto been the vogue. Another thing from which the present division would seem justified is the fact that public money was made available not to all of them, nor always expressly for the collection of agricultural information, but to some of those who did execute that work. It is, however, admitted that the division is unavoidably general and arbitrary. This is so because any change in the methods and machinery employed in any field of so vast and unorganized an industry as agriculture cannot yield to any push-button instructions, particularly in the absence of central direction. The old ones take their time to wane, and the new to wax, thus giving birth to a long transitional period which becomes difficult to divide by any sharp line.
The earliest academy deserving our attention is the Royal Dublin Society of Ireland. It was founded in June 1731 for "Improving husbandry, manufacture and other useful Arts and Sciences". Its first determined attempt to collect information on the state of Ireland, of course, including agriculture commenced in June, 1773, when Major Vallency presented to the Society a list of queries proposed by a fifty-one man sub-committee of Commerce to be sent to "Gentlemen and Clergy" in Ireland for the purpose. Two thousand copies of these queries printed for circulation. Although about half out of the total of twenty-six queries, relating to agriculture yet they inquired only "proportion of mountain and Bog to the content of arable and Pasture land" without specifically asking for an estimate of the gross area; the sorts of manures used with their source and expense without any attempt to know their quantity; the chief produce of land and its prices without any attempt to find the outturn; the remarkable qualities, size and value of cattle without enquiring their number or species. The only question which could bring a numerical reply was that on sheep, which desired to find the "quantities" of sheep and their "present number" in relation to "any former period". Without defining "present" and "any former period", would, however, leave little to expect a statistical return even to this question. The rest/
The rest of the questions generally enquired the mode of employment, wages of labourers in different industries, size of farms which implied holdings, price of land per acre, weights and measures used and the like. Even if these queries were replied to by all and with alacrity the so gathered information, would scarcely have been a statistical account of the Kingdom. But the measure totally failed. The only visible fruit of this labour was the account of the "Present condition of the Parish of Kilronin in the County of Roscommon and the adjoining district" prepared by one Charles O'Conner in manuscript in 1773. This account, christened by the name of "Statistical Account" was printed by Sinclair in Twenty-first volume of his Statistical Account. It is curious that Sinclair did not make any mention of this account in any of his earlier volumes although he mentioned it in his Analysis of Statistical Account (1825) page 63, where he gives the details of this project.

The foregoing


Note) According to Sir J. Sinclair this account was sent to him by Rt. Hon. W. Goryngham, (see p. xxvii in Vol.20 for confirmation), who must have sent it before he died in 1796. Between this year and the year and when twenty-first volume was published, as many as five volumes of Sinclair's Statistical Account were published. Probably Sinclair wanted to print it on the tail, as he ultimately did.

A very confusing Statement was come across in Berry's History (op.cit.19 P.211) regarding the account of Kilronin. He most incorrectly attributes its compilation to Goryngham instead of O'Conner, Goryngham's only role was its transmittal to Sir Sinclair. He also, again wrongly, writes "Sir John Sinclair, President of the English Board) sent to the Society a statistical account of Kilronin Parish Co. Roscommon, written by Goryngham, which had been presented to the Board in 1773. English Board of Agri: did not exist before 1793 and it was not Sinclair who sent the account to the Society. The correct position was other way round.
The foregoing information would support the contention that Sinclair was not the first person in the United Kingdom to make use of the machinery of clergy, nor of the method of correspondence, nor, even, speaking very vaguely, of the type of matter he collected for his own Statistical Account. The available information, however, is too obscure to suggest whether his undertaking was an imitation. His abstention from making any claim to the originality of his Statistical Account "which", he said" certainly stands "unrivalled for extent of useful information, and which may be "imitated, but .......... cannot be surpassed in any other country" might be taken to his disadvantage over 'originality', notwithstanding Mason's remarks that, "although his (Mason's) undertaking "be deprived of the merit of originality, in consequence of the "previous labour of Sir John Sinclair ............." Mason, of course, may have credited Sinclair because of his successful completion and for the "extent of information" which the latter did emphasize.

In the Account of Kilronan two-thirds of the total of twenty-six queries sent by Royal Dublin Society have been attended to by Charles O' Conor (Sinclair's Statistical Account, 1799 and the B.N.B. incorrectly spell this name with double "n")

Although it gives some interesting facts yet the contents and language are characterized by vagueness, and even, —— if misprint is not made the excuse —— doubtful accuracy. As an instance of the latter class, the price of land, which is given in a foot-note, is said to


5. Contd. on next page.
be "9s per acre"; when labour was 5d per day and coal '8s per ton
at pit. Some other agricultural topics such as arable part of the
parish, size of farm, market places, important agricultural
produce etc., etc., have also been touched. But their queer treat-
ment stultifies the D. N. D.'s remarks that the record "deals with
its agricultural conditions" (Vol. XIV, P. 856). We need not,
therefore, share Sinclair's regrets "that similar returns had not
been made from every part of Ireland", because "similar returns",
could not have served any better.

Failure often precedes success. If that is, and it is, true
then the Society's failure in 1773 proved subservient to their
ultimate success in bringing out County Survey Reports during
early 19th century. It might not be an indulgent view that the
Society set a good precedent of trial and error which may have
served several successors usefully.

It would be of interest to advert here to Major Vallency who
presented the list of queries for Society's approbation. This
gentleman, once the Vice-President, which the Minute Books of the
Society would substantiate, was a main cog in the working
machinery of Royal Dublin Society, and he belonged the age of the
Physico-Historical-Society of Ireland which had unsuccessfully
tried the correspondence method for the collection of information;

5. O'Conor, G. O., The O'Conors of Ganaught, A Historical Memoir
compiled from a manuscript of the late John Donovan, Dublin,
1891, PP. 224-5. The fact was also ascertained from various
biographies.
The same Vallency was actively associated with the activities of
the Royal Irish Academy, which according to Mason, revived
the project of collecting statistical information in 1793. According
to Webb, Vallency went to Ireland before 1770 (to be exact it was
1761) to assist in a military survey and was strongly drawn
"towards history, philology and antiquities". Again in the unpub-
lished Minute Book of the Committee of Antiquaries of the
R.I.A., thanks of the Committee are voted to Col. Vallency for
presenting to them the original Minute Book of the Physico-Histori-
cal Society. One or two authors of Statistical Surveys made
during 1800-1833 have addressed their volumes to Vallency. In
summary, Vallency presented Royal Dublin Society the list of
queries used in 1773; he was spending his twenties and thirties
across the water when the Physico-Historical Society of Ireland
was engaged through correspondence in the collection of informa-
tion in 1744; he came to Ireland to assist in a survey; he was
in possession of the Minute Book of this Physico-Historical
Society until he presented it to the Irish Academy in 1785; its
study may have influenced his ideas, and possibly it may be through
such influence that he advocated the method of correspondence.
Some volumes of Statistical Survey Reports have been addressed
to him, and Sir Coote, one of the authors of these reports has
even hinted at his interest in statistical works. His portraits
in recognition of his services are erected in the premises of
some/
some institutions of Ireland which we had an opportunity to see.
All these events carefully considered invite one to think that
Valency had been influential in, if not instrumental to, continual
Irish attempts in the collection of information through correspon-
dence during the 91 years (1721-1812) of his life — years which
embrace the most fertile period in so far as such productions in
Ireland as also in the United Kingdom are concerned. His biographers
and commentators, however, do not reward him for any such merit. On
the contrary he has been abused for "incomplete" and "absurd" works.

Before proceeding, a mention of Royal Irish Academy seems appro-
priate here. Mason in his Statistical Account of Ireland (1814)
maintains that the Royal Irish Academy occupied themselves in the
collection of statistical information about 1793. Their operation,
says Mason, can be traced to a Statistical Account of the Parish
of Aghaboe in the Queen's (Leix) County drawn up by Dr. Ledwick. 10
With the object of investigating the details of this undertaking by
Royal Irish Academy we struggled through the numerous and volumi-
nous Minute Books. 11 It was discovered that Ledwick was their active
member during 1793-96 and was the secretary of the Society of
Antiquaries/

8. op.cit. No. (10); & D.I.B. etc. etc.
9. White, de W.W.; The Story of the Royal Dublin Society, Tralee,
1955, p.49. After the above comments were offered, White was dis-
covered to have credited Valency for his contribution to the
collection of information. He supports our view. A more direct
support to our view was found in Vol.20 of Sinclair's Statistical
Account of Scotland when he writes that plan of 1773 was given up
"even by Major Valency, who had prevailed upon the society to
"engage in it" (Plowill).
10. Ledwick, E.: A Statistical Account of the Parish of Aghaboe in
the Queen's County, Ireland, Dublin, 1796.
11. M.S. (1) Minute Book of the Royal Irish Academy, Vol.1, April,
1795-Nov: 1826. We perused minutes from 1793 to 1797 i.e.
the year when Ledwick's work appeared.

(3) contd. on next page/
Antiquaries during 1794. He was also very regular attendant of Council meetings.

Ledwicd's close contacts and active participation in the deliberations of the Academy, coupled with the coincidence of his becoming the secretary of the Society of Antiquaries about the time of preparation of his Account, as well as the general similarity of the matter to that of the Account of Kilronin prepared by Royal Dublin Society in 1773 may have imparted the very likely, but erroneous impression to Mason that "the plan (of Royal Dublin Society) was revised by the Royal Irish Academy in 1793". It is contended that Ledwicd compiled his account on his own initiative. This contention gets support from the Preface to the Account of Aghaboe which implies that the incentive to this undertaking was provided by Sinclair's contemporary engagements in Scotland rather than the Royal Dublin Society or the Royal Irish Academy as erroneously maintained by Mason.

The object of the Account was to remove misunderstanding about resources of Ireland. The information contained in this work is fairly detailed. "Section viii" of the work is devoted to agriculture which embodies a good deal of descriptive and numerical data. The coverage of area is too small to make it a document of importance.

By/

11. Cont'd. from previous page:
   (2) Minute Books of the "Committee of Science", "Committee of Antiquaries" and "Council" for the corresponding periods.

12. It is strange that the Minute of 15th March, 1794 of the Academy's Minute Book which lists the names of the members of the Society of Antiquaries does not include Ledwicd's name, although he was Secretary of the Committee in that year. Possibly this omission was due to his supposedly late entrance to that Committee, because it was in the Minute of 22nd March, 1794 of the Committee of Antiquaries that he became Secretary.
By obtaining information by dint of his religious prestige Ledwick must have made people mentally prepared to part with facts without any misgivings. It was perhaps due to this event, besides, of course, the existence of Ledwick's Statistical Account of Aghaboe, that Mason in his Statistical Account of Ireland (1814-19) could give lavish details regarding this parish.

The abandoned plan was, however, revived by the Royal Dublin Society in the year 1800 when they passed the following resolutions:

Resolved, That it be an instruction to the Committee of Agriculture to take into consideration the best mode of carrying into immediate execution their great object of procuring agricultural surveys; prepare a list of queries to be distributed for that purpose and to make known to the public, so as to induce persons of capacity to undertake the proceeding on these surveys during the ensuing summer.13

This revival was accompanied by certain departures from the plan of 1773. County instead of Parish was to be the Unit of enumeration. The preparation of the list of queries was entrusted to the Agriculture Committee as against the Committee of Commerce. The reason for this deviation is perhaps to be traced to the British Agricultural County reports of the Board of Agriculture which were being prepared across the water. Its consequence was the shift of earlier emphasis on "Trade and Manufacture" to that on "Agriculture". This time the queries were classified into four sections, viz. Agriculture, Pasture, Farms and General subjects. Their layout was, however, vague. Anyone interested in agriculture will be gratified by this change, more so because it occurred at a time when a couple of Witnesses told the Select Committee (1936) that following/

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following the formation in 1799 of a short-lived Farming Society of Ireland; "the Dublin Society had turned its attention to other "(then agriculture) branches of Science." Thus, notwithstanding the fact that agriculture was not considered their baby, the Royal Dublin Society gave it a prominent place in their queries. In the preamble to the queries of 1773 the Society was "eulog to promote "Trade and Manufacture........" whereas in that to the queries of 1801 they were keen to "point out most probable means of extending agriculture, improving its modes........"

The importance of remuneration to the collectors of information is self-evident, and we better have a look into that aspect also. The available information suggests that, like the British Board of Agriculture, the Society hoped to prevail upon gentlemen and clergy in the country to get these reports prepared by them gratuitously. To what extent did their hope materialise is difficult to say precisely. Berry in his History (1915) tells that "in the "year 1801 the Society undertook the compilation of statistical "surveys........arranging that each contributor should receive £30 "for his work." According to 'Ireland, Agricultural and Industrial' "early in the 19th century a number of inspectors were appointed "to make statistical surveys of different counties, and twenty one "volumes (The number should be twenty-four volumes besides one "which is Manuscript) of this Survey were published by the Society."

Neither of these statements concerning appointent of inspectors or remuneration of contributors is strictly accurate. We examined the details of accounts for 1833–36 appended to the Select Committee's Report. During these years were compiled the statistical reports of Roscommon by Heald and Tipperary by Mason. No money in/

14. op. cit. (2) Q. 967, P. 72 and Q. 1317 to 1324, P. 97.
is shown as paid in these accounts, although during 1833-4 and 1834-5 other items of expenditure such as cost of engraving and colouring the map, binding etc., appear under the heading "statistical Survey". Berry may have assumed the figure of £80 from an item shown under "Annual Expenses", which reads as "Printing, etc., Statistical Surveys, @ £80... £1230", prepared by the Economy Committee of the Society in August 1833. Although it could mean what Berry maintains, yet it is more likely that this was the expense for their printing rather than compilation. Our assumption becomes a certainty in view of no provision being made separately for their printing, and also because the word "printing" appears in the item indicated above, and that printing was to be paid out of these £80 it is futile to suppose that there could be any saving to reward the compiler out of that amount. According to Weld, although he could not "say exactly", the expenses of printing about 1831 for each report were around £200. So if £80 were set aside for each report before Napoleonic Wars, i.e. comparatively cheaper days they would only suffice printing. More weight to our assumption is added by the statement of Weld in which he apprised the Select Committee (1836) that after "a sufficient number for the supply of the Society" these reports were allowed to be sold, the proceeds of which were to go to the Compiler. It is hard to believe that the Society would have paid £80 first, and allowed additionally the sale proceeds to go to the authors, particularly the

17. op. cit. (2) P.386 and 391.
18. op. cit. (19) P.211-212.
19. op. cit (2) P.94, Q 1175 to 1182.
during the opening years of 19th century when due to financial
stringency, because of small grants, according to Barry the
statistical "Surveys were also to be discontinued." We do not,
however, rule out the possibility that arrangements may have been
made with different people differently. We smile at the precedent
with amusement and alms that the Statistical branch of the
Department of Agriculture should be wholly remunerated from the
sales of "Agricultural Statistics".

It may be stated that County reports were prepared for
24 Counties by 13 different persons. Three of whom Sir Coote,
McParlane and Dutton, covered about half of these Counties.
That, contrary to what "Ireland, Agricultural and Industrial"
maintains, /

20. op.cit. (19) P.211.

21. Coote, Sir, G; Statistical Survey of the County of Monaghan
with observations on the means of improvement, Dublin (1801). He
also prepared Statistical Surveys, published in Dublin, for the
King (Offaly) (1801); Cavan (1801); Armagh (1802); Queen's (Leix)
(1803).

(iu) McParlane; J; Statistical Survey of the County of Limerick, etc,
Dublin, 1802. Same author prepared for Sligo (1802); Donegal
(1803); Mayo (1803).

(iii) Dutton, H; Statistical Survey of the County of Clare, with
observations on the means of improvement, Dublin, 1803; Same
author jointly with Archer, J. for the County of Dublin (1801)
Galway (1801).

(iv) Fraser, R; General view of the agriculture and mineralogy of
the County of Wicklow, Dublin (1801) and Wexford (1807).

(v) Dubourdieu, Rev. J; Statistical Survey of the County of Antrim,
Dublin, 1812, and by the same author for Down (1802).

(vi) Those compiled by one each were by Sampson, G. W. for Londonderry
(1803) by Keeney J. for Tyrone (1803); by Thomson R. for Meath
(1803); by Dawson, J. J. for Kildare (1807); by Townsend, Rev.
H. for Cork (1815); by Tigh, W. for Kilkenny (two parts) in
(1802); by Wall, J. for Roscommon (1832); by Mason, W. S. for
Tipperary made in 1833 but not published.
maintains, there were no inspectors appointed by the Society
will be supported by more than one event. For example, Bution
prepared his first Survey in 1831, the second in 1833 and the third
in 1821, whereas Sir Cooke prepared all five of his Surveys in two
years 1831 and 1833. Both of these could not be regarded as
"appointed inspectors" one for quarter of a century just for three
counties and another for two years to cover five. The way these
reports are addressed to prominent persons for their patronage also
weakens the view that they were compiled by paid officials. What
appears most probable is the fact that the persons did this work,
either without, or some of them, with actual expenses involved in
the execution of work. To this view of ours strength is lent by

Isaac Welds evidence who told the Select Committee that "Money was
"given for purpose (of Statistical Survey) by Irish Parliament,
"--- Some were executed in a very satisfactory manner;
"others much to the contrary. Considerable intervals afterwards
"caused between the completion of the one and the commencement
"of another; a circumstance I attributed merely to accident and
"persons not offering themselves for the purpose --- --- ---"(O.1174P.90)

The last sentence suggests that "persons" were expected to "offer",
supposedly, not for appointment but to work gratuitously and the
"accident" may mean the lack of funds to which Barry made a
reference in the History (op.cit. 15, P.211).

Turning to the matter included in the Irish Statistical Survey
Reports it may be stated that apart from the time and energy, which
is usually limited for examining varied details of such works, we
found that patience was also taxed by their aberration. It was
felt that to present a concise picture of contents, compiled with
greater care to veracity than brevity, was both difficult and
time-consuming.
time-consuming. The verbiage rather than volumes made them heavier to read. Our chief objection to their design rooted from unnecessary extension and a want of distinct uniformity, let alone the reports prepared by different persons; different reports made by the same person all suffer from diffusion. The inclusion of description of antiquities, histories and ecclesiastical institutions, even at place a tendency to describe "picturesque view of many beautiful and "romantic places" rendered them unpalatable. Our comments are, therefore, based on lengthy but casual perusal.

At the beginning of each report the queries suggested for their formation have been printed. But each writer has allowed himself a different degree of latitude to depart from them, although these queries seem to constitute the cardinal line of approach. It is in view of the latter circumstance that some points have received the attention of all the writers, although, as previously stated, their nature failed to accumulate a strictly consistent material. In most places it is descriptive, and when numerical, it is indefinite. Take for instance only one case to illustrate the point, say the size of Farms. What would a statistician make out if he is told that the farms are of moderate size of that they vary from "five to over twenty-five acres". Such illusive or elusive references are frequent. None of these volumes contain any statistical table, a few of them, however, do give some data of agricultural interest.

In short and at best these reports are essays on various counties attempted by persons with hazy conception of the science of statistics. It was perhaps in view of the foregoing facts or defects that the Select Committee in their report (1896) remarked that/
that they were "not in a condition to say whether the value of
these publications has been commensurate with their expense..."
The absence of any mention of this work, which continued for about
one third of a century under the "Scientific Activities" of the
Royal Dublin Society as well as its omission in White's Latest
Story of the Royal Dublin Society, which includes even some Four
Reports of such smaller coverage may perhaps also be an unhappy
reflection on their value.

We proceed to examine the contribution to the cause of promot-
ing the development of agricultural intelligence made by Arthur
Young (1741-1820), Sir John Sinclair (1754-1835) and the defunct
Board of Agriculture and Internal Improvement (1793-1823). The
activities of the trio will be reviewed together not because they
were contemporary nor because they aimed at the same object of
agricultural improvement, although that itself would justify their
amalgamation. The proposed treatment is an attempt to avoid the
otherwise difficult, repetition which would occur in the review
of such works as resulted from their long, and at times, close
association. The fact that Sinclair was the founder of this
Board, and continually occupied the chair of its presidency for
twelve years, 1793-1806 and 1806-1812, while Young continually held
the congenial office of secretaryship for twenty seven out of
under twenty nine years of its existence hardly necessitates an
explanation of our approach.

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22. Hackett, P; "The Scientific Activities of the Royal Dublin
Society 1731-1931" in "Bi-Centenary Souvenir, 1731-1931. "Edited
by Brayden, W.H. (Dublin 1931) pp. 11-18
23. op.cit (13)
It is rather difficult to make a comment upon the works of authors widely read and highly regarded. These comments, it is certain, will not be universally acceptable, because the inherent diversity of human minds leads different individuals to appreciate the value of intellectual exertions by different standards. That is natural. Moreover, our study is confined to only a part of the work of extra-ordinarily versatile characters. If, however, we seem to make any comment which could be taken for snapping one's finger at one or lavishing praise on the other, it must be attributed to defective expression. In our judgement, it is difficult to say that Young surpassed Sinclair, because the latter wrote the monumental Statistical Account of Scotland besides hundreds of other valuable publications. It was also through his imagination, efforts and influence that the Board of Agriculture was founded, and it was mainly through his zeal and perseverence that the big task of compiling the county Reports was completed. It is equally difficult to change their places because Young not only produced popular Tours but also interesting Annals of Agriculture to which could be added numerous treatises and manuscripts. And that is not all-Young served as Secretary to the Board far longer than Sinclair as president, and continued to serve meritoriously including a span of eight long years when his eyesight had suffered a total eclipse. In short, it is no exaggeration to say that his effort was the staff of the Board's flag, which on his death went half mast never/24. Ansen, G.D. "The Writings of Arthur Young in 'J.R.S.A.E.' Vol.35, London, 1926.
never to rise again. The whole truth being that a combination of resourceful enthusiast and resourceless intellectual can achieve for more than either alone; even if the one be gifted with Sinclair's ability and influence and the other with Young's devotion and approach. Both made equally prodigious attempts; one in the bringing up the child of agricultural data and the other in nourishing the baby of statistics. The equality between the two, therefore, is so coincident that any Englishman exalting Young will be as good or bad a nationalist as any Scot reversing the position.

Young like Sinclair was a prodigious writer but unlike him he was less diversified. He started writing at 17. His works on subjects other than agriculture included a political pamphlet, followed by four novels. His exertion outside the field of agriculture culminated with his periodical - The Universal Museum, which shortly failed because he could not enlist prominent contributors. This episode was over before he reached the age of holding key for house".

At/

* The Political prophet: The Theatre of Present War in North America (1758).
Only five volumes of the periodical appeared - starting with January 1782. Paris in Biographical Memoirs of Arthur Young erroneously makes them six volumes.
The four novels were 'The Fair American'; 'Sir Charles Beaumont'; 'Lucky Watson' and 'Julia Benson'.
At about twenty-two he turned to record, collect and
disseminate agricultural information arithmetically with a view to
educating the farmers. Here follows the story of his approach to
achieve the object. It will, inter alia, reveal the method followed
by Young, the matter collected and the use to which it might have
been employed.

Between the years 1763 and 1767 he carried on several
experiments on various cultural practices at his mother's farm in
Suffolk. These experiments brought about a combination of
pen and plough. Young commenced correspondence which contained his
experience with these experiments with a periodical entitled "Museum
Rusticum et Commerciale, etc." This was, correctly says Paris, "his
earliest attempt in Agriculture. Waller in the Imperial Dictionary,
however, does not make any mention of this work. He also quotes
Young's Letters to the People of England (1767) and erroneously
reminds that "in 1763 appeared the earliest of his (Young) implied"
agricultural works "........... A Six Weeks Tour...." Many letters
had/
had appeared in the *Museum Rusticum et commerciale*29 etc. before, on the suggestion of Harte, a friend. Young reprinted them under the head Sylva and appended them to his new work. "The Farmers Letters to the People of England, (1767). Sylva is the collection of letters that appeared in the periodical from time to time. It additionally includes information "gained from several "sensible farmers"30 But it excludes two letters, letter No.46 which appeared in Volumes 3 and No.63 of Volume 4 of the *Museum Rusticum*, etc. The data embodied in this collection enables one to compare arable farming with pastures. Young has done it and concludes by saying that "the above account discovers the vastly "superior advantages of grass, with us, to arable land." He seems sensible to the weakness of the sample when he says "I do not "mean this calculation as perfect". This collection covers several other topics for which lack of data led more to suggestions than expressions.

The detailed observations of experiments made on the Suffolk farm during 1762-67 were published in *A Course of Experimental Agriculture* (1770).31 It is written in two octave volumes of about 2000 pages. The first volume is divided into two books and the first book is devoted to an account of experiments made on/

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29. *Museum Rusticum et Commerciale*, or Select Papers on Agri: 6 volumes, London 1763-66. It is a different contemporary periodical from "Museum Rusticum etc." Most of the reference books including *P.M.B.* and *Encyclopædia Britannica* do not give the full name of the former.
30. Young, A. *The Farmers Letters to the People of England to which are added Sylva* or occasional Tracts on Husbandry etc. 2 volumes (the second vol. made its first appearance with 3rd edition).
on 'Grain' and the second to those on 'Pulses'. Largest attention
seems to have been given to wheat where method of sowing, quantity
of seed, time of sowing etc. etc. form different designs. This
crop alone takes 335 pages. Similar experiment, comparatively less
detailed and with lesser replications on other corn crop as well as
pulses form the subject matter of this volume. The second volume
is divided into fourteen books; the first two of them are headed
as "Chapter II and Chapter IV" which embody "culture and produce"
experiments on Tares and Lentils respectively. Book II to VI of
the second volume are devoted to "fodder crops", cabbages, artifi-
cicial grasses and "Fodder" respectively. Book VII is covered by
experiments on "comparison between the Drill and Broadcast Husbandry";
Book VIII to XIV are taken by experiments on tillage, grass lands,
drainage, fences, manures, cattle and implements respectively. The
numbering and the titling of "books" is confusing. Profit and Loss
Account (sic) has been worked out for each experiment and at end
of each are recorded conclusions under the head "Observations". The
Matter is generally understandable.

According to Pell these experiments were conducted at Samford
He is wrong.
Farm in Essex. The results embodied in the work under reference
related to Suffolk farm and not to the one in Essex. This can be
known from Young's Autobiography (p.49), Eastern Tours (Preface)
and above all from the work itself which bears the dates of each
experiment/

32. Pell, A; "Arthur Young" in "J.R.S.A.E" Vol. IV London, 1903,
p. 5.
experiment that range between 1763 and January, 1767. Had Mr. Fell only seen the work about which he was writing he would not have committed the mistake. The Preface (Pv) says that these were the results of experiments "I carried on in Suffolk", and not many pages inside is the main bold heading: "The Fields in which the which the following experiments were made: At Bradfield Contest, "near Bury, in Suffolk."33 Fell’s assertion in the above mentioned article that the "tenancy" of Sanford farm lasted for "five years" is also an unfavourable reflection on the depth of his knowledge.

Young held this farm only for six months and then "shutting his "neck out of it", he "moved in 1763, to another farm at North Minas, "in Hertfordshire."34

We ascribe this discrepancy to Fell’s undue dependence on an earlier writer, Paris, without attempting to consult the original reference.

It is still more surprising that even Encyclopædia Brittanica
(P.998 11th Edition) makes the same mistake. We have no other comment on the Britannica except that it is also out of path, an inch or a mile, we do not say.

In that part of his Autobiography which relates to the years
1759–66, and which in an overlapping fashion extends to events that occurred after 1766 appear the following remarks: "Another circums-
tance which perhaps of all others in my life I most deeply regretted "and considered as sin of the blackest dye, was publishing of my "experience during these four years which speaking as a farmer was "nothing but ignorance, folly, presumption and rascality."35 We read these remarks over and again, because many writers have referred to them. It is always helpful to a later appraisal of original work and/

35. Supra, P. 30.
and material to have the writers own appreciation of it. After all, he best knows the "context" and "climate" of his work and in this particular instance it is a matter of some importance, for in Pakistan we have the "climate of opinion" but still lack the experience of publicising agricultural material. If a famous writer of that appears to be a sound programme of work himself calls it "folly, presumption and rascality" we are surely lost. Unfortunately none of the many references to Young's words in this connection seem to have penetrated far beneath the surface. The D.N.B., Defries, 36 Paris and Aniny (op.cit.) all record; Aniny without any ambiguity, relates them to the Course of Experimental Agriculture, and writes that Young regretted its publication and "spent much time and money in buying up and destroying such copies "as came upon the market". The D.N.B., however, appears to attribute Young's own adverse autobiographic comments as being reference to the "Sylvae" and Defries goes so far, it would seem, as to apply them to the Farmers Letters to the People of England, 1769. The present writer certainly has some later comments of his own upon Young's claims for his Farmers Letters, but there is no real question that, as Aniny says this "effort was a success" nor is there any evidence to support Defries' assumption. Even Sylvae and the Course of Experimental Agriculture were published (1767 and 1770) after the date which Young himself seems to give to his remarks in his Autobiography, where, it will be remembered they appear in the part purporting to relate principally to the years 1759-66, although some later years were also referred to. Young may or may not have had the real/

36 Defries, A; Sheep and Turnips; The life and times of Arthur Young. London, 1938.
the real diffidence which he expresses, for example, in the Sylvae
a Latin Note on the title page (translation ours) — "I have doubted
much and long whether I should issue the collection of letters
which had brought me warmth and pleasure and which had originated
"from myself" but at least the Sylvae appeared in all three editions
of the "Letters" to which it was appended, and the Course of Ex-
sperimental Agriculture did not appear till three years after the
termination of the experiments, which one would have thought, was
long enough for second thoughts if they were in truth "rascality".
The fact, however, that these were the copies of the "Course" that
he bought up and destroyed, and the fact that it alone was omitted
by Young in his own mention of his works published or compiled
during the period coupled with his remarks in the Preface to the
Course: "Had matter.... permitted me to continue my experiments...,.
"I should not have published this Course for many years .......which
"is but the outline of what I wished to perform" will have to serve
as our last comments on this whole peculiar reference. The "public"
at least did not, and do not, seem to share Young's extreme dis-
sapprobation of any of these works, and certainly we do not find in
them any particular "awful example" of what we should avoid in
modern presentation and use of agricultural data or experimentation-
always accepting authenticity of data and recording as nine que non.

Appearing with Sylvae, as already stated, was Young's Letters
to the People of England. This work like the foregoing, as is
claimed by its author, was based on authentic data, and that no
advice for any improvement was given unless "I have not practised
"myself or viewed by execution by others". One should not perhaps
be sceptic about such a claim made by a person possessing Young's
power of observation, but in view of the nature, detail and variety
of contents we reluctantly record in epigrammatic form that we
suspect/
suspect that it is an exaggeration of truth.

These letters touch agriculture at all corners. They advise the development of manufacture side by side with agriculture. They in the main, plead the propriety of extensive corn exports. They suggest cultivation of larger farms in preference to the smaller. They recommend extension of arable land to waste land, and support preservation of timber. In 1771 when these Letters were going through a third edition they were supplemented with a second volume. The latter ushers knowledge on the methods of improving land both already under cultivation and the "cultivable wastes". They also recommend the correct layout of farms, locations and accommodation of farm buildings, system of tenures, and cropping system, rotations, drainage, irrigation, fences and communications. These recommendations are based on data which, in our view, varies in merit. Young's discussion on the economics of large and small farms which is supported with a fairly commendable type and amount of data ends with the conclusion that, appropriate to type and location the farms, requiring six to twelve horses yield maximum production. This discussion is of particular interest to the present study not only to bring out resentfully that the economic size of holding in Pakistan yet remains to be adequately considered but also because it led to useful application in practice. Referring to it Anery says that "Young's views on the economics of large and small farms "did not fail to influence the landlords when redistributing their "estates after enclosures." 37 Undoubtedly, therefore, great was the use that it served.

Our only objection to this work is the inclusion of extraneous details and it is one of the same objections which were raised by

contemporary commentators on most of Young's works.38 Had the space devoted to these avoidable descriptions been given to the venting primary data, observations and reasoning – as he actually attempted in his later works – it may have been exempted from Pell's remarks who says that "Young in his writings seems to have reached the truth not so much by slow reasoning as by flashes of 'instinct'."39

40

In 1768, Young published "Six Weeks Tour", the matter he had casually collected. This publication, among other things, contains masses of massive data on prices of labour and provisions, together with a particular mention of the "Course of Crops" i.e. rotations, size of farms, number of houses and men employed on farms of different sizes. Several calculations have been made with single object to show the technique and superiority of better "farm management". In his typical way Young assures that his calculations were authentic. In his own words "Many persons are apt to consider calculations of this sort as visionary... but the prudent and moderate "of such sentiments is more apparent than real." 41 Nevertheless no definite conclusions have been drawn. The reason for holding back such conclusions appears to lie in his having realised during previous occupation the futility of recommendation based on small samples, besides the fact that Young considered this work, being first of its kind, as "very imperfect".42 Fassal in Impressions of Arthur Young says that Young did not draw any conclusions "possibly because he realised that the area visited was narrow and the data "correspondingly a poor sample".43

Young

38. cf. Preface to Eastern Tours.
39. op. cit (32) P. 22
41. Supra. P.436.
42 and 43 continued on next page....
Young himself commented that "for the first time, the facts and principles of Norfolk husbandry were laid before the public." This work met with a kind reception, a fact which encouraged him to undertake a tour of the North with sole passion and purpose of recording such information completely for the North as his casual notes had produced incompletely for the South. During this tour he collected data from 250 farms of all sizes during a journey extending over 2,500 miles. The data was published two years later in Northern Tour (1770).

Speaking very generally the matter in the four octavo volumes of Six Months Tour to the North is similar to that of Six Weeks Tour to the South. It is, however, exhaustive and extensive, at certain places rather unduly so. For example, letter 19 is entirely devoted to the description of the Duke of Bridgewater's Canal. The striking difference, however, lies in the fact that unlike Southern Tour conclusions have been drawn. The author essentially dwells upon the economy of farming as affected by their size, stocking, utilisation and methods of farming. The volumes abound in tabulated data on all these topics with many tables framed as in the modern fashion. Generally the conclusions are supported by the data which show variations of a pattern that cannot be attributed to chance.

The data/

42. Contd. from previous page: ibid.
44. Infra.
45. Young, A.A., Six Months Tour through the North of England, 4 Vols., London, 2nd Edition, 1771. The Chapters or Letters of these volumes are serially numbered. The last letter of Vol. II and the first in Vol. III carry the same serial No. XV. In Vol. IV there does not appear any letter numbered as XIII and consequently the total correctly remains XLIII.
The data of the Six Weeks Tour were said to have been the means of bringing about "many and great improvements" in agriculture. Young himself is authority of this belief.

In 1770 Young undertook the tour to Eastern England, and compiled a similar work relating to that part of the country in 1771. Essentially, it is a continuation of the previous Tours, and follows their general pattern and style. Some additional information which had resulted from "enlarged enquiries on the profit of planting" and admirable tools was also included in these Tours. It is rather surprising that the data has not been tabulated nor have the conclusions been drawn. What interests us most in this work is an attempt to include in its tail, a chapter on Agricultural Statistics for the whole of England.

According to the statistics given in Eastern Tour the area or "Acres in all" of England is placed at 32 million acres exclusive of 2 million acres to be accounted by "large rivers, towns, cities, houses, parks, chases, royal forests, woods, and commons"; but this estimate included "barren and uncultivated lands". Young in his Northern Tours (Letter XL P.340) explained the details of this estimate and stated that he had accepted the estimate of Rev. Walter Harte who had placed the gross acreage of England at 34 million acres. Neither Harte, nor Young claimed strict accuracy of their calculations. Both of them, on the other hand qualified their figure and explained the difficulty in reaching the real truth. To show that Young accepted Harte's estimate, and that this estimate respected "gross acreage".

"gross acreage" we reproduce from Harte's Essays on Husbandry (1764): England, as nearly as can be calculated, contains thirty-four millions of acres............. In a foot note Harte stated that this acreage excluded Scotland and Wales, the latter (Wales) he said, had an area of 4.2 million acres (36.2 million, therefore, for England and Wales together). But it is painful that the Journal of the Ministry of Agriculture, an institution which owes its very origin to Young's exertions comments on his "estimates" in these ignominious words:

"No great value can, however, be attached to his (Young's) figures as they were based on the mistaken assumption that the total area of England and Wales amounted to about 47 million acres, whereas more correct measurement subsequently showed an extent of only 37,324,000 acres. A similar comment was also found in Edinburgh Encyclopaedia, which says that "the next estimate (of the area of England and Wales) was given by Mr. Templeman in his work New Survey of Globe. He reached the figure of 31,648,000 statute acres. Mr. Arthur Young was the first to challenge the accuracy of Templeman's figures. He corrected it to 46,915,933 acres by making 69.5 miles to a degree instead of supposed 60 miles."

In 1855, Hoeky in a paper "on Agricultural Statistics" (JRSAE, 1856, P.571) did the same injustice and wrote "the different estimates (of extent of the county) given by Grew, Templeman, Sir William Petty, Arthur Young, Halley, Middleton and others vary between 31,648,000 and 46,916,000 acres! The last which is Arthur Young's was actually adopted by Mr. Pitt in his estimates of probable produce of the income tax."

Again in:

48. Ibid.
49. Jou. Min. Agric. Vol.XXI No.II, 1924. F.J.Hurst in 'History of the Statistical Society of London' in the Jubilee Vol. of the Society's Journal (1835) tracing the history of the development of statistics reproduced the following paragraph from the very first vol. of the Society's Journal (1839) which duly credits Young, it said Young has left a monument of talents and industry in his various publications relating to Agriculture (P.4)
Again in 1883, Craigie in his valuable paper on 'Statistics of Agricultural Production' referred to the matter in these words:

"The curious vagueness of our English ideas as to the dimensions and the use of the soil we live on........... was perhaps now more visible than when Mr. Pitt, in his estimates for income tax assumed the acreage of England and Wales to be, as Arthur Young, mistakenly, imagined, a matter close upon 47 million acres, when it was only 37 millions." 51

The present writer is not in a position to find every reference or to defend Young for everything that flew from his pen in numerous and voluminous works. He well may somewhere have made the estimate of 47 million acres for England and Wales which he might have revised as stated above, to 34 million acres for England alone, but the Journal of the Ministry of Agriculture associates this figure to his Eastern Tours, presently under study while the others make the statement in general terms. The former writer possibly the then editor of that Journal, has also quoted Young's figures of acreage under different crops as they appear on page 458, Volume IV of the Eastern Tours. It is only three pages back, and in the beginning of the same chapter, however, that Young very clearly adheres to his earlier estimate of 32 million acres (plus two million acres not available for cultivation for England), which obviously accords better with an actual England and Wales total of 37.3 million acres than with an alleged 47 million. Young is debunked by those who should defend him. Ingratitude! thy name is Ministry of Agriculture.

The same Journal while writing about Middleton's estimates throws a further reflection on Young. It says that Middleton in his

View of Agriculture (1798) "followed Young and reached the figure of 47 million acres. A perusal of Middleton's tail-end-approach in contrast to Young's technique of sample-basis would break any link between the two. Young is suspected to have been confused with Middleton on this estimate because the latter did arrive at the figure of 46.916 million acres which means about 47 million acres, and gave it in the View of the Agriculture which he had compiled for the Board of Agriculture. Since Young was secretary to the Board our "suspicion" cannot be dismissed as entirely groundless. In all fairness it must be said that even Middleton presented his figure of estimate with a cautious note saying that his calculations were not a "mathematical truth" and were designed only "to furnish the mind with some general ideas respecting England and Wales." 52 Middleton's figure was his own and as such we refute that Young misled him as may be implied by Comments on the Journal.

The contention that Young has been confused with Middleton derives considerable evidence from the comments of Encyclopaedia, Hoskyn and Craigie, especially the latter two, who are definitely associating Middleton's figure with Young. Their reference to 'income tax' calculations leaves no doubt that they picked Pitt wrongly. We examined Pitt's speech made on 3rd December, 1798 in which he said - "Posterior to that time Adam Smith placed it (property derived from land) at 20 million. So did Arthur Young. I have also had the advantage of other inquiries made expressly by a body who have made the calculation of land their peculiar province I mean the Board of Agriculture. I allude more particularly to one report published by a person who made this part of the subject, his study, the report drawn by Dr. Middleton. All these checked with other examinations state the cultivated land of the country to amount to little less than 40 million acres." 53 It should be pointed out 52. Middleton, J., View of Agriculture (1798) 53. Gobat: The Parliamentary History of England from the Earliest...
out that it was Middleton who placed cultivated land at 'little
less than 40 million acres' the exact figure was 39,027,000 acres
(Middleton's View of the Agr. of Middlesex P.496). The confusion
seems to have originated from Pitt's statement when he said "If
"gentlemen suppose the amount of the cultivated land in the Country
"to be 40 million of acres, and the average value to be 25 million,
"they will find my valuation to be very moderate; it is also Mr.
"Arthur Young's Statement" (P.12). Here Pitt's reference to
Young's statement was not to acreage, but to the value, which
coincided with him because Pitt had taken a lower per acre value
for higher assumed acreage, as he himself said "Many persons....
"believe the average value to be 15 shillings per acre. I shall,
"however, limit at 12/6. I will put the value at 25 million a
"year". Clearly Young's 32 million acres at 15 shillings an acre
would yield almost same figure as Pitt assumed 40 millions at 12/6.
In the face of these facts we incline to remark that Young never
gave the figure of 47 million acres. He has been unconsciously
dragged in by some other writer and the rest followed line without
reaching the original reference.

Besides the extent of the country, the Eastern Tours embody
estimates of acreage, yield per acre, outturn, prices per quarter
and value of major crops such as wheat, barley and oats, peas,
beans, turnips and clover. The estimates of the number price per
head and gross value of livestock under description "draught cattle";
"cows"; "fattening beast"; "young cattle"; "sheep"; "swine"; and "poul-
stry" are also included. The total value of livestock and wool
produce has also been calculated. There are numerous other calcu-
lations in addition (PP.456-461). The whole calculation is based on/

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53. contd. from previous pages. Period to the year 1803. Vol. XXXIV
on the assumption that the farms actually visited during various Tours were a representative sample. The principal conclusion of this section of the work is that English Agriculture was capable of yielding a profit of 14 percent over the value of "stock" but a caution is signalled by saying that "I forebear making further reflections as it is drawn not from the whole kingdom, but only a part of it."54

Like the earlier Tours, specific use of data contained in the Eastern Tours is not known. There are, however, grounds to believe that like those of the similar preceding works it must have enlightened farmers on better farming which would naturally lead to general agricultural improvement.

The last work in the series of Young's Tours in the United Kingdom was the one respecting Ireland which appeared in 1780.55

This work is more descriptive, more general and less statistical than others. Nevertheless, there is some material to construct a picture of how the farms were stocked as well as the state of rent, wages, size of farms, prices, yield, time of sowing, seed rate etc. etc. The pattern of layout is closer to a diary reproduced, although it will be the diary of a person in love with the land. Unlike earlier productions, Young has not given adequate data which should precisely support his conclusions which are based on general and descriptive observations. Moreover, in these volumes the swing of his pen is more towards "political economy" than "agricultural economy". However, all throughout his writings Young stressed the importance of data.

54. Ibid.
55. Young, At: A Tour in Ireland with general observations etc. Dublin, 1780.
data. Fusse, correctly appraises the statistical value of Young's Tour. He writes that Young's "appreciation of statistical methods was, of course, limited..." and his treatment of his material "is not all that might be wished, but a picture of farming in all "its variations over a very wide area of the country can be drawn "from figures coupled with his fine descriptive writing......"

In this Tour he attacked the bounty on land carriage, urged the repeal of certain penal laws, favoured the Union of Ireland with Great Britain, disapproved the use of bounties on agricultural commodities with prohibitive objects and hinted at the advantages of large farms. None of them went unnoticed, although some of them took time to receive active attention. This was the use the matter served.

The Annals of Agriculture (1784-1815) is that stupendous work on which Young acted both as author and editor, contributing about one third or one fourth from his own pen in the forty six volumes. The Annals contained matter subscribed by agriculturists from the humble to the highest including King George III who contributed in two volumes under the pen name Ralph Robinson. It might be stated that Young was opposed to including any anonymous articles for reasons of authenticity.

Besides/


* Many writers make them 45 volumes instead of 46. The first 45 volumes appeared "regularly" between 1784 and 1809 and the 46th volume appeared between 1809 and 1815. The last volume contains comparatively smaller contribution from Young probably because his eyesight failed him.
Besides a relatively small part of these volumes devoted to descriptions, reviews and other current topics, we have, for the sake of present study, classified the matter occupying major parts of the Annals, into three sections: one, matter arising from visitations; two, data arising from actual experiments and three, information accruing in reply to questionnaires. The first section, mostly from Young's pen, embodies an account of Journeys, tours and visits of varying duration to different places. The significant part of this section is Tour of Wales, which did not appear as a separate work. This section of the Annals is marked by the same striking talent which characterises his main tours, albeit in proportion to the time spent in each. The second section, mainly communicated by correspondents, comprises results, observations and conclusions of actual field experiments made by hundreds of farmers at as many places. In general this section follows the pattern of Young's Course of Experimental Agriculture both in contents and presentation. The third section, written entirely by Young is fed by the information raised by queries issued with specific objects from time to time. Early attempts to elicit information for the Annals through queries seem to have begun in 1785, when two sets of queries; 1) concerning food of animals and 2) on sowing of wheat were issued. In 1788 seventeen queries were issued to "noble planters" with a view to know most suitable method of planting and management of wood. A reply received to this questionnaire from a planter of 7,000 acres was published for the guidance of others.

59. Supra Vol. IV, PP. 135-137.
60. Please see next page.
Another inquiry to investigate the influence of Wool Bill passed by House of Commons in May, 1788, which prohibited wool exports was instituted during the same year. As is known Young was opposed to this bill, and this inquiry envisaged to substantiate his opposition. The replies received were published in Volumes X and XI, and recapitulated in the latter. These replies were confirmatory of Young's views that rise in wool prices was not as much due to small exports as it was on account of increased internal demand consequent upon expanded industry. He proposed to continue this subject and wrote that "it is my intent to write a circular letter every year to know the price of wool and the progress of trade" and that he did continue this inquiry at least up to 1790 is borne out by the fact that as many as ten queries were addressed to different persons on the subject during that year. The continuance can even be traced up to 1795 when in apprehension of a scarcity of Provisions he issued another ten queries on this subject, one and last of which asked "X. What is the present or late price of the wool of your county." Two years after the original inquiry into wool in 1790 five queries on corn were added to the main 10 item questionnaire which related to "wool and sheep", but in 1795 only one item of the ten respected "wool". Moreover, wool ceased to be the subject of active inquiry.
inquiry in Annals after 1793. We do not know whether the subject died a natural death or whether Young cooled down in his perseverance to continue this inquiry, which is unlike him, or whether there is some truth in Marshall's allegation that Young was given the job of secretary to the Board of Agriculture in view of some political considerations, which Young himself appears to deny. Earlier in January 1789, (Similar inquiry was also issued in 1788) was issued another 14 item questionnaire to inquire about the effect of "late severe frost" on crops. These queries asked information about temperature, and its effect on crops soon by different methods on different soils as well as the remedial measures that might have been employed to meet the situation. They also inquired about the consequential effect on the availability of fish, prices of fodder and provisions, and effect on planting and gardening. The replies came from nine farmers within a couple of weeks, which were published in the Annals. Similarly the replies received in response to above mentioned five queries (issued in 1790 along with wool price inquiry) which were issued in view of expected changes in corn laws were published in the Annals during 1790. The January, 1795 inquiry as stated in the foregoing, was issued "under the apprehension of a scarcity of provisions". It consisted of 10 queries envisaging the real assessment of the situation. As many as seventy nine replies came in in response to it from all parts of Britain in one or two months time. They were published in The Annals and Young recapitulated these replies and concluded by:  

66. For Marshall's "Allegation" see introduction to his Northern Department (quoted elsewhere) and for Young's "denial" see page 219 of his Autobiography (quoted elsewhere).  
67. contd on next page
by emphasizing the great use of information about crops. In August, 1795 Young issued an inquiry "concerning the food of horses" to find out if the "cause of scarcity" in the country had anything to do with the increased number of horses. Through six questions he asked the consumption and prices of different articles of fodder by each class of horses used for different purposes. No items of information seem to have been received until 1797, when a few were published. In October 1795 a set of "seven questions" not very dissimilar to those issued in January of same year was sent with a circular letter. The reason for this query was constituted "high price of corn". In contrast to previous queries and circular letters Young has attached the name of the "Board of Agriculture" to his address given at the end of accompanying letter. These were issued as on a few other occasions at the instance of the Board. The data thus collected was presented to the Select Committee on Corn Trade (1795). The Committee in their first report dated November 16, 1795, wrote that they had received from Sir John "Sinclair (President of the Board), one of the member of the "Committee (itself) the substance of such account of the state of "the late crop of grain, as the correspondence of the Board of "Agriculture had enabled them, at the present period to collect." (see report quoted elsewhere P.45). About ninety replies to this query.

69. Supra Vol. XXVI P.407-419. Usually the replies to queries did not take long as they did in this case. Probably the reason was that he published them in the Annals first, and received no response until he sent the same queries with circulation letter addressed to various people in person.
query appear in the twenty-fifth and twenty-sixth volumes of the
Annals. In the latter they have also been recapitulated with the
conclusion that "the quantity of wheat sown in the present year,
"has been uncommonly great". In April 1799 twenty queries were
issued again to find out the effect of "inclement weather". 71
Twenty-four replies were published. In addition there were several
other queries which he issued either in the pages of the Annals
under the heading "From editor to readers" or "correspondents" or
issued with circular letters. Replies were published in the Annals.

It is difficult to state the use of these queries in each case,
but in 1799 Young warned the Government about the scarcity of food
and suggested, on the basis of "ample information", immediate import
of rice from Ipiia. 72 Although his suggestion was not implemented
yet its neglect cost the country misery and sufferings. The
information presented its use; if it was not availed, there is
nothing wrong with the data itself.

We now reach the Board of Agriculture (1793-1820), the first
semi-official agricultural institute in Britain. It is generally
believed that the Board was born to the efforts and influence of
Sir John Sinclair, although one or two writers, more through comple-
ments to Young than in contradiction to this opinion, have written
on the subject in ways which may be read as an attempt to ascribe it
to Arthur Young. Fordham, for instance, in Introduction to Defries 73
Sheep and Turnips (op.cit.) writes: "Young was also largely respon-
sible for the foundation of the Board of Agriculture" and
Henderson/ 74

72. Young, A: On the Advantages which have resulted from the Establish-
ment of the Board of Agriculture, being the substance of a
Henderson in an article on Agriculture in England and Wales says that "the Board of Agriculture was established ....mainly at the instigation of Arthur Young." 73  Probably, and if it is so; correctly, these comments refer to the atmosphere which Young through his writings had created for Agriculture. Any doubt on the issue will be removed by Young who in one of his own writings admitted that Sinclair was responsible for it.

Though less important than interesting there is another aspect of the subject: who at first thought of having a Board?  Clarke 74 has dealt with this subject. Among the earlier writers who proposed some sort of agricultural institution he refers only to four: Hartlib, Young, Marshall and Home or Lord Kames. Following Hartlib's but preceding Young could have been mentioned the names of Maxwell, Harte, and perhaps some others.

Maxwell, in Select Transactions (1743), proposed to the Society of Improvers to make an "Application to His Majesty" to appoint a "Professor of Agriculture or General Inspector of Improvement". Unlike other professors named by the Crown, instead of being a reader of "pompous and superficial Lectures", the professor of agriculture was looked to set up county "husbandry" societies for furnishing agricultural information "established upon rational experiments tried in our own Country". Such information would serve as basis for advice which the professor was expected to give to farmers. 75

Harte/

75. Maxwell, R: Select Transactions of the Honourable The Society contd. on next page
Harte hints to an agricultural institution in his Essays (1764) and says that "...no long ago than in the year 1761, there were thirteen societies existing in France, established by Royal approbation for the promoting of agriculture; and these thirteen societies had nineteen co-operating societies belonging to them, whenever it happened that a distance was too large to be effectually taken care of by one society; If our nation is not in a lethargy, I think this may be sufficient to awaken it.......

Harte, however, did not give any details about it. Unlike Maxwell, his idea was general, but its object was to gather and disseminate useful knowledge about farming.

Similarly between Young and Marshall may be named at least two other writers who referred, however, vaguely to an agricultural institution. They were Pennington and Donaldson.

Pennington suggested the appointment of "men of judgment and integrity" as "inspectors in every county" for receiving "every展览 an account from the constables, delivered upon oath, and attested, what number of acres is sown, and with what kind of corn, in their respective parishes". The information thus secured, said Pennington, would enable the Government to regulate trade. He also thought that these inspectors would report against "hoarders" during dear years. This writer deserves great credit for emphasizing the need for agricultural statistics before Young and Sinclair were heard. But, as regards his being considered as a forerunner in suggesting an agricultural institution, he ill deserves a prominent place because his recommendation, however, understandable is not explicit.

Donaldson in Agriculture Considered as a Moral Duty (1774) has addressed 19 letters, each on different topics, to the King.

In Letter XVIII he writes that "A Board of Agriculture" or

75. (Contd. from previous page) of Improvers in the Knowledge of Agriculture in Scotland; Edinburgh: 1743. PP.X-LXIV.
76. op. cit ( )PP.63 & 64. Harte also uses the three words "Board of Agriculture" at the same place. Thus besides "idea" for an institution, there also existed the name.
77. Contd.
"Great Council of Agriculture" was the only "establishment to arrive at the true state of national opulence, and national distress."

The King was suggested to be the president of this Board. The main object envisaged was the collection of agricultural information with a view to spreading it for the benefit of others. Donaldson gave clearer, though wanting in details, idea of an institution. Having considered four writers, Maxwell, Harte, Pennington and Donaldson not mentioned by Clarke, we go back to examine his thesis. He dis credits Hartlib for suggesting an agricultural institution on two grounds; the first that Hartlib's plan made it "incumbent" on the members to stay in "residence" and as such it had no relation to Sinclair's Board of Agriculture, and, two, that Hartlib's plan was not of his own. It was alleged as borrowed from one of his 'satellites'; Gressy Dynock. Clarke seems unduly hot in robbing Hartlib when he writes that "Lord Somerville (one of the "presidents of the Board of Agriculture) was, therefore, wrong. "In his System followed by the Board (1800) that the idea of such "a Board was suggested by an old writer, Samuel Hartlib."

In denouncing Lord Somerville's statement Clarke has wrongly used the word "wrong" because he has, rather whimsically, replaced the words "such an institution" by "such a Board" and has lost sight of the word "idea." If the whole paragraph was taken into consideration the writer may have had different views; for the concluding part also refers to Harte's 'idea' although the name of Harte/

Harte is not stated. Lord Somerville, in our view was perfectly justified in his statement.

With reference to Clarke's allusion to Cressy Dymock's "satellite" of Hartlib we consider that the writer has taken a biased view. He bases this assertion on a quotation from Hartlib's pamphlet. It is unfair of Clarke to delete, without mentioning it, a part of the passage reproduced from original reference. This omission is of particular significance because had the passage been completely reproduced the conclusion based on it might still have remained unchanged but it is affirmed that that would not have been the only one. However, there appears little justification to dismiss Hartlib so disgracefully. He did have an "idea" about the institution, as Lord Somerville correctly remarked, although there is no evidence to suggest that his idea was actual embryo to Sinclair's Board of Agriculture.

After cashiering Hartlib, Clarke starts under a new heading to say that after the establishment of the Board as a result of Sinclair's "successful efforts" there "appears to have been... attempts to rob him of some of the credit of suggesting it." He calls Young and Marshall the "claimants" of the credit.

He suspects Young "to be desirous of claiming some of the "credit" because he had invited, in a prefatory note to the speech of Sinclair published on Page 139 of the twenty-first volume/}

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79. Somerville, Lord John: The System followed by the Board of Agriculture, etc: London 1800, P.3. The name of Harte is our own deduction because Lord's reference to 1766 coincides with the year when Harte's "Essays on Husbandry" appeared.

volume of the Annals to "find (to see) a formal proposal for the "establishment of a Board of Agriculture" which had been published in his Northern Tour. Clarke considers Young an unworthy claimant by saying that Young's ideas on the subject were "extremely nebulous". Had Clarke known more of Young, he would certainly not dragged him in. Young himself in the prefatory note records that "the idea then (the time he proposed it) a barren one, became "different when taken up by an enlightened and active member "(Sinclair) of the Parliament". (Annals, Volume XII, P. 129).

Was there still a need to call Young's ideas "nebulous"? Was Young really desirous of cheap credits such as Clarke supposes that he was? We have read Young's Autobiography with care and interest. He does not appear an aspirant. Nowhere does he claim the credit of suggesting the Board. Critic might come forth and say that he abstained from making such claim because it was the idea of his "satellite", Harte. His reference to the matter seems casual, and not purposive. In his Address on the Advantages of Board of Agriculture Young observes that he had in the Northern Tours suggested "a similar idea" (not "the plan" or "the idea" but adds that "indeed such a plan would not have been attempted" ... had it not "occurred" to Sinclair. This reference might negate Clarke's charge against Young. Moreover, it is a recorded fact that in 1899 Young on his personal initiative warned the Government against the scarcity of food (see Address of 1899 already quoted), but Young would "credit" the Board's account with it rather than his own. Young was selfless. That he never ran after cheap credits as Clarke seems to think can be illustrated by many examples, but let the foregoing suffice.

Clarke's third attack is on William Marshall whom he calls a
"less amenable claimant". To our surprise here Clarke seems to have cooled down in his efforts to defend Sinclair. We agree with Clarke that Marshall was a "less amenable claimant" without consenting to what Marshall's quotations purport. According to these quotations Sinclair met Mr. Marshall in 1790. A few months earlier Marshall had suggested the necessity of a "Board of Agriculture or Rural Affairs" and that in 1793 Sinclair consulted Marshall repeatedly on his plan of the Board. Clarke's approach could be read as implying that Sinclair did get some idea from Marshall, although he is cautious enough not to confide himself to it in this article. Same Clarke contributed article on Sinclair in D.N.B. in 1909 i.e. eleven years later, when he clearly said "The idea of a Board did not originate with Sir John" and quotes Young's Tour and Somerville's Address which he had dismissed as 'wrong'. But if we are permitted to reproduce a passage from Marshall's Review of the Reports (1803), it will facilitate the understanding of the case. Marshall writes "In December, 1793 "(a few months after the publication of that proposal - "his Board") "the first President (Sinclair) of the Board of Agriculture did "me the honour of making himself known to me. He was then eagerly "employed in collecting materials for a statistical account of "Scotland, and in endeavours to establish a society, then for "Improvement of British Wool.......... It was not until the spring "of 1795, that he, afterwards, first President apprised me of his "intentions to bring the proposed Board before the Parliament. He "shoved on his plan....... and repeatedly consulted me on the "subject". 11 The underlined part of Marshall's passage which claimed credit for suggesting the Board would nullify his argument. Marshall admits that only after a few months he had made his proposal/

proposal public, Sinclair met him and at that time he was "eagerly endeavouiring to establish" a Wool Society. The fact that Wool Society was a precursor of the Board of Agriculture would support our assumption that Sinclair had nothing to learn from Marshall in the establishment of institutions, because when Marshall, like several earlier writers was suggesting one Sinclair was at the stage of implementing it. It is, however, a pity that a person of Marshall's talents and services to agriculture should care so much for owning the credit of merely suggesting something and to the extent of putting this claim on the title pages of all his later publications: "Mr. Marshall", author of so and so......gave origin "to the Board of Agriculture and its reports".63 It was perhaps Marshall's repeated claims that excited Sinclair to "declare" that "I knew nothing of such a measure (establishing "a Board) having been recommended by any other individual, previous to its having been proposed myself".34 Had Sinclair not elucidated this "declaration" in a foot note that "it is impossible to claim any particular merit from such suggestions as they are merely extension of the idea, which was carried into effect", when the Royal Society was instituted in 1662; "and all Boards, are derived from the Board of Trade, established in the reign of King William", it would have required unlimited faith to accept Sinclair's statement at its face-value. There

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82. Anon: Communications to the Board of Agriculture Vol.I, London, 1797. see p.vii. Here Sinclair states that Wool Society was the forerunner of the Board of Agriculture. Seven volumes of communications were published between 1797 & 1819. They contain articles "of considerable merit" on agricultural husbandry. The number of volumes in Sinclair's Memoirs has been incorrectly given as six instead of seven.  
84. op. cit. No.95 P.iii.
is, however, little to doubt that Sinclair's ideas were his own. The reasons for Marshall's hue and cry that he was "deprived" of credit for this or that and consequently his resort to flagellate the Board of Agriculture are, at best to be found in Sinclair's unwillingness to leave the subject of national importance to an individual's emotions or, at worst, in the weaknesses from which humanity suffers. McLarty in a very recent work opined that the existence of Scottish Highland and Agricultural Society which "had existed for some 10 years........may well have contributed to "the formation of Sir John's scheme for the Board."85

Clarke's last reference is to Lord Home or Henry Home. To him he is inclined to give some credit because Home had given an outline of the constitution and "objects for a Board for Improving "Agriculture" in The Gentleman Farmer (1776).86 True that several of the "objects and functions" were "exactly those subsequently "propounded" by Sinclair for Board of Agriculture, yet the suggestions of Home do not make the whole. The mere fact that Home's scheme was illusive on the most important issue of the source of financing the institute and that he did not think that more than £690 would be needed for his Board would show his narrower vision. This fact when compared with Sinclair's over £10,000 a year Board and in no case less than £3,000 per annum, would show that Sinclair's ideas were different even from those of Home. A still more important point which Clarke does not take into account is the fact that Young was Home's "satellite" and in his scheme for the Board he quotes from Young's different Tours.

Tours. If we were to follow Clarke's line of comment we would definitely say Lord Kame's idea was only as much his own as was that of Hartlib's to him.

The son and biographer of Sir John writes that the "thought of an institution for the encouragement of agriculture" besides "Hartlib and Lord Kame" might have occurred to "thousands" and adds that Sinclair "probably was not aware that "the measure he proposed had ever been alluded to by any other "individual". The biographer seems contented to merit his father only for "The energy and perseverance to carry into "effect what others passively contemplated or hopelessly "desired." 87 It is true that Sinclair struggled hard for founding the Board. There was, initially, Government reluctance besides the deep conviction of his contemporaries and consultants that any efforts to get a Board established would be fruitless. Young, for example, backed his opinion with a bet: that if Board was established he would lose to Sinclair nineteen volumes of Annals while Sinclair would give his Statistical Account of Scotland in the event of failure. 88 Marshall, the other consultant, admitted even after the Board had been established that "there did not appear the smallest "probability of the measure being adopted". 89 The earlier part of the above quotation, however, tends to say that Sinclair "was not aware" of references which he could have — as if the idea had occurred to someone.

We/

We, however, think that Sinclair was also the suggester of the idea of establishing an institution of the type and on the lines which pattern the Board of Agriculture. The genesis of this idea appear to have lain in his observations during tours abroad, experience during statistical inquiries in Scotland, discussion on Corn bill in 1791, existence of the Board of Trade and success of the unofficial British Wool Society a proto-type of the Board, of which he was again a suggester and founder president. We do not, however, rule out the possibility that previous ideas, however nebulous, may have contributed towards maturity of thought.

The Board of Agriculture and Internal Improvement was constituted in August 1793, by a Royal Charter, in consequence of an address from the Parliament. The decision to present the address was finalised on a division of the House with "Yea, Noes 26". Sir John Sinclair was made the first honorary president and Arthur Young was appointed, at £ 400 per annum, as Secretary. The Government was to grant £3000/- annually as against the original demand of £10,500 which Sinclair had by degrees reduced. To begin with the Board was set up for five years as an experimental measure. Its continuance was contingent on its ascertained usefulness. But there are other opinions too. Marshall alleged that the Board was created either

"to avoid the importunities and quiet the still more ambitious
"cravings of the president, or to embrace a fair opportunity of
"record a recent change of political sentiments in the Secretary."

It is well known that during the late eighties and early nineties
of eighteenth century the country suffered a financial crisis and
that during the crisis, Sinclair deployed his talents and influence
to restore the commercial confidence of the public and on that
account the Government was greatly indebted to him. The creation
of the Board, in reality, was a consequence directly arising out of
that situation. We do not know if Sinclair’s appointment as presi-
dent, as Marshall says, was political, his deposition from presi-
dency in 1798 did, however, coincide with Pitt’s “political
recentment”. As such the allegation that the appointment was also
political cannot be dismissed as entirely baseless. As regards
the secretary, Young’s Example of France, his famous political
work, his active opposition to Wool Bill and his Criticism of Pitt’s
speech made in 1792 which omitted agriculture, were all earlier
events. But, on the other hand, the work done by president and
secretary before taking up these “jobs” as well as during the
periods they served together on the Board leaves one to wonder if,
 apart from political considerations, there could be any better
selections. The fact that Young had to apply formally and that
the job carried to him the very small annual salary of £400 only
does

91. Poul in The Ministry of Agriculture and Fisheries (1927) in
a passing of reference says that “in consequence” of excessive
expenditure on the publication of statistical reports Sinclair
was “deposed from the presidency”. Certainly, that was not the
whole truth.”

92. Decries’ Sheep and Turnips P. 212.
does not echo Marshall's assertions of "reward", at least in the case of secretoryship. The absurdity is that it is a combination of contradictory circumstances which allows one to agree with one side without specific evidence to justify disagreement with the opposite. Decisive evidence is difficult to find, and the available one is equally difficult to rely upon.

What was the object of setting up the public Board? Sinclair envisaged that first two of the three points, which we summarise as Knowledge, Industry and Capital on which the "prosperity" of agriculture depended could be effectively attended to by the Board: Knowledge; by making available to farmers methods and techniques designed to make farm "management" economical; and, Industry by infusing in farmers the spirit of hard work.

The present study primarily concerns the first point viz: the Knowledge, which can correctly be linked with the collection and "digests" of agricultural information. We shall, therefore, restrict our study to that corner, but those interested in informing themselves of the origin, charter, set-up, constitution, objects and various accomplishments of this Board would find full details in the first volume and first edition of Communications (1797), Young's advantages of the Board of Agriculture (1800), Lord Somerville's System of the Board of Agriculture (1800) and Clarke's "Board of Agriculture" (1800).

Originally/

Originally a three pronged approach for knowledge was planned. One, by correspondence with farmers both at home and abroad. Two, by "sending persons to make regular annual surveys of the state of "agriculture and sheep farming, all over the kingdom." Three, by "Collecting the material of a statistical survey of England." The internal correspondence was to be "established" through the contact of surveyors who were to make annual surveys. Thus the effective machinery in the first two cases was appointed officials to be named as surveyors or agents. The statistical survey was to be achieved through 10,000 parochial clergies of England. In a speech made on 19th May, 1793, Sir John while recounting the advantages of the contemplated undertakings, justified the "Annual surveys of the state of Agriculture and sheep farming" as distinct from statistical survey of England. The agricultural survey was to embrace the whole of Britain while the statistical survey was to exclude Scotland, where a survey was already in progress. Separate financial appropriations were made for these surveys. In his address to the Board on the day of first assembling, Sinclair did not make any mention of a statistical survey. He dwelt on the agricultural survey. For statistical surveys, however, he prepared a separate address for the Clergy of England. To accompany this address he proposed an exhaustive schedule of queries. Different object was assigned to each of the surveys.

The agricultural survey was to provide "the general magazine of "knowledge on agricultural subjects." The statistical survey was to provide the basis for "policy and administration." The statistical

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(Refer to footnote)
statistical surveys were to extend to all industries besides agriculture. The projector hoped that these would be "periodical taken "every fifty or hundred years".

Two different schedules, one for each survey, were proposed. The one for agricultural surveys comprised 35 items, and the nature of queries was such as would elicit descriptive replies. The other consisted of hundred of items most of which would raise statistical information. These were essentially the same as were used for Statistical Account in Scotland.

That was the plan, but it was not implemented in full. Sinclair himself and his son and biographer appear to write as though the plan was implemented without dropping any vital part, except the alterations suggested by time and circumstances. But that does not seem to be the whole truth. Dr. Moore, the Archbishop of Canterbury, opposed statistical survey on the grounds that it was inquisitional on the subject of tithes. He threatened the government that if this survey was allowed to proceed, she "would lose the friendship and "support of the church". Sinclair's personal persuasion and assurance failed to provoke Dr. Moore's agreement. However, reluctantly Sinclair had to drop the idea of a parochial statistical survey.

He, therefore, seems to have decided to make best use of agricultural surveys by extending their schedule and fixing the county as the unit of enumeration. But all these circumstances do not entirely support, what we are apparently being told, that the only alteration made in the original plan was to change the unit of enumeration from "parish" to "county". Similarly, the reasons given for even this "change" provide only a small part of the answer. To particularise, Sinclair in preliminary Observations in the Communications says that "the
"sent of franking, the impossibility of conveying papers by any other medium but the post...... and doubts how far the public insight at first approve of such inquiries....... all contributed to decide in favour of General instead of Minute and Particular inquiries. The biggest factor that contributed towards the decision has been concealed by the 'father' although the 'son' lets the cat out of the bag. It was the determined opposition of the Archbishop of Canterbury which obstructed the execution of the original plan. If a statistical account for England similar to that of Scotland never appeared, the event is attributable more to the Archbishop's imaginary apprehensions than any other. We, however, wonder if the exclusion or modification of one or two pointed questions, tithes in this case, as means to calm down the Archbishop's suspicions were at all considered.

For agricultural surveys the Kingdom was divided into 30 districts from each of which a separate report was required. Usually one, although occasionally more than one, district was entrusted to each surveyor. With an attention to uniformity, "hints" or lines on which the reports were expected were communicated to the surveyors.

Sinclair seems satisfied in the selection of surveyors when he writes that he "found little difficulty in nominating persons capable of giving an account of the husbandry". His son and biographer informs that "Sir John employed in every county, the ablest person he could find to draw up" rough sketches, or as he (Sinclair) termed them "printed manuscripts". The words "he could find" have been qualified in the following lines where he writes that "in some instances, he (Sinclair) could not find agents whose performances might be put forth under the sanction of the Board without amendment." 95 We consider that the latter account/

95. op. cit. (87) P.65
account is very near the truth although Young makes a sweeping statement on the suitability of surveyors. In his Autobiography (p.243-3) Young writes that he "was infinitely disgusted with the "inconsiderate manner in which Sir John appointed the persons to "draw up the original reports, men being employed who scarcely knew "the right end of the plough". Young further complains that "the greater number of the reporters were appointed, and actually "travelled upon the business before the first meeting of the Board "took place." He also complains of alterations Sinclair had been making in his drafts and writes that "such alterations made in respect of "agriculture were absurd enough........"

Efficient dealing with agriculture, statistics and data requires a combination of diversified qualifications of agriculturists, economist and mathematician. It is, however, an unfortunate fact that experts in each of three lines, doubtless some of them with honesty of purpose, attach overmuch importance to their own particular field. As a deproofary we may instance Dr. Geary's paper on Educational Requirements of Official Statisticians in which he pleads for mathematics. Without any animadversions, we think that, to himself, he has justified his point by drawing a, to us, unnatural line between the official statisticians and, as he calls them, research statisticians. We had an opportunity to call on Dr. Geary during our visit to Dublin for the purposes of this study. The doctor was even more decidedly in favour of mathematics in conversation than he is in the paper under reference in which, however, he invites readers to "correct as if I am wrong"96 without unnecessarily/

unnecessarily entering into the controversy, we are inclined to suggest, what even Dr. Geary would accept, that if circumstances enable a state to appoint a team of experts, each qualified in either one or more of these subjects in an official or semi-official institution, it is essential, in the largest interest of work, that each one should restrict each comment and contribution strictly within the limits of one's own field. This holds good even for Sinclair and Young.

The report from the surveyors in almost all districts came in within one year of the establishment of the Board. They were widely circulated as "printed documents" in quarto volumes with wide margins for corrections, additions and observations.

One of the objects of these reports, especially those for England and Wales, was to prepare a "General Report" for England similar to that of Scotland. A 40 Chapter prospectus, excluding another 5 chapters to contain conclusions, was published in Appendix K of the Communications (1797). It is of interest to notice that the original queries which were communicated to the surveyors did not inquire about seed rate, yield per acre and the outturn, much less the acreage of crops and number of livestock. Yet the General Report, which was to be based on the County Reports envisaged the inclusion of some of the omitted items. Information on some of them had, however, been obtained by additional and revised queries issued during the course of survey.

The matter of the finally published reports include information and date, of varying merit, on soils; climate; tenures, their nature and duration/
and duration; rent; tithe (although it was objected on parochial basis in proposed statistical survey); parochial taxes; economics of large and small farms; description of crops sown and species of livestock kept on farms and possibilities of their improvement, rotations; irrigation; drainage; inclosures, and their effect on population and if they were installed by "private exertions or public authority"; rate of wages in relation to working hours; prices of provisions and their trend; sowing and harvesting time of crops; types of manures and implements and their merits for extended application; extent and management of wood and plantations; warping, paring, fogging, burning and mixed cropping, if they were practised; transportation facilities. They team with suggestions that will achieve or will aid the achievement of general agricultural improvement.

By no means is all this information available in all the reports. The difference in the amount of information in various reports can be appreciated with a view to their size. As an extreme case, the report Cumberland contains only 69 pages as against 1931 pages (in 3 volumes) of Derby.\(^{37}\) The variation may be due to the work having been attempted mainly gratuitously. Each reporter was, therefore, free to follow his own way. It may also be due to the nature of queries which did not in all cases clearly show their relative stress. Moreover, some important aspects as alluded to in the foregoing:

\(^{37}\) op. cit. Clarke (74) gives a table which shows the name of author, year of publication and number of pages of each of the English and Welsh reports.
foregoing were not originally inquired at all, it being left to
the intelligence of reporters to include them or not. The conse-
quence is that neither are all subjects common in all reports,
nor are common subjects in all reports covered in the same way or to
the same extent. The proposed "General Report" for England, however
never appeared. Whether it was due to the remonstrance of work
itself or the variety and incompleteness of the matter in county
reports which operated against the design is not known. But it
appears necessary to stress that an ideal framing of any schedule
requires a clear concept of ultimate compilation.

The foregoing discussion, among other things, covers two first
of the three major aspects on which we have been concentrating in
this study, namely the object of the work, the extent of its
implementation and the uses that accrued through it. In brief the
object of the Board as well as of its surveys and general corres-
pondence was "national improvement". The extent of implementation
was wide. In addition to several other publications, the county
agricultural reports for the all English and Wales and many of the
Scottish counties were compiled. Strictly speaking, while examin-
ing the use of the matter collected we should have restricted our
remarks to the matter of county reports, but the whole working of
the Board of Agriculture being directed by the same machinery
an exclusive treatment seemed difficult, and also perhaps unnecessary.
Young in his address (op. cit.) correctly remarked that the wide
circulation of county reports at various stages "cannot have failed

"of diffusing a spirit of improvement through every part of the
"realm (p.44)" Dudgeon in his excellent prize essay on "Agriculture in Scotland" confirmed Young's observation by writing that

"we must not omit to mention...... the National Board of Agriculture, under the auspices of which so much excellent agricultural
"information was shortly after disseminated......through the medium
"of statistical accounts and county surveys...... These were mainly
"instrumental in diffusing knowledge of better practice, and
"powerfully contributed to dispel prejudices in quarters where
"they were known to be most obstinate."98 Board's various achieve-
ments, which the information at their hands aided, though whole
of it did not come from County Reports would illustrate the uses
of agricultural information and data and would confirm that
"knowledge is a blessing". The Board proposed the General Inclo-
sures Bill after they had known that there were "more than 22
million acres of waste lands". The bill, which failed at first,
was revived during 3rd presidency. It failed again, but this time
in the upper house on the plea that it was hostile to the interests
of the Church. The measure, however, operated in accelerating
the inclosures. The Board, again in the light of information,
was responsible for the Weight and Measures Act, for the repeal
of import duty on oil cakes and exemption of drainage tiles from
excise duty, all of which were prohibitive to agricultural improve-
ments. The impending food shortage apprehended by the Board was
also fought back by Board through Grow More Potato drive, which
had brought 50,000 additional acres under that crop during 1794.

Similarly, 

99. Young's Address and Clarke's article already quoted give the
details of the Board's work.
Similarly in 1799 the Board advised the Government to import Indian Rice to counteract the consequences of next crop which according to Board's reliable information would be lean. Data was also supplied to various official committees when it must have served to the better ends of national prosperity and contentment. All of these uses are undeniably great, and if some of the recommendations suggested by data were not given timely attention, as it actually happened in case of Rice Imports, it was not so much the fault of information as the neglect of those who did not take the practical steps, which it pointed.

In spite of all this useful work the Board was dissolved in 1822. There are several reasons which would explain its disintegration; political, religious and financial included. But the largest single factor that operated against its existence was the decadence that had set in with Sinclair's final retirement in 1813 and Young's death in 1820 preceded by a long period of blindness. Both these events deprived the body of the Board of its soul. McCallum correctly remarks that "if ever there was an institution mainly dependent on personality it was the first Board of Agriculture; "Sinclair and Young between them ran the machinery". 100 The Royal Agricultural Society of England, to be discussed later took birth in 1833 to take up most of the activities of this semi-official Board. An official Board of Agriculture also to be discussed later, was, however, set up in 1889, but it has no links with the Board of Agriculture and Internal Improvement (1793-1822).

In addition/

In addition to his meritorious services to the cause of promoting the development of agricultural statistics through the Board of Agriculture Sir John Sinclair made far bigger contributions separately in his personal capacity. It is a gigantic task for anyone to have a look on 367 publications of varying sizes compiled by Sir John, let alone their study. All of them can not be reviewed. We propose to restrict our study to statistical Account of Scotland, which according to Scotsman was "the most arduous and most successful work undertaken by Sir John Sinclair."

The old Statistical Account of Scotland (1791-95) was born to Sinclair's second thought. By 1790 he had written History of the Public Revenue of the British Empire, (the first two parts of the three had been published in 1785), to which he intended to append a general statistical view of North Britain, without reference to parochial accounts separately. For the attainment of that object he thought of prevailing upon the parish ministers of Scotland through the good offices of the General Assembly of the Church of Scotland of which he was an influential member.

Perhaps in an attempt to preserve uniformity in returns, Sinclair circulated among the Scotch ministers a printed letter, accompanied by 166 queries including six queries given in "Addenda".

The queries were classified into four general heads: "the Geography and Natural History of the Parish"; (2) "Population"; (3) "Production"; and (4) "Miscellaneous questions", touching almost every sublunary subject.

The object/

101. The name and year of publication of each of these works appears at the end of second volume of Sinclair's biography.

102. "The Scotsman" dated 30th December, 1835. There is a small article on Sinclair's work in this paper which was written on his death five days ago.

103. Please see on the next page (contd.)
The object of the inquiry was to draw up an analysis for the whole kingdom. The essential "purpose" of the inquiry was to "ascertain the quantum of happiness enjoyed by its (country 's) inhabitants, and the means of its future improvement."

Out of the first received reports Sinclair selected four (these reports appear as the first four parochial accounts in the first volume of the old Statistical Account) and printed 1000 copies in one volume as specimen. This volume was transmitted to each minister along with a second circular letter which embodied five additional queries and an appeal, however, met with mixed reception; many of them, however, responded willingly. Some scorned the remonstrance of the idea, some thought it was impracticable. Some were indolent, some procrastinating, some diffident, some disinclined, some indifferent and there were others who were old and infirm to take up the task. Added to the rather discouraging response in general were several other difficulties which appeared to obstruct smooth sailing. Some parishes, for example, had no ministers, some were too large and impassable due to poor communications. Perhaps worst of all those obstacles was the public apprehension of "fresh taxes" and "rising rents" to which this survey could be employed.

Sinclair employed different tools to eradicate these obstructions. He moved his friends to use their influence on the clergy. He secured a vote from the General Assembly urging the ministers to co-operate.

103. The New Statistical Account of Scotland was published during 1835-40, and a third Statistical Account is presently being compiled.

NOTE: None of the writers mentioned here have been found to take into account the additional and supplementary queries.
Where ministers were not in a position to act he approached public
spirited gentlemen to do the job. He declared to donate sale
proceeds of the Statistical Account to the new Society for the
Benefit of the Sons of the Clergy. To excite their gratitude
further, Sinclair, on his initiative and associated with Lord
Melville obtained a Royal grant of £3000 for the same Society. He
constantly advocated the advantages of the undertaking, but where
all these attempts failed, he appointed "Statistical Missionaries"
to complete reports, at his expense from about 25 parishes. Above
all, he persisted to complete the task. From the first circular
letter up to last reminder, Sinclair wrote 25 letters. According
to Sinclair himself the completion of the undertaking was attribu-
table to five fortunate events: (1) friendly disposition which
earned him respect and attention of clergy; (3) extensive travelling
which gave him opportunity for wide contacts and field observation;
(2) regularity in correspondence which he considered most essential
for success; (4) concession of franking without which postal
expenses might have imposed limitations and (5) Spirit of perse-
sverance which no obstacle could resist. It is interesting to
observe how in present day dealings it is important to keep all
these points in view for "successful" steering of various under-
stakings including the collection of agricultural information.

The matter received from 933 ministers in respect of 979
districts was published in twenty stout octavo volumes of about
600/

104. Sinclair, Sir J; "History of the Origin and Progress of the
Statistical Account of Scotland" added to Vol.IX of the Stat-
istical Account of Scotland, Edinburgh, 1796. The number of
districts and parishes has been incorrectly given by many
writers including Sinclair himself who gave a different num-
ber in one of his publications.
600 pages each. The first circular letter was issued on 25th May, 1790, the first volume with the Statistical Account of 53 parishes appeared in 1791, the "Introduction" is signed on 25th May, 1791 i.e. exactly one year from commencement. The twentieth volume was published in October 1798, although the last report was received on 29th January, 1793. Many writers, including Sinclair's biographer, McCallum 105 and Sinclair (Millen) have made the period of completion as "seven years, seven months and seven days" literally speaking the statement is simply untrue. The correct period of completion beginning with the issue of first letter and ending with the publication of concluding twenty-first volume which embodies additions, corrections and some appendices, would come to five days less than nine years.  

The matter received in various reports was a heterogeneous mass of ill-digested information most of which has been cruelly poured out in these volumes. Probably two factors contributed to this situation: one that Sinclair was "in general obliged to rely "upon the assistance of others" in their vetting and secondly since the corrections and amendments involve a charge against the competency of the writer, which may not have allowed a severe dealing of the original reports without "calling forth their sensitiveness". Although the gratuitous nature of work and multitudes of ninies that worked on these reports may have given birth to diversity of manner and style of their reports yet by far the largest factor responsible for this "irregularity" is to be found in the vague, lengthy and/  

105. op.cit, McCallum (100)  
N(ote): The first letter was issued on 25th May,1790 and twenty first volume carries the date (with signatures)of 25th May,1799.
and ill defined questionnaire. Adding fresh queries and relying stress on the original mode the situation worse, because Sinclair initially from 160 queries falling under "Miscellaneous Questions" as also the six queries given under "Adenia" could more suitably have appeared under more appropriate heads, or even the other three heads, which in itself required readjustments, would have accommodated them with better logic. Worse happened when interpretation of these queries was left to the ministers themselves, the met, in spite of best motives, differ at least in certain interpretations. This explains the "vagueness". As regards the length of the queries 166 is in itself a big figure, but to it were added, eight months later, another five queries through the circular letter dated 25th January, 1791, requesting the ministers including those who had already sent reports, to attend to these queries afresh. Four months later appeared the first volume of the Statistical Account. In its introduction Sinclair grew obtuse in his demands and said "answers to the queries, however, which have been "circulated, are still requested; but where it is equally convenient, "it is certainly more desirable that the clergy should consider the "queries merely as a key to the Inquiry and the models which are now "yet before them, together with the annexed analysis, will be of "service in pointing out the best mode of drawing up the Statistical "Account of different districts". The "models", it should be pointed out do not strictly exhibit a uniform plan - each Parish or a group of every few parishes have been dealt with under different headings - some of them by additions and a few by omissions. The models were defective. And the "annexed analysis" was now limited to 57 queries instead of 171 communicated previously. This change may not have only invited fresh interpretations of the original queries/
but must also have caused some confusion. But the story of confusion
did not end there. In December 1791, when returns from half the
parishes had already been received, a third circular letter was issued.
There were no additional queries this time, but there were two foot-
notes\* more prejudicial to the uniformity of reports than any additional
queries. One note made it optional for the clergies either to send
 replies to the original queries or to supply “arranged parochial
accounts” and the other saying that although replies to all queries
were expected yet the necessity “to know the present state of the
“country” was stressed. Following these notes were enclosed blank
tables to be filled in as a third or rather fourth alternative. Thus
when half the parishes were still to be reported the clergy could
have recourse to either of the four ways: (1) to furnish replies to
all 171 queries; (2) to use these queries only as “a key” for the
report; (3) to prepare parish report after the model, which in itself
had further variation to show, and lastly (4) to fill the blank
tables for the first time now proposed. The obvious consequence is
an unnecessary extension and a want of distinct uniformity. Remedy
in part, lay in compiling final volumes strictly under original
heads. But it is only two: “population” and “miscellaneous questions”
which have been generally retained. The other two: “geographical,
and historical” and “productions” have been replaced by numerous
sub-heads of varying interpretations and connotations. For
agriculture for instance, there are over a dozen of sub-heads, such
as “agriculture etc; seed and harvest; cows and horses; soil produce;
“animals crops; ploughs and farms”, price of labour etc. and then the
three/

\(\text{Note): Quarterly Review (1849) incorrectly supposes that these notes}
\text{were appended to the questionnaire issued in May, 1790. They}
\text{appear for the first time in the circular letter dated December 5, 1791.}\)
three words; produce, agriculture and rent make as many sub-heads as their combinations and permutations. In all, there are over two scores of sub-heads, about half of which are omitted as frequently as they are retained. The absurdity is that even the same sub-heads do not exactly embody the same information. Take for example the "extent". It does not always stand for an arithmetical information. The type of information against "soil and climate" is seldom the same. Nor is this all. Under "farms" the discussion is sometimes on rents, at places description of farm buildings and of crops is the all that is covered and so on. The same is more or less true of all the sub-heads as well as the main heads, but where main head has been retained, for example, "population" in this case some comparable and computable material is available. In a few real words, the general pattern is universal apparently, but the variations are great.

Apart from the points raised by us against the haphazard compilation of these volumes the Quarterly Review 106 has pointed out several similar lacunae. We, however, do appreciate that many of these defects are inseparable from a novel work of its magnitude and style.

The merit of the work is that, inspite of all these defects and the fact, as Russel says, that "the arithmetical material provided "collected by the parish ministers was not of a character to lend itself to tabulation in such a way as to provide what would today be "regarded as the agricultural statistics of Scotland", 107 there is truth /

106. Anon: "The Scotch Topography & Statistics" in "The Quarterly Review" Vol.52, London, 1932, PP.343-390. In this article old and new Statistical Accounts have been critically reviewed. The beauty of the article is that it gives an interesting account of earlier attempts, beginning with sixteenth century, cont........
truth in what Gannison in Introduction to 3rd Statistical Account (for Ayershire, Edin: 1951, P.XI), says that "students of social life have continued to find its study rewarding". There are masses of data which can be used to depict, though very generally, a fairly understandable picture of parochial economy and agricultural circumstances.

The uses that this matter served have been recounted by Sinclair himself and rehearsed by several subsequent writers. Of them affecting/ were the removal of "feudal rights" which cost the farmer "one-ninth of his produce" and the abolition of thirlage, which obliged farmers to get their corn ground at particular mills, and which in addition to extra expenses cost them "vexatious exactions".

The matter was also used as basis of further works. These parish accounts together with Scots County Reports compiled by the Board of Agriculture provided material for the General Report of Scotland - prepared under auspices of the Board - the proposed counter part Report for England, as earlier stated, did not appear. This Report comprises five octavo volumes, the first three are devoted to report itself and the remaining are taken up by appendices embodying minute details. The main report under nineteen headings describes the "agricultural state" and "political circumstances" of Scotland. It was designed to serve the "executive" and the "legislature". Commenting on the Report the Edinburgh Review

correctly/

106. (contd. from previous page) made at collecting topographic and statistical information in Scotland.
107. op. cit. Fusset ( ) P.165.
correctly writes that "the different writers have sometimes encroached on the provinces of one another. ................." 108

The Review has raised several other points against the work: some erudite others frivolous. Briefly speaking, the General Report, is an abridgment of 938 parochial accounts and 33 county reports supplemented with statistical data, decorated with additional observations and edified by corrections.

The second work resulting from these accounts was their Analysis (1836), in two parts. Agriculture appears in the first (PP.229-317). The subject has been touched rather in a descriptive way and essentially it is more an essay on agriculture than an economic or statistical presentation of agricultural situation. Nevertheless, valuable suggestions have been made emphatically and pointedly. Here and there additional statistics have been added which enlarge parochial picture to the size of the Country. In essence, the Analysis is a digest of the voluminous work, without which immense store of interesting information may have remained inaccessible. Moreover, besides the fact that Sinclair's Report (1811-14) and Analysis (1926) abound in statistical data of varying merit on all industries including Agriculture. They are entitled to special attention because they urge, both by implications and allusions, the necessity of obtaining statistical information in the future as well as the best means to obtain it.

it may/

It may be difficult to trace their links exactly but it will be hard to decline that there was relation between the works of Sinclair together with those of his contemporaries and predecessors and a general recognition of the utility of statistical data. It must be more than a mere coincidence that the years immediately following Sinclair’s Statistical Account and running in part concurrently with Young and Sinclair’s active engagements, witnessed the growth of statistical works and events in mushroom disorders. Apart from Statistical activities across the water discussed elsewhere, the developments in Britain itself were remarkable numerous. To quote a few but important, in 1825 a publisher of London, J. Miller, published "statistical illustrations of Territorial Extent Population etc., etc." This work was compiled by a Committee who in 1827 named themselves as "the Statistical Society of London", since defunct. In 1831 the Magistrates of Norfolk made an effort to collect agricultural statistics of that county. In 1832 the department of Statistics was added to the Board of Trade. A year later the Statistical Society of Manchester emerged and during the same year there was established a statistical section to the British Association, the outcome of which was in 1834, the Royal Statistical Society of London. Only a few years later in 1838 the Royal Agricultural Society of England was formed. A mention of statistical promotions consequent upon these developments is, however, being left to their respective and appropriate places.

The second/
The second Statistical Account of Scotland commenced in 1831. This work was inaugurated by the Committee of the Society for the Benefit of the Sons and Daughters of Clergy at the suggestion of their President, (not "Secretary" as in the first volume of New Statistical Account, Page IV, is incorrectly written), Sir Henry Jardine.110

The justification of the new undertaking was the "inevitable "changes of nearly half a century" since the old Account was made; a period characterised by "war" and "extraordinary advance in science etc. due "to which "varieties had arisen in all branches of parochial "economy". Its impelling object, however, was the hunger of the Society to increase funds for financing the education of their sons and daughters. Unfortunately, some of the original records of the Society are not available now, but the money making objective could be clearly illustrated by quoting from such original documents as are still extant. The Manuscript Report which Lord Norreiff had presented to the General Assembly for their information and appreciation narrates that the old account, the property of which was conveyed by Sinclair to the Society, "has contributed considerably "to increase the funds of the Society. Its value, however, is now "much impaired to the remoteness of the period to which it had "reference ...... there was, at the same time, the prospect of a "considerable amount of profit arising to the funds of the Society...
"(the Committee) express their conviction that the proposed New "Statistical Account will prove most useful to the Country profit-
"able to the Society and honourable to the Church of Scotland".111

The General Assembly recorded their minute on this report in the minute book/

Edinburgh, 1845. The whole account comprised in 52 Numbers,
the first was published in 1834 and the last in 1843. These
numbers are bound in 15 volumes.

110. Anon: "Historical Account of the Society for the Benefits of
the Sons and Daughters", Edinburgh, 1834. According to this
contd......
minute book with this marginal heading: "New Statistical Account for the benefit of sons and Daughters of the Clergy approved of." The omission of the word "Society" preceding the word "benefit" with small "b" tends to support the point, although small "s" in sons and capital "D" in "Daughters" are diverting. The contents of the minute itself are however, substantive. Except the heading, the whole of the minute was published in the abridged minutes of the General Assembly as also in the Edinburgh Evening Courant and the Scotsman. The relevant part of the minute is reproduced: "The General Assembly feeling deep interest in the prosperity of this benevolent institution, and an earnest desire that it may receive the full benefit of the publication recommended to the ministers of its church to give all the aid in their power." On the Report presented to the General Assembly on 31st May, 1845, which said that the work had been completed the minute of the Assembly concluded with this sentence: "and they would (General Assembly) hope that its success otherwise may be so great as to afford some benefit to the fund under the management of the Society." Although, as has been shown, the origin of the new survey was different from the old, yet the method in general and the machinery in particular was the same. A perusal of the fifteen page "Heads of Inquiry for The New Statistical Account of Scotland" (Printed by Neill & Co. Old Fisherkirk Edinburgh in February, 1831,) circulated/

110. (Contd....) work, as well as four later Similar Accounts, Sir Henry was President in 1831.
111. Manuscript Assembly Papers, 1832. (The M.S. is preserved in the Church of Scotland, General Assembly Library, 352 Castlehill, Edinburgh. The condition of papers is precarious). PP.1-8.
112. Manuscript Records of the General Assembly 1832-34. See minute of 24th May, 1832, P.98.
113. The Edinburgh Evening Courant, dated 24th May, 1832.
114. The Scotsman, dated 26th May, 1832.
116. A copy of the Schedule was found in the MS 4391 in 'Blackwood' papers in the sub list 'Anonymous' 1942-85 N.D. PP.46-53 (see also later reference to the MS).
circulated among the ministers substantiates that really "some improvements" were envisaged and that "some new and Important topics" were included. The accompanying instructions were clear.

Information "in numbers" for certain queries was emphasized with a star mark on them. The desirability of using "New Imperial Standards" for weights and measures was stressed. The necessity for clarity and uniformity was expressed in these words "10. Brevity and strict adherence to the several points of statistical Inquiry, are res- spectfully, but earnestly entreated." Yet omission of many important questions on agriculture, such as number of livestock, their production, rainfall and a clearer indication of what was meant by "grain of all kinds" left much to be desired although information on some of these points for some of the parishes was included in the final volumes. The fact that, as a specimen, a copy of the old parish account was also sent to each of the clergy seems to have brought in unrequested information on those points. Yet it also seems to have had an opposite effect, because final volumes in general are closer to the old account than to the new schedule. The tiresome nature of the questionnaire, however, might also be, at least partly, responsible for the latter situation. On the whole, the attempt for additional information is not very successful.

As regards "improvement on the plan" and "arrangements of the contents" the results are, however, visible. The parochial reports, according to the predetermined plan, have been digested under six heads: (1) Topography and Natural History; (2) Civil History; (3) Population; (4) Industry; (5) Parochial Economy; and (6) Miscellaneous Observations. The superintendence of different heads was committed to competent persons, mainly drawn from our University of Edinburgh. The Professor of Agriculture, Prof. David Loud
Low, was to supervise the section on "Industry" which embraced the major part of agriculture. It was, perhaps, the realisation of Maxwell's hopes, who a century earlier proposed that the Professor of Agriculture should not be a mere reader of "pusillanimous and superficial lectures".\(^{117}\) John Gordon\(^{118}\), the then Secretary to our University besides vetting the section on "Parochial Economy" was entrusted with the "whole work" of editing.\(^{119}\)

It is with genuine feelings of pride that we remark that whereas the third statistical account, under revised plan on the suggestion of Hyde, sponsored by the Scottish Council of Social Service and financed by the Suffolk Foundation, is being prepared through appointed surveyors jointly by all the four Scottish Universities, the University of Edinburgh itself made no mean contribution to the second one. Cambridge and Oxford might usefully have learnt here from Edinburgh, since the much wanting similar information for that period in respect of England is lacking. It is not intended to dwell upon the study of the third Statistical Account in this thesis, because as far as agriculture is concerned, it deals with such information as is collected by other agencies.

In the New Account which should more appropriately now be called the Second Statistical Account of Scotland first five of the six proposed headings have been fairly rigidly adhered to in all the 375 parishes. "Miscellaneous" is sometimes left out. The fact that editing was done by one man, Gordon, has not only narrowed down the...
the departure of contents from various heads but also has brought about a fairly comestible uniformity in general treatment of the matter. The Society's attempts nevertheless to "effect improvements" in the second account have been only partially successful. For example two figures of extent for the same parish given under two different headings is a frequent occurrence. Their efforts to secure "simultaneous" accounts were frustrated by the length of about fourteen years which it took to complete.

One instance of the general interest was the revised contemplation of Statistical Account for England and Wales about 1846, which has not been mentioned by any of the numerous writers we have consulted for this thesis. In truth, we reached the reference accidentally. Long and nearly fruitless search for the schedule issued for the second Statistical Account of Scotland led us to a very interesting M.S. in the 'Blackwood' papers (Anonymus Volume), in the National Library, Edinburgh. Over one hundred pages of this manuscript written in two hands embody a plan for a Statistical Account of England lately extended also to Wales. The eight point plan carries this headings: Outline of "a plan for procuring a Statistical Account of "England". In the main the plan envisaged the compilation of a statistical account for England and Wales on the basis of the county instead of the parish. The whole account was to be published in 50 or 60 Volumes of 850 to 900 pages each. The matter was to be collected/
collected through paid individuals to be selected from among the clergy, Church Wardens, Schoolmasters, agriculturists and manufacturers. The Coordination and editing was to be entrusted to one highly paid editor or 10 or 12 paid editors. The schedule used for the Scottish parish account with necessary modifications was to be used for the English County Accounts. The total expenses of the undertaking had been variously calculated and the cost varied between £65,000 and £96,000. The largest single and even the largest aggregate item of expense was the remuneration for the editor or editors, which were proposed to be headquartered in London.

The plan as stated is recorded among "Anonymous" papers and it is not possible to ascertain its origin and fate directly and precisely. But a look into other contemporary M.S. records in the National Library leads fairly reliable deductions on the points.

As stated earlier, Gordon was the editor of the Second Scottish Account. The schedule used for that survey carried the first of the six heads as "Geography and Natural History", but in the edited final volumes the word 'Geography' was replaced by 'Topography'. The same modification in the Scottish Schedule was now made with a view to using it for England. The missing important points like livestock, poultry, rainfall etc., etc., which the editor of the Scottish Account endeavoured to include there, were also provided in the modified schedule. The brightest clue was the importance of the editor in the proposed English Account both in matters of pay and authority. We supposed that the major part of the plan was made by Gordon. Comparison between 'Anonymous' and Gordon's MS letter 120 containing/
containing very individualistic 'Es' and 'Ds' tended to confirm our supposition. The other part resembles the hand of Blackwood. The National Library are, on our suggestion, considering the desirability of revising the catalogue for the hitherto anon. M.S.

But we still could not see how Gordon, a University man, then Secretary, could be interested in an English statistical account. He did not need a job. A final clue to it was found in a third different M.S. containing correspondence between Blackwood and Gordon in connection with the Scottish Account and other matters. From a reply (to a letter which is not available) of Gordon to Blackwood we deduce that the idea of making a statistical account for England originated from Blackwood (MS 4731 F.99). Gordon in this reply dated 5th July, 1846 wrote: "This is a great undertaking you have in view. And I think two great things to be studied........." One; he proposed that Government should be persuaded either to advance some money for the project or to undertake to make good losses that might accrue. Alternatively he suggested that 'subscriptions' from individuals to the amount of £15,000 to 20,000 should be raised, and in the event of neither of these, security arrangements proving probable, Gordon proposed that "commencement might be made experimentally, that is, "by getting up and publishing a single county or two; and no more "unless the success proves decisive." The letter ended with the sentence "More, however, when we meet." Although conclusive evidence that this letter did not refer to the contemplated English Statistical Account is unavailable yet the inferences strongly favour this probability. Particular significance is attached to the handwriting in which/
which the expenditure estimates for the English Account were made, which appears to be of Blackwood. The only doubt against this conclusion arose from another letter among Blackwood papers which carried the date of 22 June, 1846 i.e. about three weeks earlier (M.S. 4731 F.101). According to National Library's cataloguing as well as their interpretation that letter from Gordon to Blackwood reading like this: "I enclose draft of short memorial to Sir R. Peel "about the statistical (Account)" - referred to the proposed Statistical Account of England. This position appears to be incorrect. Most probably the 'memorial' mentioned in the letter was the one, which in its proof form is available in Anonymous (M3 4991) papers, which Gordon had prepared entreating Peel to buy copies of newly published Statistical Account of Scotland for placing its copies "in the different Government offices at home and abroad" (M3 4991). This probable interpretation also confirms our foregoing thesis that Blackwood had made the first suggestion for Statistical Account of England in his letter the reply of which dated 5th July, 1846, has been quoted above. The fact that the reply left 'more' to be discussed and made certain precautionary suggestions so characteristic of preliminaries cannot but support that prior to 5th July the proposal for English Account which 'Blackwood' then "had in view" could be subject of the memorandum.

Unfortunately, the correspondence is incomplete in the available manuscripts. The available papers contain what could be called only preliminary jottings. There are in them several cuttings, and many blanks yet to be filled up. Added to that is the fact that various pages of the plan, as well as its items have been carelessly numbered. This/
This all suggests that the plan was either never finalised or it was proceeded with on papers which may have perished. Whole-sale failure on the part of commentators, on the early attempts made at collecting statistical matters, to refer to this English plan which we accidentally discovered, suggests that it never reached maturity, let alone its presentation for official approbation.

The plan was, however, comprehensive, and definitely better conceived in certain respects than that of the Scottish Account. Probably its premature death is to be traced to the official attempts made in 1845 to collect agricultural statistics as a pilot project which though successful in Scotland and Ireland had utterly failed in England. That failure may have cooled down the enthusiasm of Blackwood, publishers, who as the calculations and precautions contained in the M.S. support, wanted to commence the plan as a business adventure.

Additional evidence to the fact that Sinclair's Account had created great interest in Statistical Surveys is furnished by William Shaw Mason's (1770-1853) work. He published, with maps and plates, three volumes of "A Statistical Account or Parochial Survey of Ireland". The first of these volumes appeared in 1814 and contained the account of twenty-nine parishes. (The serial numbers incorrectly make them thirty because No. X comes after VII in the context, and thus No. VIII is left out. The contents are, however, not numbered). The second volume embodying twenty-five parishes (Again through a similar mistake the serial number makes them twenty-four because two parishes have been numbered as V) was issued in 1816, and the third and final embracing another/
another twenty five parishes was printed in 1819. In a few places
two or three parishes have been described together, but even so the
total number of parishes respecting which statistical account in
three volumes was compiled is less than one hundred out of the total
of 2,436 at that time in Ireland.

On the aspect of incompleteness, the author has made repeated
references and concludes the Preface to the third volume by saying
that "though he may not have accomplished all he wished, he has
endeavoured to do something for his Country". 122

The specific object of undertaking this project, is not stated.
But one can safely say that it was prompted by patriotic instinct
and initiated by Sinclair's Statistical Account of Scotland. This
fact is not only clearly acknowledged by Mason in these volumes but
also exhibited by following Sinclair in the general layout of the
matter besides the use of the same method of correspondence with
the same machinery of the clergy. As

As hinted in the foregoing the matter of the account was collect-
ised through correspondence mainly with the parish ministers, whom the
author considered "the most fit persons" although in certain but
relatively few cases the inability of the clergy to put their "good
wishes into practice" necessitated "superior means of information"
being employed in their stead.

This was the procedure adopted. "Letters were addressed to them
in every parish of Ireland..... soliciting their assistance..... To
every letter a series of queries were annexed tending by their
systematical arrangement to direct the attention of the clergymen
to the most useful and prominent objects of the Inquiry. Following
the footsteps of Sinclair the account of two parishes (Thurso in
Scotland by Sinclair and Aghatoe in Ireland by Dr. Ledwith) which
had already been surveyed by men of talent, were reprinted and
transmitted to them as models to guide them..." 123 The correspondents

122. Mason, W.S.: A Statistical Account or Parochial Survey of Ire-
land, 3 Vols., Dublin 1814 (1st Volume) and 1819 (3rd Vol.)
123. Supra pp.XII, XIII of Vol. I, and IX and X of Vol. II.
responded with "alacrity and spirit" and/or material poured in."

The whole matter has been given under the following twelve sections:

1. Name of the parish, situation, extent etc. 2. Mines, Minerals etc. 3. Modern Buildings, etc. 4. Ancient Buildings, etc. 5. Present and former state of Population, food, etc. 6. The Genius and Disposition of the Lower Classes, etc. 7. The Education and Employment of Children, etc. 8. State of Religious Establishment, Tythes, etc. 9. Modes of Agriculture, crops, etc. 10. Trade, Manufacture, Commerce etc. 11. Natural Curiosities, Remarkable Occurrence etc. 12. Suggestions for Improvement, and Means for ameliorating the Condition of the Poor.

Each section is divided into a varying number of headings, placed haphazardly in the margin of the book, with little regard to uniformity of information against each. Neither the number of headings nor the nature and quantum, with few exceptions, of data against them is necessarily the same. It is disappointing that, barring broadly speaking the "extent" and possibly "the population", any attempt at constructing statistical tables from these "statistical" accounts is bound to end in frustration.

Two of the above sections namely "Modes of Agriculture and Crops, etc." and "Suggestions for ameliorating the Condition of the Poor" are relatively more germane to this study. While, however, cursory perusal of all the heading was found interesting a detailed look could be only had on the contents of these two sections.

The section on Agriculture varies considerably both in its design and contents. There are only two or three headings in certain parishes/
parishes as against over a dozen in others. It seems impossible
to dwell upon each of these headings without transgressing the legi-
stitute expectations of the reader of this thesis. Some parishes
have been discussed individually in three or more, but none under
all of the several headings, such as burning of land, culture of flax,
drainage, fairs or markets, fences, implements, irrigation, labourers,
limestone and lime, mode of agriculture, mode of ploughing, number of
dairies and their stock, planting, produce, proprietors, rents of land,
rotation of crops, size of farms, soil, stock of cattle, tenure, tolls
value of crops, value of land, wages of labour etc. etc.

Allowing that the omission of a few of these headings such as
culture of flax, drainage, irrigation and number of dairies etc.
originated from their applicability only to certain parishes, it is
undeniable that the omission of most of these headings in majority of
cases was for lack of pertinent information. Again the same heading
does not always contain exactly the same information. Sometimes it is
a general description of the topic, sometimes it is definite and
numerical data and sometimes a mixture of both in varying proportions.
There are parishes which occupy as few as only five or six pages for
their whole account, and there are others covering as many as over
one hundred and fifty pages. A better illustration of this point is
that three parishes with detailed information, but neither necessarily
bigger in area nor with all the data being pertinent take about twenty
times as much space in these volumes as is devoted to the same number
of other parishes, not necessarily smaller in area, nor essentially
superior in description; having scanty details. With all loopholes,
these/
these Volumes contain a large amount of data capable of affording basis for drawing up a general but reasonably more reliable picture of agriculture than it would have been possible without them. Placed with the almost contemporary Survey Reports of the Royal Dublin Society and Wakefield's "Account of Ireland (1812)" the regional information which these volumes contain acquires far more than their separate intrinsic values.

Under the section on suggestions, emphasis is laid upon the development of Agriculture in its various phases. In brief, these suggestions advocate the reclamation of barren and sea land, keeping of poultry and bees, developing of fisheries, introduction of new grasses and crops like onion and flax, adoption of superior implements, use of manures. If "pest-control" and "improved seed" were added to the list of these recommendations it will almost complete the present day advice given for the purpose in Pakistan. But this was not all that Mason suggested. Although for some of the parishes this section has been completed with the insertion of "None" yet in several cases recommendations of universal applicability, though unappropriately confined to and "lost" in one single parish, have been made. Some examples are: the disapproval of absentee landlordism; scaling down of high rents; abusing of general idleness by saying "I can suggest no plan to improve unless a method could be devised to make them (the Irish) more industrious (P.163 Vol.1); abandoning of certain local customs; discouragement of co-partnership of tenants (this is, however, against the spirit of co-operative farming - should the cooperators in Pakistan consider it, they might find the explanation of their failure in popularising co-operative/
co-operative farming in Pakistan in the reasons that induced Mason to
discourage it in Ireland! But ours is not that study; inauguration
of subsidiary agricultural industries; lack of general education, etc.
All these recommendations, are of fundamental importance, but
easily enough, the author mentioned certain evils in some of the sec-
tions, which according to him deteriorated the tenants economy, but
did not suggest their eradication under "suggestions for amelioration". Similar inaptness is also noticeable in some of the suggestions, how-
ever genuine, which apparently seem to have been made without suffi-
cient data to justify them.

The uses to which Mason's "Account" may have been put, are
unknown, if any. But the fact that official patronage animate the
project and as an "unassisted individual" Mason proved the practicabi-
ility of collecting agricultural and other information, may have
engendered an attitude in official circles that collection of statisti-
cs was useful, practical, and urgent. That he ventured to gain
these ends with zeal and perseverance is clearly demonstrated by his
account of the Barony Portmahinch (1921) 124 which he submitted to
George IV during his visit to Ireland as a model for Statistical
Survey of the whole country as well as his voluntary and unrecompens-
contributions of the Statistical Survey of Tipperary (1933) to the
Royal Dublin Society, which is preserved in the Society's Library as
a Manuscript.

124. Mason, W.S: Survey, Valuation and Census of the Barony of
          Portmahinch, in Co. Queens (Leix), Dublin, 1921.
CHAPTER VI

SEMI-OFFICIAL AND UNOFFICIAL CONTRIBUTIONS TO
AGRICULTURAL STATISTICS DURING 19TH & 20TH CENTURY

The two preceding chapters have been devoted to the study of the activities of individuals and academies. The reasons for placing them into separate chapters have been there explained. This chapter has been separated with a view to distinguishing such individuals and academies as have contributed towards the development of agricultural statistics and data either both before and after the annual official collection of agricultural statistics since 1866, or only afterwards.

Among them the Royal (since 1837) Statistical Society of London will be first reviewed. It was set up in March, 1834 for "procuring, arranging and publishing facts calculated to illustrate the condition and prospects of Society" facts which should be capable of being numerically stated and tabulated. Although, it is neither purely nor even mainly agricultural in character yet a reference to it seemed requisite. There are three reasons for that. First, the Society, now and then, made efforts to collect statistics including agricultural. Second, it has established the scope and merit of statistics and, finally, it has provided advice and guidance for statistical systems, not excluding agricultural.
To be brief is more pardonable than tiresome. It is, therefore proposed to restrict reference to the society to the limits which it extends to agriculture, and, indeed within the boundaries of the three reasons set above.

The activities of the society, including collection, were divided into four classes; Economical, Political, Medical, and Moral and Intellectual. Each class was to be superintended by a committee named after them; Agricultural statistics were one of the responsibilities of the Economical Committee. By the way, "Committee on Correspondence" which was soon added as fifth was to deal with Colonial statistics.

The quiescent collection of agricultural statistics by the Society may be regarded as having commenced in 1835. The Rev. Stanely proposed some "Heads for the Arrangement of Local Information" during that year. It induced the Society to request its other fellows to frame interrogatories in their special fields. Agriculture, besides Crimes and Banks, was to be covered by Porter (the first statistician to the Board of Trade). The queries proposed by him, after approval of the Economical Committee, were printed and along with interrogations covering other branches of statistics were circulated in thousands, partly directly and partly through some public and private institutions.
The queries were designed to elicit "parochial statistics" on the lines indicated in them; not necessarily respecting the entire questionnaire. To the queries concerning agriculture only three returns seem to have come in, which are mentioned in the Society's Proceedings. To the entire questionnaire one, and perhaps only one, return was made by Esmond, which was published in Volume II of the Society's Journal. Independent of that, the fellows of the Society made individual attempts on limited scales. Two of them Tremenheere and Fletcher could be mentioned as instances. Tremenheere collected agricultural and educational statistics for five parishes in the County of Norfolk for several years from 1791 and in some cases up to 1942.

1(a). Anon, Proceedings of the Statistical Society of London, from the commencement of the Society operations up to the publication of the "Journal of the statistical Society of London" in which the subsequent proceedings are continued, London, 1839. For agricultural queries see pages 269 and 296. The replies are not published. Only mention is made that replies were received. A brief record of the papers received before the Society as well as before the F Section of British Association is also given in proceedings.


Most of these statistics were obtained from farmers, whether by visitations or correspondence, or both, is unknown, but the collector notes that the farmers rarely evinced any disposition "to withhold the information solicited". In the paper embodying these agricultural statistics their importance is emphasised, and it was suggested that the Government should make similar investigations on a larger scale. Such an undertaking, Tremenheere opined, "might at first encounter opposition and mistrust (of farmers); suspicions will be gradually allayed".

Tremenheere's statistics though of limited coverage, suffer from two main defects. One, the classification of land for each of the five parishes has been made under incomparable headings. Two, Table III which includes the acreage under various crops, yield per acre and production, exhibits mathematical mistakes, for in some cases "production" does not, as it should, equal the product of acreage multiplied by yield per acre. Whether it is due to careless calculation or careless printing is not known.

Fletcher, in an "anxiety to obtain some insight of agricultural statistics" has compiled two tables only. One gives area under wheat and barley in 29 localities in Eastern Counties during 1838 as well as their yield per acre also for the years 1836 and 1837. The second table contains rate of wages in 16 counties/
as it prevailed during the winter of 1836. These were collected through personal inquiries, the exact procedure of which is again not stated. Like Tremenheere, Fletcher also hopes that similar inquiries would be extended, and writes that if his work "moved the curiosity of others to make further investigations my highest purpose will be accomplished."

In addition to these accounts, the Society unsuccessfully endeavoured to make a statistical account of London in 1836. For that, the Bishop's co-operation was also elicited. Similarly in June 1840 the Council of the Society appointed a fruitless committee to report on the feasibility of preparing a cadastre for the United Kingdom. At any rate, the outcome of all these attempts was either nil or negligible. Several reasons seem to have contributed to failure: lack of funds, want of voluntary services, comprehensive and tiresome nature of proposed queries, want of general influence of the Society, and lukewarm interest of "Economical Committee" in the work. The failure, however, is regrettable particularly because the English parochial statistics which could not be obtained to form counterpart for the first Statistical Account of Scotland remained unavailable even to the second which was then under preparation.
In the '40's the Society changed the mode of their approach and abandoned "research by enquiries". The new procedure was to work through special Committee. Unfortunately, no Committee exclusively on agricultural statistics appeared before 1900 when the first one was set up to inquire into the basis for estimating the production of meat and milk. It will, however, be erroneous to suppose that agricultural statistics had been thrown into the back-ground for over half a century preceding the appointment of the Meat and Milk Committee. For example, in 1869, in the first formal presidential address delivered by Newmarch on the eve of his election, the progress of statistics in 26 various branches of national statistics was reviewed, and "early attention" where most needed in 18 of them was indicated. The first two of the eighteen "fields of statistical research" for which "scientific truths" were yet to be established had reference, interalia, to agriculture. To elucidate his point Newmarch observed, "we are perpetually guessing the probable consumption of wheat and other grains per head - the same of potatoes and butchers' meat".

Although, as Newmarch also observed, the collection of annual agricultural statistics of acreage under crops/
and number of livestock had commenced three years earlier, yet the production statistics without which consumption could not be worked out, were not officially or systematically collected until about 15 years more had lapsed. There was, however, no other contribution made by the Society towards the actual collection of agricultural statistics. Thus between the unsuccessful attempt made during the childhood of the Society and the appointment of the Meat and Milk Committee, although agriculture did not get entirely omitted, yet there was no active undertaking of exclusive nature.

The Meat and Milk Committee of 1900 was to inquire into the basis for estimating the production of these Commodities. The Committee decided to collect "entirely fresh data", and reported their findings in three reports; the interim gives the preliminaries of general approach and early progress,

§. Anon; (Presented by Raw); "Report of the Committee to inquire into the Statistics available as a basis for Estimating the Production and Consumption of Meat and Milk in the United Kingdom" in J.R.S.S. Vol.65, London, 1902, PP.367-71. To this report are added the copies of questionnaires or schedules used.
the second is devoted to meat and the third to milk.

In the interim report the Committee apprised the Council in 1902 that they had distributed among farmers over 3000 schedules requesting information as to the annual number of births and deaths by accident and disease among cattle, sheep and pigs; the number of cows in milk; the average yield of milk per cow for different breeds; the proportion of milk suckled by calves, and the ratio of milk sold and consumed as such or in by-products etc. Another 150 schedules were circulated among butchers. Through them was information about the average weight of different animals of different ages when slaughtered. A third schedule (the copy of which is not appended to any of the three Reports) was distributed among heads of the households, mostly fellows of the Society, to state the amount of different meats, milk and milk products consumed during particular weeks. Necessary instructions to be observed for their filling were communicated simultaneously. The number of returns to the two first schedules received by the Committee up to June 1902 was 289 and 81 respectively.


7) Anon: Third Report from the Same Committee. Supra PP.385-393. For appendices to this report see PP.394-412.

8) Rev,M; "Observations on the Production and Consumption of Meat and Dairy Products" Supra PP.413-421. This paper includes a good deal of instructive and informative other data on the subject.
About 17 months later, in November 1903, the Committee presented the Second Report dealing with meat. According to the report 27% of cattle 38% of sheep and 121% of pigs were annually slaughtered. The average weight for cattle and calves was 660 lbs. and 95 lbs. respectively. For sheep and lambs it was 60 and 40 lbs. respectively and for pigs 135 lbs. It embodies a long description of the procedure and calculations followed to arrive at those estimates which, for brevity, we have turned into two mathematical equations:

(1) \( Y = W \times \left\{ \frac{(n+b)-(d+e+n)}{p} \right\} \) where \( Y \) stands for production, \( W \) for average slaughter weight, the value of which was adjusted by the Committee on various considerations, \( n \) for the number in the particular species of livestock which was, in this case, obtained from official returns, \( b \) for births during the year, \( d \) for deaths by accident or diseases, \( e \) for exports and \( n \) for the number of the species of livestock at the end of the year.

(2) \( C = \frac{X + 1}{p} \) where \( C \) stands for consumption, \( 1 \) for imports and \( p \) for population.

The consumption calculated on the basis of production and population was 115.09 lbs. per head per annum. The corresponding figure on the basis of 247 "householders" schedules obtained from "all localities" was also calculated.
For the latter calculation four classes of population on the basis of "Annual Value of private dwellings" as artisans, mechanics and labourers (73%); lower middle class (15%); middle class (7%) and upper class (5%) were weighted. The consumption figure arrived at was 119.32 lbs. or 4.23 lbs. higher. The difference was said to have originated from seasonal variations, relatively small samples, and the nature and magnitude of work. We might add that the weights applied may not in fact have been appropriate for the universe.

The third Report deals with milk and fundamentally the same procedures of weightage were applied in that case. Indeed, the inquiries were different, and more complicated. This report, though understandably, concludes with apologetic conclusions. It placed the net yield of milk at 420 gallons apiece per annum.

That brings us to the end of the review of the work done by the Royal Statistical Society in procuring agricultural statistics. True, that success did not correspond with the hopes, except, perhaps in the case of the Meat and Milk Committee. Yet the efforts that failed epitomised general interest in statistics, while those which succeeded founded fundamental bases for future calculations.
As regards the Society's influence on defining the scope and merits of the science of statistics the subject is too wide for this study and too above our competence to be thoroughly discussed. The part of the society is, however, well reflected in the fact that hardly, if ever, before the birth of this society was so much consideration given to present the facts numerically and "tabularly" both these points were the aim of the Society, but with the emergence and growth of the Society the method of descriptive presentation has been less and less laxly observed. Its contribution in international field through the International Statistical Institute which owes its establishment to the Society is again a subject extraneous to this thesis.

Of all its activities, the Society's performance is greatest as an advisory or guiding body, although not outstandingly so for agriculture itself. Early in 1839 and at the time of each subsequent eve of decennial population Census, Committees have been appointed. The very first recommended a change in the machinery of Census from that of Poor Law overseers to that of the /
the Registrar General of births, deaths and marriages. The successor Committees have been making suggestions on the expansion and improvement of schedules, and lately demanding a quinquennial instead of decennial census. What interests us more however than population statistics is agricultural statistics. Only two of the Census Committees, those of 1851 and 1861, appear to have referred to agriculture. The former noted that they highly appreciated the importance of agricultural statistics, but they "did not think it advisable to encumber the operations of next (1851) Census with their collection" and suggested the appointment of a fact finding Commission, with a view to pave the way for their collection "when undertaken as an independent object". In spite of this suggestion one or two particulars of agricultural interest (area sown and number of labourers) were included in the Census schedule of 1851. The 1861 Committee (The International Statistical Institute, in their 1860 session had also recommended that agricultural statistics should be decennially obtained along with population Census) inter alia, recommended: "It also appears to the Council that in the Census of 1861 an effort should be made to initiate a Decennial Return of certain kind of agricultural statistics;"

Possibly because the Government was already occupied with the idea the recommendation did not receive active consideration. Nor did the successor Committees revive the subject, the probable reason of which was the commencement of official annual collection in 1866.

Apart from the counsel that Census Committees had been going for the collection of agricultural statistics, the fellows of the Society suggested various plans and schemes with a view to procuring them efficiently, accurately and cheaply. Porter was the first among them to give a plan in a paper read to the British Association in 1838. Relating the advantages of agricultural statistics, and illustrating the backwardness of Britain in this respect, Porter emphasized the importance of collecting agricultural and livestock statistics. He proposed that in each of about 14,000 parishes of the United Kingdom "a paid agent must be employed", and opined that for effective working "it is indispensable to have an organised machinery in constant action". Porter stressed that the persons entrusted with the task of collection "must be paid". In addition to parish agents, one "paid person" in each county, and "competent persons with assistants" were recommended. The latter part relating to "competent persons" is not lucid. /  

lucid, but apparently it suggests a central department. Porter did not favour the employment of volunteers in the work. His scheme required "an annual outlay of from £20,000 to £30,000."

It might be stated that Porter was head of the department of statistics of the Board of Trade. He was also the fellow and treasurer of the Society. We are inclined to think that the Society not only pooled the knowledge of different fellows to furnish guidance but also provided opportunities for officials to echo their opinions in public. The direct influence of the plan is not known, but a few years later in 1845, an official attempt, on a small scale, to collect statistics was made. About sixteen years later another fellow of the Society, Paull,\footnote{12} proposed another plan. Meanwhile official attempts to collect agricultural statistics in Britain as pilot projects had been twice discontinued. In Ireland, however, the work was continuously in progress from 1847. Paull's plan excluded livestock statistics. The striking difference otherwise between Porter's and Paull's schemes was that the latter recommended the employment of free\footnote{12}.

free services as against paid in case of the former. Paul suggested that experienced "agricultural labourers" should be furnished with official schedules and "terriers." They should mark the area under different crops and frame an estimate of the yield by going round the fields without specific inquiries from the farmers. From these observations the "schoolmasters" or "some competent scribe" should frame tabulated returns which should be sent to the Board of Trade for calculations and compilations for the whole country.

Paul discussed three other contemporary schemes in his paper. One that had been tried in Scotland by Hall Maxwell a year earlier and two others which had been proposed, one by an unknown person "A Farmer" *(not a complete scheme)* and the second by one Cooke which he had addressed to the President of the Board of Trade. Maxwell's scheme, which will be discussed later, was estimated to cost £80,000 annually and that of Cooke's £300,000. The cost of Paul's scheme was approximated at £50,000 per annum. The difference between Cooke's and "A Farmer's" schemes was minor, if any. The former suggested the machinery of "district surveyors" to collect statistics whereas the/

the latter initially favoured getting them directly from the producers although later he ceased to put pressure behind this suggestion that "to be of any use these returns must be made by the producers alone".

The three schemes were criticised on two main grounds. One that they were costly, and two, that they were likely to raise inaccurate statistics because of producer's prejudice against parting with their private information on one hand and the inability of "district surveyors" to do the job properly, on the other. Paull claimed merit for his scheme on exactly opposite grounds. Such merit seems ill deserved because the cheapness of Paull's scheme depended on the success of his anticipation that gratuitous service would be available for all the 14000 parishes. It was too much to expect in practice. Secondly, Paull's scheme refers to grain and vegetable statistics alone, whereas Cooke¹³ maintained that the "stock and fodder crops would of course enter into the returns" ¹⁴

As regards accuracy, there was a wide range of possibilities in all cases.


14. The original scheme could not be seen. The quotation is from his letter which refers to his original scheme.
As already hinted in a footnote, agricultural statistics in the forties of the last century had become a popular subject. The Times of 18th October, 1853, in a leading article, while commending the collection of Agricultural statistics by the Board of Trade in three Scottish and two English counties writes "the only wonder is that considering their importance, they have not long formed a regular part of the statistical information annually poured on the Country." (P.6) By the way the editorial was also reproduced in the Farmer's Magazine, Vol.4, 3rd series, November, 1863. Referring to this article, Cooke in his above mentioned letter wrote a week later

"when the magnitude of the interests involved is acknowledged in your columns there is a chance of its being appreciated by the public." Several other newspapers like "The Courant", "The Daily News" and "The Scotsman", The Farmer's Magazine etc. etc. not only wrote editorials but also, some of them, brought out special supplements exclusively devoted to agricultural statistics.

Emphasis on their importance and suggestions on the methods and machinery for collecting agricultural statistics began to be discussed in the two Houses and in meetings of various Societies.

The Central (or London) Farmer's Club at their usual monthly meeting held on December 7, 1846 heard a lecture by Shaw, of the Strand. A lengthy
discussion terminated in the resolution "that in the opinion of this meeting, an accurate system of agricultural statistics would be highly beneficial." On the suggestion of the same gentleman, Shaw, St. Peters Club also passed a similar resolution in March 1847. Eight years later the London Club again discussed the subject in their meeting held in March 1854 and "resolved - that the opinion of the Club is that it appears to be expedient for the public benefit that an efficient system of agricultural statistics should be established."

In February, 1847, Sutton, a member of that Society read a 24 page paper to the Literary and Philosophical Society of Liverpool. He advocated the adoption of some system by which the supply of food may be evenly regulated. Stressing the need for agricultural statistics for countering speculation and avoiding, starvation, disease and death to many, and demoralization to all Sutton wisely concluded that "the very least that a Govt. can do, where it does not provide the food, is to supply the information (P.119). He gave a detailed plan of the kind of statistics required."


It envisaged annual collection of acreage statistics in June-July and yield statistics in about December as well as a Census of livestock at least every three years. The machinery proposed was that of the Poor Law Collectors or Registrars. It pleaded compulsion for returns. This plan was sent to Sutton by one Thomas Baines which he included in his paper. His original plan was explicit. He had, however, suggested that besides crops and livestock, produce of fishes, if possible, should also be ascertained.

In 1854, Maxwell, the then Secretary of the Society in an address to a meeting of Royal Highland and Agricultural Society, set forth clearly the needfulness and advantages of taking stock periodically of agricultural production. 15b

Similarly the Society of Arts hotly discussed the same subject in their meeting held in March 1854 when

15b) Maxwell J.H. Address on Agricultural Statistics in Tran PHAS vol. V. PP. 392-399.
Levi, also a fellow of Royal Statistical Society, read a paper "On the Importance of A Correct System of Agricultural Statistics". A lengthy discussion followed. Among those numbering over a dozen who participated in the discussion were included Jadis, Caird, Dr. Farr, Porter and Newmarch all of them belonged to the Royal Statistical Society. In all three main proposals were made. One by Levi himself, who gave a clear and detailed scheme on the second day of discussion. He suggested that the Poor Law Board and the Tithe Commission should be amalgamated to make a Central office. His main argument in favour of his recommendation was that the Tithe Commission had complete maps and other necessary information for the work, whereas Poor Law Board had field staff. He said this scheme would provide the essential desiderata for the project, namely: "Competent Central Board", "good local machinery"; and a "number of able inspectors".

A year later, on 28th June, 1855 giving evidence to the Lord's Committee on Agricultural Statistics (1855) Levi in reply to the question if he had/

had "given any attention to the best mode of collecting agricultural statistics in this Country" replied that he had read a paper to the Society of Arts which embodied a plan with the help of "eminent men for the collection of such statistics. He was referring to the plan here under consideration, which he had modified during the course of time. Levi said

"I confess .... I recommended that a central Board should be formed and that Board should correspond with the Boards of Guards ...... but now I doubt the expediency of such a recommendation; ........ I am quite satisfied that the Poor Law Guardians are not the best medium to use for such a purpose" owing to the unpopularity, lack of co-operation with them by farmers, party and political feelings and small remuneration offered to enumerators and recommended that Registrar General would be the best medium through which agricultural statistics should be collected. The method suggested was the same as for census schedule; small penalty "to give it a form of duty" was proposed and information was to be collected annually, which would be forwarded to the Central Board on or before the 1st of June each year. The Registrar, said Levi, should also, by other schedules, obtain annual returns of produce from farmers or any other sources, but these should be voluntary. The estimates of yield were proposed to be "made by inspectors recommended by the inclosure and "copy hold Commissioners". The Central Board was conceived to be connected with the Board of Trade,/
or there might be a separate Board of Agricultural statistics, who would get returns through Registrar General or the Copyhold Commissioners, "as they may think best". The cost of this "operation" was estimated to be from £50,000 to £80,000 which, according to Levi was "of no importance".

The second proposal for the systematic of crops and livestock statistics came from Jadis, of the Board of Trade. He discharged Union clerks and the clergy; the farmer on grounds of exacting demands on their duty and time and foreign nature of work to the latter, suggested paid inspectors under the Board of Trade. Main objection to this proposal was raised because of the suggestion that inspectors should be paid out of increased local rates on agriculturists. The third to which Farmers Magazine was "inclined to attach most importance" was made by Caird, who wanted to gear the machinery of the Tithe and Inclosure Commission with the aid of seasonally appointed


18. Anon: "The Statistics of Agriculture" in "The Farmers Magazine" London, 1854, P.400. In this article Caird's approach as given in his scheme has been supported. But the Commentator differs on the authority of Prof. Wilson, with Caird's suggestion to make Tithe Commission as central office, because that office was unpopular with the farmers. On PP. 401 to 407 Levi's paper is reproduced.
appointed inspectors. Caird main argument in favour of his suggestion was that the officials of the Commission were not fully occupied in their normal work during May–July, when new work was required to be done.

Caird also referred to his plan during his evidence before the Lords Committee (Q.268, P.52) and repeated that paid officials equipped with compulsory powers were the only means to get accurate and reliable returns. Much was said during discussion for and against each proposal, but there was consensus of opinion favouring the idea of collecting agricultural statistics, with the sole exception of Waddilove who failed to see any use of agricultural statistics. Among other things, the scope of schedule, the time and procedure of its fillings, the method of digesting and publishing the material were also discussed.

When the importance of agricultural statistics had become justly felt the appointment by the upper house of a Committee (Lords Committee) to investigate the best way of collecting agricultural statistics in 1855 was only natural. We shall discuss this Committee elsewhere. It would suffice to say that credit is due to the Royal Statistical Society for the establishment of Lords Committee which directly influenced the founding of the system of officially/
officially collecting agricultural statistics.

In addition to the actual collection and advice, the Society has accumulated a useful mass of information in its Proceedings Transactions (up to 1838 and Journals since 1838. The articles in these publications are too numerous to be summarised in this thesis.

Another aspect of the system of statistics, agricultural statistics included – in which the Royal Statistical Society took very active interest was the establishment of a central office for co-ordinating and publishing national statistics. The first hint was dropped by Purdy in his Address to the Society. He severely criticised official statistics as "confused" and "Ill prepared" for both public and press. He favoured the establishment of a new small central department charged, interalia, with the duties of indexing and cataloguing available statistics. The main work of the proposed department was to provide an intermediary between parliament and different departments.

The spoken need of the time was not heard by the Government until six years had passed. Purdy was followed by Lack (1875) and Giffen (1876) of the Board of Trade who presented memoranda to the Treasury both of which showed that there was great room for improvement in the system in which official statistics were prepared. They pointed out that there was no fixed principle for guidance of the several offices, and as a result harmony and coherence between different classes did not exist. It rendered them incomparable, and as such much prejudice was done to their utility. Lack, in his memorandum said that it was possible to remove/defect, "but in order to accomplish this important object it would be necessary to create some controlling power over the action of the individual departments, so as to direct their work upon a uniform and systematic plan". (P.75) Giffen recommended an inquiry by "a committee" into these evils. Fuel to fire was provided by departmental dispute between the Board of Trade and of Customs with regard to their position over the Returns of Trade and Navigation in 1877. Official Committee was the consequence. The Committee/

20. Anon: (HMSO); Official Statistics. Copy of Second & Third Reports of the official statistics, etc. Parliamentary Papers, No.107, The House of Commons, 1881. The memoranda appear as Appendix A PP.73-115
Committee (1877) was to inquire and report on the general statistical system. Their attention was especially directed to the unnecessary detail and duplication in the printing of annual volumes of statistics, and "evils of differences in form in compiling statistics in the same subject for England, Scotland and Ireland, and the want of harmony in the headings classification, dates, and other points, where statistics in different subjects ought to be made capable of inter-comparison".

The Committee found ample confirmation of want of condensation and uniformity which caused obscurity and confusion, but they were not unanimous as to the best mode of remedying them. During the period of its business three members resigned from the Committee. New persons were appointed in their places. Ultimately of the seven members (not six as Rew said in his 1921 Address to the Society) two wrote a note of dissent. The majority report favoured the establishment of a new independent small central office – almost similar to that conceived by Purdy, charged with the duty of supplying wants and supervising harmony of official statistics. The weighty members were dissidents.

* The three terms of reference of the 1877 Committee were exactly the same as were proposed and discussed in Giffen’s Memorandum. See pages iii and iv and 83 of the above report for comparison.
Both belonged to the Board of Trade. They appear to have thought that the creation of a separate department was prejudicial to departmental autonomy. The difference of opinion bred inaction. No direct outcome made appearance, but if Baines account was accepted, "marked improvements" resulted from the deliberations of the Committee indirectly. He instanced the creation of a statistical section under the Board of Agriculture as one of the indirect influences. The Society, however, did not wane in their enthusiasm to insist on their recommendations. In 1885, in their important Jubilee meeting of the Society Rawson revived the subject and observed that "we should take advantage of the present occasion to urge upon the Government the appointment of some superior body, Council or Commission, to organise and unify the collection, abstraction, and publication of the official statistics. He favoured the appointment of the new department under the Minister of Commerce in preference to the Minister of Finance. This time again the result was no better. But the Society still followed up the subject. In 1905 Dudfield revived the campaign. He desired to put a plea for an "independent of existing departments" central office for vital/

vital statistics alone. During the following year Prof. Bowley dwelt upon the same subject in his presidential address to the F Section of the British Association. He said that "we need a central thinking department in statistics". In 1907 this subject was again the subject of presidential address to the Society. Dilke, the president, quoted examples of overlapping and even in some instances of contradictions. He illustrated waste and confusion by quoting from various documents. Dilke thought that a mere "meeting of statisticians from various departments" as Giffen had advocated to the 1877 Committee was not enough. There should be a permanent "statistical direction" from a department to which should be handed over "those statistics which are collected by various departments".

In 1908, Dilke read to the Society a paper of Prof. Bowley on "The Improvement of official statistics". A large part of this paper was devoted to elements and criteria of statistics but the part/

part dealing with the subject here under discussion, though discursive, clearly supports his conclusion to set up a "de novo" central statistical office, the duties of which he had prudently set forth. A very lengthy discussion followed, and among several who participated the name of Coghlan ought to be mentioned. He remarked that "how extraordinary it was that a society like theirs, numbering among them so many persons of eminence in the statistical world should have so little influence in the official statistics of the Country". Coghlan's statement was factual, although another participant, Harper called it "pessimistic".

The Census Committee of 1908 had also put a case that a consultative committee composed of departmental statisticians should be set up. The response again could not be excited.

In 1909, a Select Committee of the House of Commons was set up to inquire into "wasteful expenses" of official publication. The Society's Secretary, Rew through Dilke arranged to give evidence to the Committee with a view to press the subject of a central department on the Parliament. The Committee going out of their terms of reference recorded that

"the question of the reduplication of official statistics and the feasibility of securing greater co-ordination in their publication has frequently risen in an incidental manner" and that they were/

27. Supra P.484.
28. Supra P.488.
were "struck with the fact that this question had
not received greater attention since the enquiries
conducted by the official statistics committee
appointed by the Treasury in 1877"..29

In 1911, Baines, the President of the Society
in a paper (already quoted) stated that defects in
official statistics were mainly traceable in want of
cooperation between departments and absence of such
machinery as would deal with them as "informative"
statistics as distinguished from their departmental
significance. His clear and conclusive recommendation
was that "to raise our returns to a higher position
in the ranks of statistics" a central Government
department was needed. According to Baines the failure
of "economists and statisticians" to have a central
department was to be accounted by two reasons. One,
the "stereotyped financial" excuses and, two; "an under
current of apprehension" that "relations between such
an office and existing departments ... would engender
perpetual friction". (P.29)

In 1916, Mallet30 made a passing reference to
the issue and "expressed an opinion that no real
improvement in statistics could be looked for"
without "establishing some form of central control and
supervision". Mallet, however, did not go into
details, probably because the vice president of the
Society, Drage, was scheduled to deal with it.

29. Anon: Report and special Report from the Select
Committee on Publications and Debate Reports,
H.M.S.O. (Col.286) Para.4, P.X.
30. Mallet, B; "The organisation of Registration and
its Bearing on "Vital Statistics" in J.R.S.S.
Drago in his paper "The Re-organisation of official statistics and a central statistical office" covered the subject comprehensively. His accent was on the defects of official statistics, which would be judged from his statement that "the more one knows of the existing confusion the less one wonders at the distrust which pervades the public". According to him, the unsatisfactory state resulted from five main events:

1) Lack of cooperation between departments,
2) Absence of central supervision;
3) Making of dual purpose (record and administration) blue books;
4) Tendency of departments to produce greater quantities of statistical material and
5) Inadequacy of compulsory powers and relaxed application of such power as existed.

He concluded by suggesting centralisation of statistics in fewer departments and an efficient coordination through "central bureau of statistics". Influenced by his discourse, and perhaps by his personal influence the council of the Society passed a resolution in January 1917 recommending a "centralised organization" for which the Society offered their cooperation. Nothing happened.

In June 1919 the Society appointed a fresh committee "to consider the best method of approaching the Government with a view to affecting an improvement in the collection and presentation of official statistics".

The Committee prepared in November 1919 a position requesting that a Royal Commission or a Parliamentary Committee should forthwith be appointed to inquire into the methods "of the collection and presentation of public statistics and to report on the means of improvement". No immediate action was taken, but a cabinet committee was appointed in July, 1920. The Society, however, continued to put pressure behind their plan.

In July 1920, Knibbs in a paper on "The Organisation of Imperial Statistics" expounded the views of Purdy, Dilke, and Drage. He went a step further in urging the centralisation of empire statistics aside from national statistics - which were not "a mere aggregation of departmental statistics". The British Empire Statistical Conference also met in July 1920. Knibbs was on the general Committee of the conference. Through his contacts he seems to have influenced the conference immensely. The very first resolution of the conference, based mainly on the views expressed by Knibbs in his above referred paper, which he had read to the Royal Statistical Society, urged the

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the establishment of an Imperial Bureau of Statistics.

Towards the end of 1920 Rew in his presidential address confirmed that the appointment of a Royal Commission, as suggested by the Society's Committee in their memorial was "unquestionable".

In passing, it is of interest to note that Rew referred to most of the earlier petitioners of centralised statistics, but he fails to mention the name of Knibbs who was most recent, and perhaps also most influential in the link. The omission is rather curious in view of the fact that Rew as one of the participants in discussion had said that he "wished also to congratulate Mr. Knibbs on having brought before them in so interesting and clear way a subject which was so opportune".35.

Nothing can resist persistence. "Cabinet Minute 40(20, Conclusion of the 15th July 1920)" appointed a Cabinet Committee, on which Ministry of Agriculture was not represented, to report to the Cabinet "on the specific question of appointing a (separate)committee to inquire into the defects alleged in the Petition (of the statistical society on official statistics)" and to advise on the desirability of appointing a "consultative committee on the statistical work of Government Department" 37. The Cabinet Committee in their report wrote, "the present does not appear to be an opportune time to propose the creation of a new department which must impose an extra charge on public funds"(P.5), and opined that no case existed for an inquiry by a Royal Commission or a Parliamentary.

36. op. cit. No.(34) P.222
37. op. cit; (33)
Parliamentary Committee into the existing system of collection and presentation of official statistics. They recommended that a permanent consultative committee of statistical officers should be established with a view to ensuring effective co-operation and co-ordination between different departments. The power of the Consultative Committee were set forth. The Cabinet Committee recommended that the Consultative Committee should consist of official statisticians selected from various Government offices, who should, in turn elect their own chairman. It should have the services of an appointed secretary. Among the 18 ministries, boards and departments, a representative of the Ministry of Agriculture and Fisheries was also included in the Consultative Committee.

All departments were to be directed to inform the Consultative Committee of any change proposed to be brought about in the form or scope of their statistics. The Consultative Committee was allowed to initiate discussion and recommend changes to departments on matters relating to the subject, and reciprocally individuals and were entitled to approach the Committee through departmental representative. The Committee was also to advise the Government on matters concerning statistics, and was required to submit an annual report of their/
their proceedings to the cabinet secretariat for circulation among Government departments interested. The Committee was also to make an index to official statistics as was suggested 50 years earlier by Purdy.

After carrying out the campaign for half a century the Society succeeded in providing a central direction by way of this Consultative Committee. Needless to say that this was not all what they wanted, but it was certainly something similar. Whether or not in practice the Consultative Committee succeeded in solving problems which necessitated its establishment is a matter of opinion, but that it then quietened the popular demand for a central statistical department is beyond doubt. Moreover that a few years later the creation of central department in this country was found necessary speaks of a foresightedness, the credit of which must largely go to the Society.

We have possibly given more space than was apparently necessary to the topic of central organisation. The eradication of overlapping, duplication, inconsistency and incomparability however is facilitated by a central department. These defects are very common in Pakistan statistics. To quote personal experience, in 1951 the writer of this thesis joined the Civil service in the Co-operation and Marketing department, and was appointed to the Food and Cash Crops Branch.
A year later, in a leave vacancy he was temporarily appointed to work in the Market Intelligence Branch as Editor of the Monthly "Markets and Prices". Much to his surprise he discovered that the price returns by the provincial directors of agriculture were sent to six or seven different departments of the central Government and what was more amusing was the instance that two branches of his own department were receiving the same return. Still more absurd was the fact that neither of the two branches maintained a complete file of these returns. In this case we cannot blame the absence of a central statistical department and of course the instance quoted was corrected, yet overlapping and duplication is generally evident. There are several and serious shortcomings which are being left for the time being. But it justifies our dilation hereupon the subject of centralisation.

Different countries, to-day, have made different arrangements to suit their circumstances. Many of them are working satisfactorily. We have the experience of visiting the Irish (Eire) Central Statistical Office. It is doing fine work, or at least that is the impression our short visit gathered. Pakistan, too, has a central statistical office. It is under the Ministry of Economic Affairs, and not the Treasury. By the way the Irish office is/
is directly under the Prime Minister. But inspite of the Central office, Pakistan's official statistics are what they were before its establishment. It will be an unmerited slur on administration if this office be not made more useful to justify the expenditure now being incurred on its big establishment. We shall revert to this subject while discussing the general position in Pakistan.

It will be remembered that we are presently dealing with the activities of the Royal Statistical Society. In addition to what has already been said, the Society at its advanced age of a hundred galloped forward in the field of agricultural statistics. It formed, in 1933, within itself, an industrial and agricultural "organisation" or section. The establishment of this section was consequence of a large mass of opinion, both within and without the Society, which indicated that "the time had come for the formation of an organisation" for providing facilities "for the consideration of problems involved in the application of statistical methods to industrial and agricultural research." The section started holding four meetings a year from November, 1933. An annual supplement to the Society's ninety-six years old Journal embodying deliberations and proceedings of the section began to appear from 1934.

The war from 1939 onwards forced temporary suspension of its proceedings as well as the publication of the Supplement. In December, 1945, the Section and the Supplement were revived with changed set up. It is hardly needful to enumerate the activities of the group here. Interested readers, however, will find ambitious prospectus indicated in an anonymous "Note" in the Supplement for 1934\(^3\) and chairman's opening remarks published in the Supplement for 1946.

The nineteenth century opened with feverish attempts to collect agricultural information and to force on the attention of the Government the necessity of securing it officially and extensively. The demand could not long be resisted and official efforts began to be made from early thirties onwards. Those are to be discussed in separate chapters; here we shall pass in review the unofficial attempts.

Sir James Caird (1816-1892) provided the next link in the strong chain of Petty, Young, Sinclair, Mason, Comber, Couling and McCullock. He collected masses of agricultural data during 1850, made estimates of agricultural produce in the three divisions of the/

39. Ibid.

the United Kingdom in 1860 and again in 1878. Besides that Caird successfully imposed the responsibility of collecting agricultural information not only on the Government of Britain alone but also that of Pakistan (then part of India). In Britain he steered the project as member of the Lower House and in Pakistan a member of the Famine Commission appointed in the late seventies of last century. The story of his "struggle" with Government will be related elsewhere; we examine his first three attempts here.

Following the free trade policy of the late forties agricultural prices declined. Farmers and landowners began to complain against agricultural distress. They maintained that the situation was serious and that it was the direct consequence of the policy. The excited state of agriculturists indicated the necessity of some inquiry into the actual state of agriculture in England. The Times newspaper originated the inquiry. In the beginning of 1850 Sir James was "invited" to work as "Times Commissioner". Caird consulted Sir Robert Peel on the pertinence of the enquiry. Peel not only approved but encouraged it.

In January 1850, Caird accompanied by one of the staff members of the Times, J.C. McDonald proceeded to make the inquiry, but his associate withdrew shortly after.
Caird alone collected and shaped the matter secured by personal inquiries and inspection by going over farms in various districts of each county accompanied by farmers, landlords or their agents, and "by seeking access to the best and most trustworthy sources of local information." The data collected by "walking or riding over individual" farms together with thought provoking observations was communicated in the form of letters to the Times. About three score of letters appeared in the Times between January 1650 and December 1651. The data embodied in letters respected size of farms, wages, rents and rates, and yields. Besides that, the letters contained analytical notes and minute details regarding farm practices. Conditions of labourers and relations between tillers and owners of land were given as especial attention as Young gave to rotations in his Tours. In essence the letters bear similarity to Young's Tours. The Times Obituary, in its issue of 11th February, 1692, correctly observed that Caird's "letters afforded the only general account of the state of agriculture through out England since Arthur Young's Tours, made upwards of 80 years before".

41. Caird, Sir J; English Agriculture in 1650-1651, London 1852, P.x.
42. The Times dated 11th February 1892, P.10. It carries a two column account of Caird's work during his life. It is obituary note.
With a view to rendering these letters of permanent and extended benefit to farmers, Caird published them in one volume: "The English Agriculture in 1850-51" (London 1852). In the preface to this work Caird acknowledged assistance of the Times in these words: "To the liberality of The Times I feel deeply grateful, for the ample means placed at my disposal for conducting this inquiry, and for the perfect freedom with which I was permitted to express my opinions, irrespective of their political bearing". At the same place Caird uses the word "invited" instead of "appointed" which the Times used in the obituary note referred to above. The way of acknowledgment and the use of the word "invited" gives a fairly believable deduction that the Times, which originated the inquiry financed its operations without enlisting Caird on its staff. Again specific mention of "staff members" Rcdonald at both of these sources distinguishes Caird as independent inquirer assisted by the newspaper in the collection of agricultural information. Amongst those forms of machinery used for statistical collection which we have come across, this represents a new set up.

The letter embodied conclusions. Curiously enough, the much discussed livestock branch of agriculture in the preceding letters does not appear in "conclusions", but to our great satisfaction, the importance of agricultural statistics, their want and utility, is duly
duly stressed. The rest of the conclusions or recommendations comprise adoption of long leases* with liberal convenants, husbanding of fertilising matter running waste from big towns, cheapening the transfer of lands, alteration in the law of settlement, and facilitating the sale of encumbered estates. The great emphasis on the subject of agricultural statistics are obvious not only from the space devoted to them but also by the approach, concludes with the remarks that "it is, therefore, on grounds of public policy, not less than the special benefit of agriculture, that we venture to insist on the advantages of obtaining correct agricultural statistics"(P.524) He did not stop short at making the recommendation, but himself (on the basis of Couling's figures) framed estimates of English Agriculture. The classification and utilization of area in England was estimated as follows:

(million acres)

<table>
<thead>
<tr>
<th>Description</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total area</td>
<td>32.16</td>
</tr>
<tr>
<td>Cultivated land including meadow and arable pasture grounds</td>
<td>27.0</td>
</tr>
<tr>
<td>Uncultivated area</td>
<td>2.0</td>
</tr>
<tr>
<td>Moor and Mountain</td>
<td>3.16</td>
</tr>
</tbody>
</table>

* In 1881 Caird was examined by the Royal Commission appointed in 1880, to examine the depressed state of British Agriculture. On this occasion Caird in reply to a question said that he no more advocated long terms leases. He, now favoured two yearly tenancy. (See RCA Report, Q.62,767. P.174) In the final Report the Commission recommended discriminate removal of restrictive convenants (See P.31 of the final Report) The point was stressed by several witnesses but curiously enough not by Caird.
Area under wheat, barley, oats, rye, clover, peas, beans, turnips, mangold, potatoes, rape and fallow = 13.67

The merit of these 1851 estimates could be best illustrated by placing them with the corresponding figures obtained in 1867 (the return of 1866 excluded holdings of less than 5 acres) by official agricultural returns. The figure of cropped and fallow acreage, with slight individual variations, differed to the extent of less than half a million acres (cf 1867 returns) in aggregate. Even that difference would be explained to a considerable extent by the general opinion that acreage under permanent pastures had increased during 1850 and 1867 (cf Lawes and Gilbert J.R.S.S. (1868) P.365). Caird's estimate of yield of wheat per acre placed it at 26.66 bushels (in the table he used 27 bushels) has never been alleged as being far removed from the truth, although, as Caird himself said, the contemporary "leading statistical works" placed it at 32 bushels per acre (PP.521-22). 43

Caird's work in the field of agriculture rocketed sky-high when inspite of Government opposition he succeeded in carrying out the resolution in June 1864 which soon after led to/

43. op.cit.Caird's English Agriculture (41).
to the establishment of present yearly returns. But he did not end there. Two years after the commencement of annual agricultural returns which excluded production statistics, Caird made estimates of the total produce of agriculture in the three divisions of the United Kingdom. These estimates were given in the paper 44 (1868) which, initially and additionally, recounts the chief advantages of agricultural returns for which he "was the instrument. The estimates were those of home produce of corn, beans, peas and rye, potatoes, cattle, dairy produce, sheep, wool and flax for each of the three divisions of the United Kingdom as measured by value - the detailed figures of quantities being withheld and contrasted with foreign food supplies. In 1878 he made fresh estimates 45. This time the quantities produced besides their value were indicated. It was a fuller estimate but unlike 1868, figures for each division were separately not given. The commodities considered included all corn grains, potatoes, hay and straw, different meats, milk, cheese, butter and wool. These estimates were made/

44. Caird, Sir J; "On the Agricultural Statistics of the United Kingdom" in J.R.S.S. Vol.31, 1868, pp.127-145. Estimates appear on P.139. This article was read before the Statistical Society on March 17, 1868, and afterwards published under the title of "Our Daily Food; its Price and Sources of Supply", London, 1868. D.N.B. incorrectly gives the year of publication as 1868.
made at the request of the Royal Agricultural Society of England, which approached Caird to write a General View of British Agriculture for presentation to the International Agricultural Conference at Paris in 1878. In style and approach the two estimates of 1863 and 1873 are similar. Both statistically bring out need for "high farming" in order to reduce dependence on foreign food supplies, which Caird always pleaded. Looking at Caird's continuous and tireless efforts in the field of agricultural improvement, one is inclined to regard him as the Arthur Young of a later generation.

Caird was also twice examined as a principal witness before the Select Committee on Agricultural Statistics, 1855. His plan for compulsory returns of agricultural returns annually through paid machinery has been, in general, favourably commented upon by us elsewhere. But the whole was not equally sound. For example Caird's view that obtaining of livestock returns together with crop returns was desirable, but it was unimportant, and even unnecessary/

* Caird in his evidence before the Royal Commission on Agriculture (1860) pleaded for the establishment of an agricultural department. He suggested that the Board of Trade and agriculture. Eight years later the Board of Agriculture was separately established. We do not assume that it was a direct consequence of Caird's evidence.
unnecessary (cf Report of the Select Committee). We are inclined to differ with his argument that cereal supplies could be arranged if deficiency made appearance whereas livestock supply could not be augmented and therefore returns of livestock were not "so necessary". Without pleading our disagreement in detail we only instance the event that the collection of livestock returns was found more necessary than corn returns in Britain and the first official return in the present day annual returns related to livestock alone, taken in March, 1866, in consequence of cattle plague.

Caird was also not very enthusiastic about production returns though he changed his views from the leaving of it to individual calculations to those of establishing large farms representative of all conditions and localities. The change in his views was explained by him in the £3,000 plan published in The Times dated June 2, 1864, which suggested the establishment of 100,000 acres standard farms at 15 different places, which would provide basis for average yields. By this plan Caird justified his earlier views which had hinged on three objections; cost, inquisitional nature and difficulty in obtaining accurately./
It is suitable occasion now to turn to Sir John Bennet Lawes (1814-1906). Associated with Sir Joseph Henry Gilbert, Sir John performed numerous experiments at Rothamsted, which, to-day, is the oldest agricultural farm in the world.

Sir, John, during the later half of his life, also bent his energies towards agricultural intelligence. His thirty-seven annual letters published in The Times between 1863 and 1899 and three articles written jointly with Sir Joseph, which appeared in the Journals of the Royal Agricultural Society and the Royal Statistical Society, are most germane to our study. Only those we intend to examine here.

The basic data for letters came from the soil. The method of obtaining it was this. Lawes began to grow wheat on a 14 acre field from 1843. The field was divided into several plots varying in size from 3/10 to 6/10 of an acre.*

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* The total area of these plots, according to Viger, was 3.3 acres, whereas if each of the plots was 6/10 of an acre, as Lawes said, five of them should not have exceeded 3 acres. For us the point is of minor importance.
Five of them were treated in the same way continuously from 1851 onwards. Between 1843-1851, slight changes in the treatment took place. Thereafter one of them (Plot 3) was permanently unmanured, one (plot 2) was given 14 tons of farm-yard manure annually, the remaining three (Plots 7, 8 and 9) received the same amount of the same description of artificial manure every year. After twenty years continuous performance of these experiments Lawes felt reinforced in his convictions that the difference in the yield of these five plots was "mainly due to the varying character of the seasons". Proceeding on this belief, Lawes concluded that fluctuations in yield of the experimental plots could afford an indication of the general wheat crop-yield in the country. The average of the five plots, where the mean average of the three artificially manured plots was taken for one, was the basic figure of yield. According to Lawes, these plots represented all conditions in the country at large:

"some calculated to yield moderate crops, and others the heaviest produce which the character of the soils and seasons will admit of". He did not, however, apply the result of these plots without "care and reservation". Slight changes were made in the basic figure considering the characteristics of each season in the experimental field and the country generally.
Thus the ultimate figure of yield per acre, and naturally, that of production though based on the average of the yield on the five plots, was not the actual average but a correlated figure, which was arrived at after several considerations. It is, however, doubtful that these cares and cautions were effective enough in the absence of knowledge about the ratio of unmanured and manured area under wheat in the country. As stated above, Lawes' letters were grounded on this data. His first letter appeared on October 14th, 1863. There was no indication that it was a small beginning of a great undertaking. Sir John wrote: "So much has been said of late respecting the wheat crop of the harvest just passed that perhaps a statement of some of the results of my own experience on the subject may not be without interest to your readers. He added a small table giving the yield of seven plots yielding over 50 bushels during 1863 together with the preceding 10 years average. Explaining the performance of different plots, Lawes finally concluded that his "results" were confirmatory of the general opinion that of the decade the 1863 wheat crop was the largest and/

** The method of calculations is given in detail in the three articles to be discussed shortly here.
and superior—most. The second letter appeared in "The Times" dated October 19th, 1864. The yield of six plots instead of seven was given in the table. It also embodied the average for the preceding 12 years (1852-62 inclusive). In this letter Lawes claimed that his letter of 1863 was very near the truth. The general matter and its treatment resembled that of 1863. From third to thirty-seventh letter which was published in the Times dated October 7th, 1899 the tables included the actual yield of only five plots, with additional columns giving average for the preceding groups of years. The correlated figures for the whole country seldom appears in these letters, although reference was invariably made to the prospectus of crops. In size the letters grew larger and larger until the last one occupied three times as much space as the first! The additional space was devoted to comments and criticism of contemporary estimates of yield such as those made by The Times itself, to be mentioned later, review of the weather and discussion on the performance of different plots. Had death spared Lawes these letters might have continued. The fact that they gradually swelled in/

* For more letters please see The Times dated October 10th, 1866, October 5th, 1867, August 17, 1868, September 27th, 1873, September 26th, 1896, September 25th, 1897, October 22nd, 1898. These letters are indexed either under "wheat" or "Lawes" or both or neither. "The Times" index should therefore be carefully examined.
in size and besides "The Times" appeared in other "daily and agricultural papers" is itself a testimony of their popularity and utility.

Much has, of late, been said for and against their value and validity. These arguments have been examined along with the Venn and Vigor controversy to which we shall refer to in detail in the following pages. It will, however, be remembered that estimates of yield for several consecutive years had never been prior to 1863. The Times own estimates of yield have been made since 1866 and official estimates were not available for as many years after as shilling in the guinea. The greatest significance of having estimates is that they precede all other estimates including the official, and that their value has universally been acknowledged by all subsequent writers, including Vigor, for the period when they were the only source of information. Their influence in various forms on the official machinery lately geared for the task cannot be derived, although the extent of their influence remains a matter for speculation.

Lawes, jointly with Gilbert, wrote first of the three articles already alluded to in 1868. They calculated for harvest years (September 1st to August 31st) 1852-3 to 1868-69, to home produce by/

home produce by applying the yield figure they had worked out from plots. The acreage for the years prior to 1866 for England was derived from the difference between the estimates made in 1850 by Caird and official returns of 1866. The assumption was that increase or decrease had been gradual. For Ireland official figures were adopted. For Scotland official acreage which had been collected by Royal Highland Society was available for four years, 1854-57 inclusive. It provided a reliable basis.

For the remaining parts "exclusive of the Islands in the British Seas" the acreage obtained in 1866 was used for back years. Deducting 2.25 bushels per acre for seed requirements the home produce available for consumption was arrived at. Per head consumption on the basis of mid-harvest years population from home supplies was found to be 3.5 bushels per head (mean 1852-3 to 1868-9) for the United Kingdom.

Corresponding figure for England and Wales, Scotland, Great Britain and Ireland was 4.4, 1.4, 4.1 and 1.4 bushels respectively. Net Imports were added to home supplies, and with that total consumption for England and Wales, Scotland, Great Britain, Ireland and the United Kingdom rose to 6.1, 4.2, (2.8 being from Imports), 5.9, 3.0 and 5.2 bushels respectively.

For England and Wales average price per quarter was also given in a table (P.392). More or less similar calculations/
calculations were made in the two subsequent articles written under the same title: one appeared in both the Journals of the Royal Statistical Society (Vol.XIII, 1880, PP.313-340) and the Journal of the Royal Agricultural Society of England (Vol.XVI, 1880, PP.337-354) and the other in the Journal of the Royal Agricultural Society of England (3rd Series, Vol.4, 1893, PP.77-132). The main changes made in the last two articles were the inclusion of price data and evaluating the crop in money and reduction of seed rate from 2.25 bushels per acre to 2 bushels per acre from 1887 onwards. In explanation of this reduction since 1887 the authors said that "it is not, of course, assumed that then a sudden change at that period, but that a gradual reduction has taken place". ....(1893, P.111).

The article published in both the Journals in 1880 was also, during the same year, read before the Royal Statistical Society. The discussion that followed admits of the deduction that these articles aroused great interest in yield statistics. We are, therefore, reluctant to refrain from making the tempting remarks that Lawes articles besides being useful and interesting economic reviews contributed to the forces responsible for later developments in the field of yield statistics.

It was perhaps the awakening of great interest in agricultural statistics and data that also brought the press further into the field.
As already stated, The Times had instituted an inquiry through Sir James Caird, in 1850. During the mid-fifties of last century in the experimental stage of the returns which were being officially obtained most of the major periodicals came forth with support to the project. In 1861 Mark Lane Express, which for several years had been a source of agricultural intelligence, conducted "the first of this class" an inquiry from about 500 reporters to find out yield per acre of crops. This newspaper repeated the inquiry in 1883. On this occasion the number of reporters was only 251. Similarly in 1866, and every year since, The Times started publishing crop reports. It has lately been obtaining information from "about 350 crop reporters" who "are for the most part leading farmers in their districts who know the state of crops. Some land agents and some members of the staff of agricultural colleges are also on the crop reporters list".

In 1910 as many as 750 persons assisted The Times Inquiry (c.f.Venn's article). For England alone the list of reporters "is kept to a strength of 300-400 by adding names when necessary" and "detailed country figures" of yield are given. For Scotland and Wales the number of reporters is comparatively very small, for these two divisions are given the detailed country figures. The reporters are not paid.

47. Craige, Major P.Q.; "Statistics of Agricultural Production" in J.R.S.S., Vol.46, 1883, p.9. In this masterly article the history of early attempts has been briefly and beautifully described.
They send information because it is valued by the farming community. The reporters are, however, supplied with four copies of The Times in which these reports appear. These reports relate to harvest conditions in each county of England and the whole of Scotland and Wales at monthly intervals from 1st of July to the 1st of October inclusive. Their actual publication takes place in the second or third week of these months.

Initially these reports appeared as letters to the editors from Agriculturist or land agents under the heading "The Agricultural Crops of 1866" and so on. After one or two decades the present uniform system was adopted, which reviews the country as a whole. It has continued unchanged. In all of these reports the prospects of standing the crop are reviewed. Anticipated yield from the standing crops is tabulated. For England the figure is given for each county but Scotland and Wales are treated as one unit. By the way, Ireland is not covered under The Times reports. The first three reports are almost identical. They make forecast of yield in terms of percentage to the preceding five individual year's crops as well as decennial average. The forth report issued in October includes expected yields in terms of actual/
actual weight instead of percentage. The
descriptive part is similar to those of the
preceding reports.

Slight changes from time to time, have been
made in the crops included in these reports. Always,
on the whole, main crops have occupied attention.
Presently wheat, barley, oats, potatoes, sugarbeet,
and grasses are included in the first three reports,
but grasses are omitted in the final report.
During some earlier years crops like hops, mangold
and hay were also reported.

The method of calculating the yield figure
given in these reports was communicated to us by
the Agricultural Correspondent of the Times on
our request. He stated that the method adopted
for calculating the averages was as follows:-

1) The returns are sorted into counties;
2) An average for each crop for each county is
obtained;
3) An average is calculated for each of the four
districts (into which England is divided by
 grouping the counties) and for Scotland and
Wales;
4) The average for England is obtained by avera¬
ging the four district averages;
5) The average for Great Britain is calculated by
multiplying each of the averages for England,
Scotland and Wales by respective number of
returns, adding the results and dividing the
grand total by number of returns received from
Great Britain".
The "Times" reports are a valuable record of its kind. They commenced with the official collection of acreage returns in 1866, and cover a period of 18 years for which official estimates of yield were not made. They have continued for over 90 years, and as such a continuous series of yield statistics has accumulated. Both as a useful supplement to official statistics and a dependable source of check data they are invaluable.

Among all these estimates, only two were continuous for some years. They were those of the "Times" and of Lawes to be referred to as "Rothamsted estimates" hereafter. Their method and material has been described. It is their value and use which need now be mentioned. Nothing in the world is assessed uniformly and this is certainly true of these estimates.

Caird, himself an authority on the subject in one of his articles wrote "the annual trials of Mr. Lawes (later Sir), in Hertfordshire, which have been conducted with the greatest care for more than 20 years (when the article was written) have proved a wonderfully accurate test of the general yield of the country." 48

Craigie's - (another equally known authority, who made the first elaborate and private estimate of agricultural/

agricultural production in 1883) opinion is also available. Although his failure to refer to Rothamsted estimates in his article in more detail than he did has sometimes been construed to depreciate their merit yet (c.f. Vigor's paper) his remarks are self explanatory. Reviewing various attempts made at framing statistics of agricultural production he remarked that "most of the inquiries have stopped short at the produce of the wheat crop. This has been so from the crude guesses of our earlier calculations to the elaborate experiments and valuable records which Sir John Lawes now lays year after year before the Country." More opinions could be cited to strengthen the right side of the issue if it was needful. Suffice it to add one more, that of Venn. He referred to both Rothamsted and the "Times" in two articles published in the Economic Journal. In these articles he went to the extent of saying that Rothamsted estimates "have universally been accepted" and made them one of the yardsticks to measure the accuracy of English official estimates for the periods when they were concurrent. His conclusion was — and with some truth—that official estimates of yield, and naturally, that of total production were under-estimates due to "extreme conservatism" of official reporters.\footnote{Op. cit. No.(47).}

There were other standards, too, on which Venn judged and presented a prima facie case about English official estimates as "under". They were that:

1. were stagnant.
2. were chronologically and geographically anomalous.
3. denied the appearance of good seasons.
4. did not recognise plant breeder's efforts.
5. did not exhibit harmony with Scotland & Ireland.
6. failed to produce "an amplitude of range" found in continental countries.
7. supported a "contingent possibility" that the practice of forecasting had exerted depressing influence on official crop reporters.\(^1\)

Although we are here primarily concerned with the appraisal of estimates and could therefore have confined our comments, it is, both tempting and instructive to examine the whole subject in some detail. There is justification too, in that we are basically searching for improvements of official statistics as a whole. The estimates nevertheless shall be discussed before the rest of the points.

Venn’s comment was an adverse reflection on official estimates. An official statistician, Vigor, a few months later/ 

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later (in November 1927) read a paper to the Royal Statistical Society, London. It was in effect a rejoinder which dealt with Venn's paper, point by point, refuting all allegations. Vigor's reference to the Rothamsted estimates was first rebut; refusing any statistical value to these estimates. His main arguments were that an area 3 1/3rd acres (p. 9) situated in one locality could not represent the yield of vast area under wheat, and that the average which was adjusted according to human judgment, though within a narrow limit of two per cent, had no objective grounds. He instanced that during 1921 when officials reported highest yields of the decade, the average of the plots indicated a fall of 20% over the preceding decennial average. Why he did not consider the small and localised plots as representative of the country was explained further. Here he quoted Fisher's "The influence of rainfall on the yield of wheat at Rothamsted" (Phil. Tran. Royal Society, London, B, 1924, Vol. 213) and Hooker's "Correlation of the weather and the crops" (J.R.S.S. 1907 and "The weather and the crops in Eastern England" (Meteorological Society 1922) which yielded inference/

inference "that the conditions of cultivation which apply to Rothamsted experimental plots could not be expected to furnish an entirely trustworthy guide to the yield even of the farms on varying types of soils in the surrounding county; much less to that of the total area of the United Kingdom." The apparent conformity claimed by makers of these estimates at earlier stages with the contemporary records, according to Vigor, was due to the acreage and average yield being both hypothetically estimated. The fact that such conformity was more plausible for the periods before official acreage figure became available tended to support the view that the blame was always thrown on acreage figures in order to justify yield figures.

Vigor also questioned the omission by Lawes of certain stocks while arriving at consumption figure for the country which was used by him as check data. He also brought in the reply which Gilbert had given to Chedwick, who in 1880 during discussion on a paper read by Lawes had doubted the validity of estimates, and when Gilbert had told the audience that the 27 years average of their estimates had corresponded with contemporary estimates "within an eighth of a bushel". We think that Vigor's vigorous defence against Venn's violent charges had involved undue attack on the Rothamsted figures.

53. Supra F.11.
Perhaps, he would have been less hot in denunciating these estimates if he had coolly read Lawes own statement which he had made at the end of his paper read in 1880, and which was jointly discussed with a second paper by Craigie in the Royal Statistical Society. Lawes had "said that an apology was due to the statistical society for offering them a paper "so full of guesses, instead of figures which could be altogether relied upon. 54." Even in one of his articles (J.R.A.S.E. 1868, P.369) Lawes himself called those estimates "a priori, anything but satisfactory." Much was certainly true in what Vigor said, but more of it was mere defence rather than truth. If Chedwick's opinion, for instance, was to be used against the estimates, then Powers, a participant in the same discussion, criticism and remarks and Gilbert's satisfactory reply to them should not have gone unnoticed. It could have balanced opinions./

54. Lawes, J.B. and Gilbert, J.H; "On the Home Produce, Consumption and Price of Wheat, over Twenty Eight(or Twenty Seven) Harvest Years, 1852-3 to 1879-80 Inclusive" in J.R.S.S.Vol.43, 1880.P.332- This paper (PP.313 to 331) was discussed together with Craigie's above mentioned paper and discussion is published in the same journal on pages 332 to 340. Lawes had read the paper and Gilbert had replied questions. Lawes had communicated on Craigie's paper.
The Times estimates were objected to on four main grounds and with some truth. One that they were based on similar methods but on less extensive opinion than were the official estimates. Secondly, they were reported for each district as against each parish, and unlike official estimates, which were weighted average, were grounded on simple arithmetical average. Thirdly the Times estimates were made both for cereals and roots on the first of October, and they thus preceded the time of official estimates for cereals by a fortnight, and for potatoes and root crops by six weeks. They were as such deprived of numerous actual threshing results which official estimates had the advantage to have for cereals. For potatoes and root crops they were too far in advance of harvest to avoid an element of forecast, and lastly but more cogently the reason for relative over-estimation was linked up with the fact that the Times reporters, as a class, were drawn from "eminent and experienced agriculturists" who might tend to base their estimates on their own farms, which "ex-hypothesi" were "among the best cultivated". That was, therefore, the average of superior farms rather than that of the whole country.
Against the charge of 'stagnation', Vigor showed fluctuations in various counties. In the discussion, three more explanations were available from this topic. They were, briefly, availability of less and less labour and capital for English agriculture since after the eighties of the preceding century; steady decline in the prices of produce which had depressed incentive for "high farming" and the neglect of drainage for about 20 years in England. These causes also explained why harmony among Scottish and Irish figures on the one hand and of the English on the other was lacking.

The same also in part explained the apparent ineffectiveness of plant breeding work in yields. But they were all dealt with separately and individually. Year to year fluctuations in various counties were statistically shown which made the return of good seasons visible. Referring to plant breeders, Vigor remarked that there was no definite proof of the universal expectation that new varieties would definitely effect yield average.

With reference to chronological and geographical anomaly Vigor said that Venn's view was based on the "oft quoted" economic theory that when areas "under a crop have been reduced it is "the most fertile land which is retained" and that Venn had disregarded its limitations. Hedging against his own findings as based on limited data/
"data given in one of his own papers "The Increased Yield Per Acre of Wheat in England Considered in Relation to Reduction in the Area" (J.R.S.S. 1916) which had supported the theory, Vigor quoted the different view held by Prof. D.H. Macgregor. The Professor in his report (P.152) as a member of the Agricultural Tribunal of Investigations (1927) had stated that "the land which is first lost to a crop is not necessarily that with the lowest yield, but that with the lowest yield in relation to cost." Several causes were related to explain disparity of English yield with those of Scotland and Ireland. "High farming" system in both and higher immunity to weathers in Scotland and persistent efforts for better farming in Ireland since depression of 60's was said to be the major aim for higher yields.

Comparison with continental countries was declared invalid because the period selected by Venn for relative study was owing to war, abnormal.

Replying to the allegation that the forecasts had "depressing influence" on crop reporters Vigor said that forecasts and yield estimates were independent inquiries. The yields were estimated parish by parish, while forecasts respected the whole district and were expressed as percentage of the average of whole area. Forecasts were less/
less exhaustive than final yield estimates which were reported with strict attention "to facts". The main reason for relatively low yields according to Vigor, was "a succession of seasons of very unfavourable weather conditions".

Vigor further emphasised two facts: one that official reporters were continually being replaced and thereby "fresh blood" was being introduced constantly with a view to raising competence and experience in the official reporting system. Secondly, that fundamentally the same class of reporters was employed in Scotland and as such there was no ground to consider them different from English reporters. In the latter Vigor was supported by Mr. Caie of the Scottish Board of Agriculture, who through a communication read during discussion had entirely supported the general stand taken by Vigor. All the participants in the discussion namely Rew, Bledisloe, Turner, Forrester, and Caie were generally agreeable to Vigor's reasoning. The only exception was Yule, but even his remarks that "he did not think that Mr. Vigor had quite proved his case as against Mr. Venn's "arguments" were derusive. He, in fact raised a new point: that he would not trust "any form of eye-estimate" and this objection was applicable to all estimates under discussion, but inspite of it being theoretically very weighty, it did not find much recognition during discussion. If the opinion of speakers during discussion could be taken for judgement to decide for the victor and vanquished/
vanquished between Venn and Vigor, the latter was victorious. It is, however, fair to state that most unequivocal support to Vigor came from official statisticians like Ken and Caie. It is suitable to remark that although Vigor successfully pleaded his case, yet the issue raised by Venn that official estimates tend to be "under the actuals" continues till today, to baffle official statisticians in many places including Pakistan. To particularise, reference is made to the proceedings of the official Grow More Food Conference held in Karachi in 1952. In a table exhibiting the "average quantity of grain available for human consumption" in Pakistan. Official estimates were inflated by 5%. Its explanation in the following paragraph says "Experience has shown that the actual production is generally more than the official forecasts". These remarks were grounded on random sample survey. A survey "carried out on wheat in the Punjab during 1944-45 revealed that this under reporting was of the order of 5%. The forecast production for all crops has, therefore been increased by 5%". Although it is statistically questionable to apply the results of one province and of one major crop, wheat, to all food grains for the entire huge country yet that the official estimates were underestimates was again demonstrated through repeated Crop Estimate Surveys based on Random Stratified/ 

* The word "forecast" refers to final estimates in this case.

Stratified Sampling Technique. These surveys were made on wheat and cotton in the old province "Punjab". These two crops are the most important crops of West Pakistan. The conclusion drawn from wheat during the first large scale survey, 1951-52, was that "the official estimates are under-estimates but to it was added: "The difference in the yields as estimated by the two methods is not important" and for cotton the conclusion was that "the survey estimate was higher (than the official estimate- survey was also official) by about 8,354 bales (of 392 lbs. each) in these six districts." The survey on cotton was repeated for the second year during 1952-53. This time the finding was that "in below normal years usually the official estimates are pitched high". It would be too hasty to conclude that Venn's charges have been finally established, but the appearances are that they are at least not entirely groundless. Referring twenty-five years later to Venn's and Vigor's "long and lively controversy", Britton and Hunt in their excellent review of Agricultural Statistics correctly wrote that "the issue was not settled; (between Venn and Vigor) the method of crop estimating continued unchanged; The Times yields still tend to exceed the official estimates by an appreciable margin/.

and added that perhaps the most that can be said "(about official estimates) is that if there is any bias in the official yield estimates it does not appear to be such as to give rise to production estimates which are irreconcilable with the other statistics available". Venn also devoted much space to the discussion of the accuracy of the crop estimating and forecasting in his "The Foundation of Agricultural Economics" (1933, 2nd Edition). He again reached the same conclusion that official series "have been permanently biased in the lower direction over a number of years". Commenting on this book a reviewer (see J.R.S.S., 1934, P.183) said that Venn's conclusion was unreasonably hazardous. To us, however, Venn's own opinion expressed in a note at the end of Vigor's rejoinder is most acceptable. In that note Venn assured that he did not regard his "deductions infallible" and said that "the truth if ascertainable, would be found to lie somewhere between our divergent standpoints".

The value of the Rothamsted and the "Times" estimates which we had set out to assess could, therefore, be placed "between" the two opposite extremes.

As regards their use, they afford material for analysing and checking the official estimates. Apart from that they must have goaded the Government to decide on the collection of production statistics which she had delayed for about 18 years for crops after the beginning of the collection of
dulations of the United Kingdom", J.R.S.S. Vol. CXIV, (Series A General) part I, 1951; P.79

59. Venn; op-cit, (50) P.40
of acreage returns. For livestock, however, official estimate was not attempted until 1908. Whether this goal was only by way of demonstration of their practicability and utility or was a constant pointing towards the omission of a useful work or both is unnecessary to say. But either alone would justify saying that the work done by Rothamsted and the "Times" by way of promoting agricultural statistics was far more important than the mere framing of yield estimates.

The Royal Statistical Society was not the only academy, nor was Caird the only individual, nor the Times the only paper to work for agricultural statistics during the period here under review. There were many more. The Royal Highland and Agricultural Society of Scotland did commendable work in this field. Apart from the collection of Scottish Agricultural statistics for the Board of Trade during 1853-1857 inclusive (to be discussed later), the Society had engaged itself in the collection of agricultural as well as forestry statistics.

from time to time. Annual reports on the cereal and other crops which the secretary of the Society had been collecting from 1880 to 1954 are simply invaluable. The Secretary used to issue twelve question to "eminent agriculturists"; on an average one in each county; to elicit information both statistical and descriptive, on the yield of crops and conditions of livestock and general farming in Scotland. A summary of these replies in respect of each county had been annually included in the Transactions of the Society. Among other things these summaries embody data of the yield of crops expressed numerically for three quarters of a century. The crops covered include three principal corn crops, potatoes, turnips, mangold and sometimes also hay and pasture grasses. Its collection and publication was dropped in 1954, because more extensively reported data on the same subject was now available. The present secretary of the Society, whom we consulted on the issue, told that besides the fact that more reliable reports were being published by the Scottish Department of Agriculture, the decision to stop the collection of these reports was also based on considerations of economising space in the Transactions.

* Information on trees was requested from Parish Clergics, individual proprietors, factors, and foresters in various districts. During 1880 the number of questions was eight. The additional four since 1881 respected livestock, pasture and wool.
It also emerged that even the reproduction of official statistics which have appeared in the Transaction since their collection would be discontinued from 1957 onwards. It is a coincidence that, exactly a century ago, in the 57th year of the last century, the society declined to collect agricultural statistics for the Board of Trade after performing that duty for five years, and in 57th year of current century it decided to discontinue their over ninety years old publication. The later incidence will terminate age old association of the Society with agricultural statistics of Scotland, to which it had in fact given birth.

The Mark Lane Express newspaper had been also collecting statistics of the yield of crops. It commenced earlier than the Times; the first inquiry being conducted in 1861. Over 500 correspondents assisted the inquiry and returned average yield of cereal crops in England for the decennial period ending with that year. The same paper repeated the inquiry on several subsequent occasions, but the number of correspondents diminished. In 1882, for instance, when returns for average yield for the past seven years, and the estimated crop production for 1881 were also requested, there were only half as many correspondents as twenty one years earlier.
(op.cit.47 p.11). It is remarkable that the reduced number of correspondents nearly matched the number of those used by the Times in its similar inquiries, yet it is interesting to notice that the Times, which is a junior undertaker of statistics is the better known to agricultural statisticians (cf Venn and Vigor Controversy) Probably only periodical collection of statistics and the final cessation of the Mark Lane Express in 1924 (first appeared in 1832) would account for this.

*In 1867 the "Farmer" published yield per acre of food crops in England and Scotland. The yield was based on several reports, and in respect of ten different geological districts instead of counties. The highest yield of 31 bushels for wheat was reported from drift lands, whereas the lowest for the same crop was reported for wealden lands. It was only 21.5 bushels per acre.

In 1870, the "Chamber of Agriculture Journal and Farmers' Chronicle" made an inquiry to ascertain "by a very extensive series of special reports" the normal or standard yield of major crops for each of the poor law Unions as well as the County.*/

* We could not find the original reference. It is, however, certain that the "Farmer" was first published in 1865, and continued under various names until 1889, when it was issued as "The Farmer and the Stockbreeder". The information is called from Craigie's forementioned paper.
Returns from "hundreds of leading farmers", distributed in different parts of Great Britain, were obtained. The same paper made another inquiry in 1882. This time the supervision was entrusted to the able agriculture statistician, Major Craigie. He progressed it in two parts. One, an intensive investigation by a circular and, two, by private application to agriculturists, millers and traders. The data collected comprised two sets: average yield during "last harvest" and average yield over the two years immediately preceding. The inquiry was, however, limited to grain crops. It embraced both England and Scotland. Of the unknown number circularised as many as 800 sent replies of which 730 were found valuable for the computation of results. It seems fair to remark that under similar conditions the results of Craigie's inquiry would be more reliable than subsequent official returns of yield which have been obtained from about half of this number of reporters. The results of this inquiry were embodied in the paper, already quoted read by Craigie to the Royal Statistical Society in January, 1883. The merit of this inquiry lies not as much in that it supplied authentic information as/
as in the demonstration it afforded that it could, and should be collected. Referring to the lack of "official" estimates of crop yields, Craigie remarked "I feel sure those who have in the dark directed their efforts to frame calculations, will be first to acknowledge much remains to be done", and added that "I am now brought to inquire definitely whether we may not proceed to attempt to carry out a system of reaching approximate accuracy... If an unofficial person... can procure over 800 individual opinions to represent the cultivated areas of Great Britain, I do not think the new department of agriculture, when we get it, need despair". Incidentally, Craigie was a great advocate of a Board of Agriculture (cf The Agri. Gazette dated June 10, 1889)

For crop yield returns Craigie suggested that the machinery of Chambers of Agriculture, Farmers' clubs and agricultural societies "might be pressed into the service". He also proposed in the paper, supplementary returns of livestock to appraise "meat supply difficulties" and finally "trusted" that "the matter will be seriously entertained by our statistical authorities." (Pages 5, 19, 35 & 36).

The fact that official collection of crop yield returns commenced the following year might not be a mere coincidence.

A few years earlier, the Royal Commission on Agriculture, appointed in 1879, to inquire into the causes and remedies of the depressed state of agriculture, collected masses of agricultural statistics. The final report abound in tables of price, yield and production of cereals, roots, flax/
flax and livestock products. The yield statistics comprise two sets. One is actual record for a number of years of some farms, and this is the only set as far as livestock products are concerned. The other is the average yield of crops over a number of years prior to 1878, beginning in some cases with 1857, as well as during 1879. The compilation of the latter set of figures was effected in two stages; by issuing an eleven head questionnaire to farmers, estate owners, agricultural and local bodies. These questions, covered a wide field, but yield of crops, milk, butter, cheese and whey, and their utilization formed an important section. The final report of the Commission does not bear the results in respect of commodities of animal origin. The second stage was the supplementing of this data through visits to practically all districts of the country. It was done by four itinerary assistant Commissioners. The notes and Explanations necessary for appreciation of these estimates will be found against 0.52,943, 0.57,422, 0.57,427, 0.64,085, 0.64,123 and 0.64,734, but the bulk of tabulated data was thrown in appendices to the final/
final report. The use and object of the statistics is well demonstrated in the recommendations made by the Commission, which suggested several legislative measures to remove depression.

Some of the late writers objected to the waste of energy in the task, but there were others who commended it, although they did not entirely approve the way it was compiled.

Numerous above mentioned efforts made by individuals, academies and even official bodies at gathering crop yield statistics proved a storm which broke full in official quarters with the result that, in 1884, and every year since, returns of crop yields have been annually obtained officially.

With the institution of yield returns about 20 years after the collection of acreage and number of livestock returns statistical thirst was anything but quenched./*

63. Anon; Report from Her Majesty's Commissioners on Agriculture (Final) C-3309, 1882. Appendices PP.153-181. All data collected was not published in the Report (see Drucè's speech during discussion on Craigie's paper, (op. cit. 47, P. 51).  
64. Anon; Preliminary Report from Her Majesty's Commissioners on Agriculture, H.M.S.O. (c-2778) 1881.  
65. Anon; Minutes of Evidence taken before Her Majesty's Commissioners on Agriculture (C-3096) 1881. For questions all the three references shall have to be consulted. The yield data is also reproduced in Craigie's (a.q.) paper.  
66. cf. op. cit. Craigie (47).  
* Reference to it will be again made in the following chapters.
Much remained to be done on the side of livestock. Thanks again to unofficial enthusiasm which preceded official realisation of the necessity for elaborate statistics for livestock productions; of meat, milk and wool. Many such attempts made prior to 1866, and quite a few like those of the Statistical Society and Caird, since then, have been discussed at appropriate places in this review. Since 1866 the number of livestock has been ascertained officially. As such the difficult task of estimating both number and yield and production faced by individuals like Young and McCulloch had become easier, though not equally simpler. Complexity is illustrated by computations, yielding different results, made either by contemporary authorities or by the same authority at different period. It was true of crops also, but especially so for livestock. Whatever the result there is no denying the fact that these were most valuable statistics for the periods they belonged to.

Scores of people could be brought into this review, but after a lengthy study it is thought advisable to limit it to such persons as have either made inquiries into the subject or affected some important adjustments in the original calculations.

We begin with meat. Thompson and Clarke made independent calculations during 1871. Thompson, in a paper "On the Management of Grass" assumed that/
that 25 per cent of cattle, 42 per cent of sheep and 116 per cent of pigs returned in June Returns were annually slaughtered, and that the average weight for each class of animal of all ages was 600 lbs, 60 lbs and 134 lbs. respectively. He treated the whole of the United Kingdom as if it were on one big farm, and assumed that relative proportion of different classes of stock and their disposal would be the same for the total number enumerated in the returns as in the case of an average self maintaining herd. He had arrived on these assumptions after consulting a "considerable number of opinions" of butchers, salesmen in leading markets, local cattle dealers and railway companies. Cathcart, then president of the Royal Agricultural Society referring to this paper in a biographical note remarked that "in point of style and method" it was "full of ripe experience" and was best of Thompson's writing. Thomson's assumptions were critically analysed by Rew in a /

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67. Thompson, H.S. "On the Management of Grassland with especial reference to Meat Production" in JRSAE Vol.viii, 1872 PP.152-179. This paper concludes that grasslands were unsatisfactorily managed and if properly manured they could raise sufficient meat for population.

a memorandum prepared for the already reviewed "Meat and Milk" report of the Royal Statistical Society. Raw's main objection was based on the arithmetical anomaly which arose from two of his assumptions: one that the herd was self-maintaining and the other the percentage of stock born, dead and marketed. The two assumptions could only coincide if the percentage of annually slaughtered animals was assumed as 21% for cattle, 36% for sheep and 136% for pigs. Notwithstanding criticism Raw regarded Thompsons' work "of great importance ... by reason of the fact that it laid down a basis of calculation" and added that it had "been generally accepted, with the slight modifications, by subsequent writers and in many official returns". 69

Clarke, through his own inquiry, arrived at different results which he gave in a paper published in the Chamber of Agriculture Journal for 1871. He assumed that 29% of cattle (14% higher than Thompsons figure), 50% of sheep (6% higher) and 100% of pigs (16% lower) were annually slaughtered. His estimated weights for dead meat for each class of animal also differed. Cattle were placed at 560 lbs. (44 lbs. less than Thompson's figure), sheep at 56 lbs. (4 lbs. less) and pigs at 90 lbs (44 lbs. less). 69

Two years later, in view of the replies received to a series of questions addressed to thirty three (34 for sheep) prominent agriculturists in twenty four counties in England and Wales, and Scotland, he drastically revised the proportions slaughtered as well as the average weights of each class of animals. For proportions he reduced 1871 figure of 29% and 50% for cattle and sheep by 10% and 18 per cent respectively, but increased by 36% to 136% for pigs. With regard to average weights, the cattle weight was reduced from that of 1871 figure by 46 lbs. to 514 lbs. The weight of sheep on the other hand, was increased by 11 lbs. to 67 lbs. and so also of pigs by 44 lbs. to 134 lbs. Clarke handed in these tables of production to the Select Committee on Contagious Diseases (1873). The tables were further corrected "to some extent" in the light of subsequent inquiries regarding age at which animals were killed and their average dead weight, and published in the Chamber of Agriculture Journal for October, 1875, and reproduced, in/

70. Anon: Report from the Select Committee on Contagious Diseases(Animals) together with the Proceedings of the Committee, Minutes of Evidence and Appendix(House of Commons) 1873. See Q.8659 and Appix 13, PP.629-633.
in summary, in the paper titled "Practical Agriculture" which the Royal Agricultural Society presented to the International Agriculture Conference meeting in Paris in 1878. Clarke's calculations are very elaborate, and it is difficult to follow his methods easily for cattle and sheep and finally for pigs. In 1872, Jenkins and the Veterinary Department of the Privy Council calculated meat production. The former depended, to a considerable extent, on Thompson's estimate and then later on Clarke's. Jenkins had read the paper on the production of large and small farms to the Farmer's Club (the Journal of the Club for that year inspite of efforts could not be seen), in which he had progressed his calculations, through numerous inquiries, to work out meat production per acre cultivated, assuming that it was cultivated exclusively for meat production. His estimate was 91 lbs. per acre. 72


72. cf. Rew's op.cit. (69) also Craigie's op.cit. (47).
The Veterinary department included their estimate in their annual report for 1672, published in 1673. The department assumed Clarke's average weights, but they assumed different proportions for cattle and sheep, calculated on the basis of June returns. They did not, however, make any inquiry. They applied rough and ready formulae.

In 1676, Macdonald, on the suggestion of the Royal Agricultural Society while investigating into the causes of many farmers ceasing to breed horses, several others replacing cattle by sheep and still many others giving up cattle breeding also estimated meat productions. Although he appears to have reached the figures of proportions annually slaughtered independently, these were almost the same as adopted at one time or the other by Clarke or by Thompson in 1671. His estimates of average weight for cattle, sheep and pigs were 700 lbs.

70 lbs and 140 lbs, which he seems to have

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74. Macdonald,W; "On the relative Profits to the Farmers from Horse, Cattle and Sheep Breeding, Rearing & Feeding in the United Kingdom" in JRSB, Vol.XII, 1876, PP.1-108. Rev(op.cit.69) incorrectly refers to Macdonald as "James" instead to "W.Macdonald".
have guessed were, however, higher than earlier estimates except that of Clarke's final estimate for pigs which placed them at 149 lbs. It is interesting to notice that like the first estimate of Clarke and Thompson the ration of 10:1 of assumed weights for cattle and sheep respectively was also maintained by Macdonald, although the absolute figures were as different as 560:56; 600:60 and 700:70 respectively. It is, however, clumsy that Macdonald, who issued a ten-items questionnaire to over 200 residents in various parts of the United Kingdom did not include any question likely to elicit information either on proportions slaughtered or the average weight of animals inspite of the fact that he realised the lack of "thoroughly reliable statistics as to the number of cattle, sheep and pigs annually killed as well as their weights". His failure to take into account production of milk and its products is also not understandable. To meat, nevertheless, a great deal of attention appears to have been devoted. It is easy to follow him when he made no allowance for the loss of animals by death or disease. This was to be counter balanced by veal calves and lamb which were slaughtered without being returned in June. Similarly his explanation for assuming 140 lbs. average weight for pigs, which he thought was/
was rather on the high side was acceptable because he considered that the proportion of pigs annually slaughtered was higher than 100 per cent which he had assumed.

In 1877, and again in 1878, Caird, in 1884 and 1887 Craigie, in 1886 Little, in 1888 Howard, in 1893 Elliot and in 1894 Giffen made estimates of meat production. Except that of Caird, their calculations were either adjustments or adoptions of Thompson's estimates. It might be stated that James Howard was said to have based his estimate on Clarke's findings by Craigie in his paper of 1883, whereas Rew in his Memorandum (op.cit.69) thought that Howard "adopted Sir H.M.Thompson's Formula. We could not see the original reference, and as such it is difficult to say which of the two is correct. Speaking off hand we consider Craigie's opinion as more reliable because Rew seems to have culled much Craigie's style and stuff in his several similar writings. By the way, Craigie had adopted with slight variations, the scale proposed 13 years ago by Thompson for meat/

75. cf. Rew, op. cit. (69).
meat estimates.

In 1896, Turnbull made very elaborate calculations of farm production and gave the estimated results in numerous tables appended to his paper "Farm Capital and Revenue". He had also attempted similar estimates during 1893 for the London Farmer's Club, to which he made "some slight additions" and presented to the Royal Commission on Agriculture (1896), which published them in their Minutes as appendices. In answer to the question put by Little, who ten years earlier had himself made some estimates on the basis furnished by Thompson as modified by Craigie, if the witness had made the most careful calculations" from the same estimates, Turnbull replied "I compared their estimates with my own" and that he had not followed even the same principle because Thompson's statistics contained "serious mistakes".


79. Anon: Minutes of Evidence taken before Her Majesty's Commissioners appointed to inquire into the subject of Agricultural Depression with Appendices, Vol. IV (House of Commons), 1896. Appendix A Page 547.

80. Supra. Q. 59, 275, Q. 59, 276, Q. 59, 277 also see Q. 59, 357-59, 369.
His main reliance, apparently, was on agricultural returns, which according to Rew was "never simple and satisfactory". Prior to the availability of estimates framed, at the opening of current century, by the Royal Statistical Society's Committee (already discussed as meat and milk Committee) of which Rew was member, he adopted Turnbull's calculations of meat production in his writings. In his paper "Farm Revenue and Capital" Rew wrote "I have had the advantage of examining the very voluminous details of Mr. Turnbull's figures...it appears to me that as a whole, they form the most complete statement of the quantity and value of the home production of meat and I have...adopted them as a basis of calculations for the present purpose". 82.

We turn to milk. Mention has already been made of the estimate made in the proceeding by Morton in 1865. In 1875, the same authority, placed the milk yield at 420 gallons apiece per annum. Morton thought that "this is most likely more than is yielded by an average cow beyond the requirements of its calf" 83 reduced the figure to 400 gallons for England.

In 1878, Morton reduced the figure to 370 gallons for Britain, which he gave in "dairy farming" section/

81. op.cit. Rew (69) P.675.
82. Rew, R.H. "Farm Revenue and Capital" in JRSAE, Vol.6, 1895. An interesting analysis of "past estimates" is a part of the paper. PP.30-46.
section of the paper prepared by Royal Agricultural Society for Paris Conference (JHAE 1878 a.q.). It is amusing that in another section of the same paper titled "Practical Agriculture" (a.q.) Clarke considered 420 gallons as a safe estimate. Again in 1885 Morton extended his estimate to the whole of United Kingdom and reduced the yield figure to 292 gallons. In 1878 allowance for calves was made at the assumption that they take one sixth of the gross production, but in 1885 their consumption was assumed as half of that placing it at one-twelfth.

The method adopted in reaching these estimates comprised adjustment according to size and breed of results obtainable from certain private dairies. Much seemed to depend on personal judgment.

Clarke, besides meat, also had attempted milk estimates. Prof. Sheldon in 1879 and again 1889 estimated milk yield. He mainly relied on Clarke's basis. On the second occasion, however, he inflated the former estimate of 285 gallons by 20 gallons due to the "improvement of milking qualities of cows". For calves Sheldon allowed one eighth as against one sixth at first and one-twelfth later allowed by Morton.

84. Morton, J.C. "The Dairy of the Farm", London 1885, Chapter I is on dairy statistics.
Rew made an exhaustive, and first of its kind, inquiry into the milk yield in 1892. He issued a circular and received 74 returns from 45 districts of the United Kingdom. This information was supplemented by actual records obtained from 50 herds. Although the average yield in the first case worked out to be 471 gallons and in the latter 480, Rew estimated it at 435 gallons. Out of that he deduced one-tenth for calves reaching the estimates of 400 gallons apiece for the United Kingdom.

We noted it with interest that Rew’s paper on "Production and Consumption of Milk" resembled in its style to Craigie’s paper on "Production and Consumption of Meat" (a.q.). It is satisfactory that Rew has acknowledged Craigie’s "invaluable assistance and advice" which makes it easy to understand resemblance. Probably for same reasons Rew in this paper follows Craigie’s footsteps he had set in 1883 in his paper "on statistics of agricultural production" (a.q.) for advocating urgency of official returns for yield and production statistics. Craigie had dealt with crops. Rew dilated upon milk and hoped that "are long, whether with the agricultural returns or by special inquiry" the Board of Agriculture would/
would be able to give, "for the first time" complete and reliable information on the production of milk and its products. Unlike Craigie, Rew's hopes took time to materialise. Nothing was done before the census of agricultural production taken in 1906, before which unofficial estimates were also made very carefully by Turnbull (a.q.) in 1898, by Blyth in 1899 (cf. Rew op. cit. 8) and by the Royal Statistical Society in 1902 of which Rew again was an active member.

The Royal Highland and Agricultural Society of Scotland had also come in the field of milk statistics in 1903 when at its own expenses and initiative, it introduced milk recording system in the country.

During the period here under review, the first wool estimate of production was framed by Bottomley, a wool merchant, who published it in "Bradford Observer" dated 13th October, 1870 (cf. Hamilton, infra). He placed production of wool in 1870 for the United Kingdom at 157 million pounds (m. lbs.) as against 175 m. lbs, estimated by Baines (a.q.) in 1858.

Towards the end of same year Hamilton pushed it to 160 m.lbs. He multiplied the officially available average number of sheep for 1866-70 by the average weight of fleece for each county as supplied to him by M/s J. and J. Hubbard of Bradford. The average weight for different counties was strikingly different. It varied from 6 lbs. in Lincoln to 2½ lbs. in Monmouth. For Ireland and Scotland one figure for the whole of the country was supplied. It was 6 lbs. for Ireland and less than 5 lbs. for Scotland.

In 1875 Earl Cathcart applied the same tables to the number of sheep returned during 1867-69. He excluded sheep under one year of age and estimated production at 124 m.lbs.

In 1880 Helmut Schwartze and Co. Wool circular gave estimated production for 1870-4 and 1874-79 as 157 m.lbs. and 155 m.lbs. respectively. In 1882 'Bradford Observer' gave the figure of 129 m.lbs. It is not known as to how these two estimates were calculated (information culled from Craigie's Statistics of Agricultural Production).

What use all these estimates serve is easy to say. Earlier attempts at gathering the acreage and livestock statistics had provided data for the/
the periods not covered by official returns. They also goaded the Government to commence their collection systematically. It was ultimately undertaken. The efforts made for collecting yield and production data drew attention of the Government to an equally important series of statistics besides the fact that they furnished data for periods preceding official collection of yield returns.

Among the class of individuals and academics being here described, mention must be made of the Royal Agricultural Society of England and the Royal Economic Society. Neither of the two undertook, what may be called, the collection of agricultural statistics of the country. But both of them not only used but also made considerable contribution in suggesting improvements in the current methods of their collection. It is not needful, and would be tedious, to include entire substance likely to demonstrate their performance in this field. Suffice it to invite reader's attention to numerous articles published in the Journal of the two societies, which have been referred to in this thesis. Especial attention for specific examples is invited to Venn's attack on official statistics in the Economic Journal/ 90

90. op.cit. Venn (50) and (51).
and Hoskyns' masterly pleading for agricultural statistics as well as Lewis' Commentary on and suggestions for improving agricultural returns in the Journal of the Royal Agricultural Society.


CHAPTER VII

PERIODICAL OFFICIAL ATTEMPTS AT THE COLLECTION OF AGRICULTURAL STATISTICS BEFORE 1866

In historic times, official collection of agricultural statistics seems to have commenced with the Domesday survey made during the last quarter of the 11th Century. Subsequently numerous enquiries, mostly of local and immediate significance, occasioned by particular circumstances aided or financed by state expense are also known to have been conducted. The more important of these have been passed in review in the preceding chapters. Many of them furnished interesting agricultural statistics, but that was rarely their basic or real object. In fact agricultural statistics or data were in a great many cases only a by-product. Except, perhaps, the Domesday survey, none of them apparently were directed to investigation into the agricultural situation with a view to providing basis for policy, planning or administering this great industry effectively and efficiently. Tax and defence rather than economics and politics invoked their institution. Although in all official inquiries these factors, do, and will always, loom, yet a period was reached when they were not the only causes, except in the case of returns collected during the Napoleonic Wars, and in the special inquiries during the Great World Wars, nor were they even the principal factors prompting their collection.

There were the distinct periods from the point
of view of the present study. One, when inquiry was made to meet certain immediate situations; and two, when their continuous collection was established as a national necessity. It is the former period vis-a-vis the collection and development of official agricultural statistics which ended with 1866 that we propose to study here.

Without dipping into older farming literature the demand for agricultural statistics for economic and political ends could be traced in Capt. Graunt's Observations published as early as 1663. The Captain wrote:

"Now the Foundation and Elements of this beneft, "harvest" policy is to understand the land, to be governed "according to all their intricate and accidental differences; "as for example, it were good to know the Geometrical Content, "Figure and Situation of all the Lands,... (and to ascertain) "how much Hay an Acre of every foot of Meadow will bear; how "many Cattle the Pace weight of Hay will feed and fatten; what "quantity of grain and other Commodities the same acre will "bear in one, three or seven years; Communica Amia; unto "that use each foil in most proper.....How many people then be "of each Sex, State, Age, Religion, Trade, Rank or Degree, etc., "by knowledge whereof Trade and Government may be made more "Certain and Regular" (1)

That this demand was repeatedly made on several subsequent occasions has been pointedly brought out in the preceding pages. Partly, perhaps, in response to these direct and at times implied calls made stressingly by different individuals and academies in different forms, but mainly due to exorbitant

(1) Graunt, Capt. J., Natural and Political Observations Mentioned in a following Index, and made Upon the Bills of Mortality (the 4th impression), Oxford, 1665, pp. 147-149.
rise in corn prices in consequence of frequent failure of crops in the later part of the 19th Century, official machinery crept into action slowly to collect agricultural information. It gathered momentum with the threat and outbreak of Napoleonic War. First movement, however, was short-lived, but it left impressions.

The first step of the kind, and in the time we are reviewing presently was the establishment of the Board of Agriculture in 1799. It dissolved in 1822. The 10 item enquiry addressed by the Board to "the landed interest" in early 1799 which marked the beginning of official interest other than mere tax or defence was mentioned when we discussed the Board. Remarkable work done by the Board by way of several postal enquiries and survey reports was also then reviewed. The second step immediately followed. During the same year in October, the Home Secretary addressed a letter to Lord Lieutenants in each County requesting them -

"to procure an account of the produce of a fair crop of every such article of grain.....comparing the same with the produce of the crop of 1794 of every such article of grain..."and to report such account as early as possible" (3)

It respected only corn crops and altogether omitted livestock.


The returns, according to Minchinton, are to be found in B.40. 42. He does not say if returns for Scotland were also available somewhere.
The enquiry of the Board as well as that of the Home Secretary were prompted by rapidly rising prices of provisions, especially corn. The machinery, within the counties, for collecting this information in the latter instance was to be provided by Justices of Peace and High Constables in the hundreds, instead of "landed interest" in the former case.

Some of the information was returned quite expeditiously. It was placed at the disposal of the Select Committee on the Corn Trade. In its first Report submitted a few weeks later the Committee wrote that it had received "the substance of such accounts of the state of the late crop of grain" from the Board of Agriculture which it had gathered through circulars, and that it had —

"also received from His Majesty's Principal Secretary of State for the Home Department, such Returns, as had been hitherto made to the circular letter sent by him....to the Gaftodes Rotulorum, and Sheriffs Deputy in England and Scotland, desiring them to obtain meeting of magistrates for the purpose of procuring an account of the state of the late crop; but these returns are not as yet sufficiently numerous or complete to lead to any precise conclusion"(3)

Incidentally, it may be remarked that Mischinson, to whom we owe several useful references, has wrongly stated that

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(3) First Report from the Select Committee appointed to take into consideration the present high prices of corn, and to collect evidence relative thereto (House of Commons Papers printed in 1803) Vol. IX., 1795-96, pp. 43-46. Made on 16th November, 1795.
though most of the Returns were shortly made "it was not till the Third Report of the Select Committee that the returns received mention". We have reproduced from the very first report, which was at least partly based on the general result which the returns yielded.

The Committee in the first report, observed that on the whole, it was satisfied with the information obtained from letters and the Board, etc., that the -

"crop of other sorts of grain than wheat has been abundant, but the produce of wheat has proved so far deficient, as to require the adoption of the speediest and most effectual measures".

3.

The Committee in their third report referred to these returns again and wrote that from the "considerable number" of returns they had received they found it impossible to draw a "precise conclusion" because the returns were "incomplete in their number, and varied in information, some stating the whole quantity of grain produced, others the number of acres sown, and others again the average produce of each acre, and drawing in some instances a comparison with the crop of last year, in others with that of certain preceding years, and in others what is generally called a Fair Crop;.....it is extremely difficult to combine and compare them, so as to "state accurately the result of the whole". Minchinton examined these returns recently and has concurred with the Committee in this judgment.

(4) Minchinton, op cit (2), p.34.
(5) Report, op. cit. (3).
It is true that the returns of 1795 were statistically defective. They did not, however, fail to show that the wheat crop was 17-30 per cent smaller than the normal. This evidence enabled the Committee to recommend remedial measures, Consequently, several laws were brought forward to encourage imports of grain, and to ban their export, to discourage their distillation and manufacture. Campaign was also started to popularise the use of substitutes. Most of these measures proved a success. The information, however incomplete, was thus used to alleviate misery through wise policy, which inevitably would have followed a small crop.

The next official collection of agricultural information was again consistory, not consecutive. On April 2, 1798, the Commons passed a Defence Bill moved by Dunias on 27th March. Kenyon incorrectly makes the date as 29th March instead of 2nd April. It provided, among other things, for an investigation into defence potential and indemnification for such losses as might be incurred in the event of French invasion. It also envisaged removal of —

"the property of the inhabitants of the villages, who "may be employed in arms......and carry off their flocks in "order to prevent its falling into the hands of the enemy". 8.

(8) Ibid.
Consentaneous, with these provisions, a detailed return under as many as 57 headings was called in May 1733 "on a County basis". Kenyon contradicted himself by saying at one place that returns were collected in August not May. Neither Minshington (op. cit. (21)) nor Kenyon (infra) made it clear in their articles, which the latter on our inquiry wassoind enough to elucidate, through a private letter, that the inquiry only extended "to the Counties immediately threatened with invasion, Essex, Kent, Sussex, Hants., and Dorset" (Private letter dated 30.7.1957 from Mr. Kenyon). Mr. Kenyon in the same letter informed us that nothing is known to survive for Kent and Hampshire, very little survives for Essex, some details for its Coastal strips for Dorset and complete returns for Sussex, are, however, extant. Sussex returns were available at Lewes. It is curious that Minshington in another article9 fails to notice, even after reading Kenyon's article which revealed that complete returns survived for Sussex.

The schedule inquired about stock, manœuvre and transport. According to Minshington acreage under crops was also asked, but this would only have been the case in Dorset, because Kenyon definitely informed us through the letter that acreage

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details were not inquired for Sussex, and, in his opinion as well as our own, acreage may not have been ascertained even in other counties, for that was of little importance to the "wholesale" clearing policy for the sake of defence. Similar information was also collected in 1801 and again in 1803. On these two dates the schedule was expanded. It now contained 65 instead of 57 headings in 1798. The additional headings however, did not relate to agriculture. Even quantities of grain in stock ascertained in 1798 were excluded from the expanded schedules. Of these 1801 returns there exist only for Sussex, and for 1803 for Essex, Sussex and Somerset.10

Matter of agricultural interest comprised detailed statistics of the number of working oxen, cows, young cattle, and colts, sheep, pigs, riding horses, wagons, carts and stocks of grain and hay. It is, however, doubtful that a uniform schedule was used in all the counties. Each lieutenancy was to arrange the collection of their county statistics. It is therefore reasonable to suppose that different schedules were employed. This supposition becomes a certainty in view of

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He had the advantage of corresponding with Mr. Kenyon. He was most willingly helpful in clearing several involved points. The three collected returns were collected on a county basis for strategic areas in 1798, 1801 and 1803, and were an entirely different undertaking from the 1801 returns collected from all counties of England and Wales to be discussed later. Kenyon's help is most gratefully acknowledged.
Minchinton's account that acreage was inquired in Dorset, which was not the case in Sussex.

Sufficient information with regard to the machinery employed was unavailable in the published articles to which we had access. Kenyon's letter, however, contained a valuable account of it. It stated that "the machinery for collecting "this (the returns implied) was the same at all three dates "(1798, 1801, and 1803) The farmers filled in a simple form "and returned it to, usually, the parish or Vestry clerk who collected the whole lot for the parish and sent to the Justices "of the Peace or the Deputy Lieutenants, the parish totals. "These were entered in tables in lieutenantcy records...."

(private letter). It must be pointed out that there was no central compilation of county returns.

As already stated, the object of these censuses was defense planning, and in his article Kenyon remarked that

"as a result of the 1798 census of stock, grain and "transport, the lieutenantcy decided on 13th August, 1801, "that wholesale clearing (as envisaged in the Defense Bill) "of the County (of Sussex) was impossible....."11

Thus planning and decision were facilitated by the matter collected. This may be assumed as the use which this information served.

One of the main interests of these returns is the detailed census of livestock attempted for the first time in official history. Even Domesday survey did not apply for livestock statistics for all the counties it embraced. It is also

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(11) Kenyon, op. cit. (10) p.61.
remarkable that the 19th Century returns including those which commenced in 1866 did not elicit, to begin with, as copious information as Defence returns. Nevertheless, it is a pity that the records incompletely survive even for the counties for which they were made. The truth whether the extant records are accurate is also clouded by uncertainty.

It may be appropriate to remark that since 1801 decennial population census has been made. Although the number of particulars inquired through the schedule 12 has at times been as high as 25, and during all these decades 40 different particulars have been inquired, no serious thought, in spite of occasional allusions, has been given to use of the same machinery for the collection of agricultural statistics. At one or two occasions, one or two questions are, however, known to be inquired. The response to them could not be regarded as discouraging.

Nevertheless, in 1801 the collection of agricultural statistics was undertaken by the Government on an extended scale. It will be remembered that the Commons had received the First Report 13, from their Committee on the Assize and Making of:

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(13) First Report from the Committee on the Assize and Making of Bread, etc. Provisions and Poor, 1774-1802 (House of Commons) Vol. IX, 1803, pp.65-80. For Young’s evidence on which the report is mainly based, printed on page 76.
Making of Bread in February, 1800. It was based on the
evidence of several witnesses including Arthur Young. The
striking revelation was that the 1799 crop of wheat was
deficient to the extent of 33 to 50%, as that of barley and
cats by 20 to 25%.

This report was discussed with concern in both the
Houses (14). There was great reluctance, especially among
Lords to accept that the crop was really deficient. One could
reasonably assume that lack of reliable information on
agricultural situation made itself manifest seriously in the
Parliament. Meanwhile, high and rising prices of provisions
did not stay. A Committee on the high prices of provisions,
and another of the Lords on the Dearth of Provisions which
made certain inquiry from respectable and well informed
persons, was the consequence. The former reported on thirteen
occasions in a period of seven months ending with the 36th
June, 1801, but itself, the Commons' Committee did not
collect any returns to ascertain the state of crops. They
thought it would involve "great delay". Their reports as is
stated in the first (infra) were based on "those inquiries"
as "different departments of Government have directed to be
made by the/
made; by the receivers of the Land Tax; by the various officers employed under the Board of Taxes, Stamps and Excise..." and the one which the Bishops of Diocese have made through a circular letter to clergy. The letter was issued at the request of the Home Department. It inquired through four questions, the produce and yield per acre of corn crops, potatoes, hay, peas and beans, their prices as well as the prices of mutton and beef, stocks of wheat and use of "substitutes" in various districts. Replies to this circular according to Minchinton (q.e.) are preserved for almost all the Diocese of England and Wales in the Public Record Office (B) 42, 52 - 55. The Committee were "Fenfible" of the weakness of such information, yet they had correctly known from it that the 1799 harvest was deficient.

It must however, be regretted that in none of these reports did the Committee directly recommend systematic collection of agricultural statistics, especially in view of the fact that in the very first report it had complained that the "account of this nature" which they had utilised as the basis of their report scarcely afforded the accuracy "upon which positive reliance could be placed".15.

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(15) First report from the Committee appointed to consider of (sic) the Present High Prices of Provisions (House of Commons) vol. IX, 1803, p.87.
It may not be wishful to suppose that debates on scarcity coupled with the allusions of the committee to the lack of "reliable" accounts pointed to the necessity of authentic agricultural statistics. This may not, however, be the only reason, yet the Government immediately applied for crop returns in 1801. Davies and Russell 16 in their one article dealing with 1801 returns said that they could not discover the real "motives of the experiment". They considered several possible causes, one of them being an official desire to ascertain the effect of enclosure on Food Production. Considerable force to their contention is lent from the general comment on enclosures under "General remarks" of the Schedule, as well as the contents of a letter which Lord Pelham had written to the Board of Agriculture in April, 1802, while forwarding the returns for expert scrutiny. It said that annual returns of acreage were proposed to be collected by the Government —

"as it would form the best criterion whereby to judge of the effects which the provisions of Parliament both in regard to enclosures and other matters, produce on the Agriculture of this Country...." 17

It was high prices of provisions to cause several "provisions of parliament" and to incite great attention to enclosures. Basically it is understandable, therefore, that it was scarcity of food that occasioned agricultural returns of 1801, just as it was the case six years earlier in 1795.

The machinery/

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(16) Davies, R.C., and Russell, G.E., 'Worcestershire in the
(17) Ibid. Acreage Returns of 1801' in Tran.of Archeol.Soc.
Worcestershire, N.S. Vol. 37, Worcester, 1931, pp. 15—
The machinery was thus set. Home Office, and not the Board of Agriculture, perhaps because of its being unofficial, sent printed schedules to the bishops of twenty-six sees in England and Wales. Scotland was excluded from this inquiry for reasons unknown. The bishops were to arrange for their clergy to return acreage during 1801, on a parish basis, for seven main arable crops, wheat, barley, oats, potatoes, peas, beans and turnips or rape. Space was also provided for other crops, if any. In a majority of cases this was taken up by rye (cf. op. cit. (13) and (21)). More than half of this schedule was left blank for "general remarks". It is not unexpected that in the absence of any known specific directions emanating from their office the general response to this column was so varied as the number of notes inserted in them. The returns were optional and were not required to be signed, "but this was done in a great number of cases!"

Curiously enough these returns escaped notice of the following generations. For about a century and a half in all, probably nothing was known about them. In 1949, Hoskins, in an article titled *The Leicestershire Crop Returns of 1801* revealed that -

"Crop returns made immediately after the harvest of 1801, survive for the greater part in the Public Record Office among the Home Office papers, where they are grouped under the various diocese."16.

A flood of articles on these returns followed. Only Henderson (Geographical Journ. Vol.119, pp.339-345, q.a.) and Minchinton (op. cit. (2)) dealt with all England and Wales returns. William did his article on entire Wales19 while almost all others 20-22 and including Henderson23-24 and Minchinton25 who wrote more articles, confined their studies, with varying degrees of diligence, to single county returns. Discussion and analysis as well as approach and style varies with different writers, but many of them (see op. cit. (21)), have extensively reproduced in altered forms, the original returns.

The Schedule was circulated, sometimes between 30th July 1801 and the following September. Fixation of the former date is:

(24) Henderson, H.G.N., 'The 1801 Crop Returns for Sussex' in Sussex Archael. Coll. vol. 90, Oxford, 1957, pp.51-59. Dr. Henderson is engaged in mapping this in respect of various counties. He, in all of his published articles, mistakenly assumes that the Board of Agriculture existed as early as 1866 to collect agricultural statistics annually. In fact it was the Board of Trade that did this work to begin with.
date is enabled by the fact that Lord Pelham, to whom the returns were directed to be sent directly by the clergy assumed this office of Home Secretary on that day (see Cobbett's *Parliamentary History*, vol. 35). The latter is fixed on the authority of various writers, quoted here, who told that the returns bear dates beginning with September and going up to 6th March, 1802 (cf. William). The extant returns are incomplete, either through loss or "through the neglect of the incumbent to make a return", reluctance of farmers to give the information, absence of survey maps for farms and difficulty to approach far off districts aggravated the situation.

Different writers indicate the extent of surviving returns for the Counties they have studied, but it is insufficient to enable us to make an accurate statement for the whole of England and Wales. For Wales, out of 981 parishes returns survive for 523 (cf. William) for Devon and Cornwall only 23 out of a possible total of 432, for Leicestershire 150 out of expected 237 (cf. Hoskins) for Worcestershire they are extant for 140 parishes out of 173 (cf. Davies and Russell) and in Yorks. for 381 out of 492 parishes (cf. Charley).

The clergies were not asked to report the estimated yield of crops. Many of the clergy, however, sent that information, but the majority did not. On the whole the returns were scrappy. Of the three/
Of the three main points of interest to the present thesis; what necessitated collection of agricultural statistics or data, and how and what was gathered have been amply covered in so far as 1801 returns are concerned. The third, viz. to what use was it employed remains to be seen. Davies ad Russell write that -

"the Home Office does not seem itself to have put the returns, thus collected, to any useful purpose (p.16)

Minchinton strengthened this statement by saying

"neither these (1801 returns implied) nor the previous returns were used, as far as is known, as the basis for Government policy" (p.45, op. cit (2)).

Minchinton, however, concludes his article by adding that -

"from it can be gained a clearer picture.......of the attempts to collect accurate statistical information to be used as basis for policy to meet pressing social, economic and military questions, and of the administration problems and difficulties in the way"(ibid). There is nothing to support our disagreement with Davies and Russell's assertion as well as with that part of Minchinton's remarks which relate to 1801 returns, but there are good reasons to question the later part of Minchinton's statement. While discussing "previous returns" it was brought out by us that the committees were enabled to make recommendations in the light of the information collected on various occasions.

It was also/
It was also stated that "defence plan" to vacate the southeast of England, was given up in view of inadequate means of transport which was revealed by 1796 returns. In the face of these facts, Minchinton's remarks lose much of truth viewed in the form he made them. In fact they tend to be contradictory. One of the probable reasons for disregarding 1801 returns, for any use, might be the comments which the then influential Board of Agriculture had made, when, as already said, these returns were sent for scrutiny with a letter from Pelham. The Board had commented that the returns were "extremely erroneous as well as defective". Kenyon in his private letter strongly supported the Board's view. He opined that serious attention was not paid by the clergy or the farmers to fill in this schedule and added -

"I doubt 10% of the farmers (in Sussex) ever completed any return or if they did the surviving figures in this part are either completely absent or else made for so few farms "as to be wholly misleading".

Lord Pelham's letter to the Board indicated official desire to collect similar returns annually. The Board, on their part, had not only approved the idea, but it also made certain useful suggestions with regard to the layout of the schedule, as well as the machinery which could more suitably be used for the purpose in England and Wales as also in Scotland. They had proposed/
proposed "assessors of the land or other King's taxes" for England and Wales and "school master or clergy for Scotland". It is unknown why their continuance was not found practicable. Although Lord Pelham's removal from his office has sometimes been construed as one of the reasons, yet that the returns were not called even in 1802 and 1803 when he was still in office, it clouds the issue. Posterior investigations are always hypothetical. Probably the failure to secure accurate and complete returns without such delay through the machinery of clergy was one of the main causes of abandonment. Loss of Lord Pelham's patronage two years later, and engaging pursuits of influential individuals like Young, Sinclair and Marshall in more or less similar projects, viz. County survey reports, who might otherwise have supported its continuance or immediate revival must also have permitted cessation. The County reports, too, which were simultaneously being written and revised by the Board of Agriculture may have provided a further cause. Possibility also could not be discounted that return to normal of deficient harvests which initially necessitated these returns relaxed the urgency. Whatever the truth, official efforts to collect agricultural statistics on an ambitious scale, were not followed by any attempt for over half a century. Nor were experiments made even as pilot-projects for over a quarter of a century.

Dormancy/
Dormancy of official interest was at last broken by the worsening condition of the agricultural poor in the country. In 1831, a Committee of the Magistracy of the County of Norfolk with a view to inquiring "into the Maintenance and Employment of the Agricultural Poor" in that County applied for information to 630 persons in as many parishes in the County. It is not known who these persons were: farmers, Clergy or others, nor is it precisely known what information was collected. Russell, however, is only partly correct when he remarked that "it is not known what information was requested", because some of the particulars asked could be deduced from some published accounts. From Boileau's Memoranda, for instance, one could certainly know that besides total acreage of the parish, the arable acreage and the number of agricultural labourers was certainly asked.

Only 426 persons of the total made returns. The "remaining 254 declined answering the questions addressed to them".

The substance /

(27) Report from the Select Committee of the House of Lords, appointed to enquire into the Best Mode of Obtaining accurate Agricultural Statistics from all Parts of the United Kingdom, with Minutes and Evidence (House of Commons 501) vol. VIII, 1835, p.141.
The substance of the inquiry was embodied in a report prepared by the Committee of Magistracy, which was presented by their Chairman, Edward Vodehouse, M.P. to the Quarter Sessions in October, 1831. We could not have access to this report, but it is known that the results of 426 parochial returns were assumed to apply also to the unreported parishes. The report concluded that there was—

"no material surplus of labourers beyond what the cultivation of the soil may be fairly said to require".30

At any rate, available information about the schedule and the machinery is foggy. The original returns had perished as early as 1875 when Boileau prepared his Memoranda. Nor do we have evidence suggesting that the matter was used for any specific purpose or policy. Still the fact that the attempt was made only in Norfolk, not in other counties, enables us to remark that official apathy until then was stronger than their interest in the agricultural information. Subsequent events would, however, substantiate that it was revival of official interest.

In early 1832, the Board of Trade addressed the Treasury requesting sanction for the setting up of a statistical department in the Board of Trade. The same communication pointed out the difficulties inherent in obtaining accurate statistics of/

(30) Boileau, op. cit. (2).
statistics of agricultural produce. The Board hinted at using the machinery of which worked for decennial population censuses. The proposed department was sanctioned and set up. The collection of agricultural statistics was however suspended because of "the farmers not being at all well disposed in the matter"31.

It will be remembered that official efforts during the meeting years of the last two centuries were primarily prompted either by deficient harvest or by defence necessities. Scarcity again provided the stimulus to "suspended" plans. It is known that in 1836, the Commons appointed a Select Committee to report on the "Causes and Extent of Agricultural Distress in the Country". Although Committees in earlier years of 1821, 1822, as well as the Committee on Agriculture in 1833 did not pay attention to agricultural statistics the committee of 1836 inquired from as many as half a dozen of witnesses if the collection of Agricultural Statistics was desirable. The change in the approach and attitude of this Committee from those of its predecessors could be attributed to two events, One, that one of the witnesses, Hall (q5002) had set the ball rolling without having been particularly questioned. He was asked to suggest measures remedial to the prevailing distress. While recounting measures he opined that possession of agricultural information would be an effective bulwark against distress. It was after

this statement of Hall's that the Committee directed their attention to this topic. Sanders (Q.9318), Sturge (Q.7217), Calthrop (Q.8167), Rickerton (Q.8746) and Church (Q.13527 & 13560-4) gave enthusiastic support to the idea of collecting of agricultural statistics. Church was, however, polite in the applause, but even he did not fail to appreciate the usefulness of accurate information. It was, however, clumsy that all the witnesses conceived agricultural statistics as only the production of grain. Another possible, rather probable reason, to account for the committee's disposition is to be traced in the event that the then president of the Board of Trade, Poulett Thomson was one of the members of the Committee. Since the Board was already considering actively as to how could statistics be obtained, it is reasonable to suppose that the president's presence on the Committee was responsible for the committee's interest in agricultural statistics. Another person, if personal influences are to be regarded, likely to have contributed could be Wedehouse, also a member of the committee, who was the Chairman of the Committee of Norfolk Magistracy which had attempted the collection of agricultural statistics in 1831. The Board of Trade "at the desire" of the President, Thomson, endeavored to obtain agricultural statistics in May, 1836. Following that no more questions were asked by the Committee on the subject during the remaining part of its deliberations. This is a circumstance which could be accepted as evidence that stimulus to
to suspended plans of the Board of Trade was provided by the Committee. It must, in fairness be stated, that neither Thomson nor Bodehouse whom we hinted as the prompters asked any question from the witnesses. It was Graham, another member, who invariably adverted to the topic. Probably both of those gentlemen were too convinced to ask for any confirmation of the desirability of collecting agricultural statistics.

The County of Bedford was selected to test the probability of success. The choice of Bedford is said to be made for it headed alphabetical list of the counties. It was proposed to extend the inquiry to the whole of England and Wales were the results of the experiment encouraging. It is amusing that Scotland did not appear in the plans of the Board, nor did Ireland. Whether it was because the second statistical account for Scotland was then being prepared or because politically bosses were less interested in other parts of the United Kingdom (because Ireland was also disregarded) is a matter for guess. It provided for a complete account of the quantity of land, and its utilization under different/

(32) Report on the Committee of Lords, op.cit. (27) Q.90

under different crops, the number of each kind of livestock, the produce of grain, butter and cheese, the average value of labour. It was exhaustive, rather lavish, for it respected some minor crops also.

The questionnaire comprised 52 items. It was issued in May, 1835, and the data to be returned was for the year 1835. Most of the questions were so framed as would elicit numerical information but many of them were given descriptive answers. The letter that accompanied carried a personal request to the 125 alergies, (in Hansard vol. 76, the number is misprinted as 256 instead of 125) in all the parishes of the country.

It also made it clear that answers to such questions as may be inapplicable to a particular parish were not expected. Ninety-nine made no return. The measure failed. It was therefore "necesarily abandoned". The repercussion was serious in as much as it slowed down official machinery which always takes long to pick up momentum. One can not but regret that a good start was stayed.

The ball thrown by the Home Office to the Board of Trade was next played by the Commons. In April, 1844,

Milner Gibson

(36) Supra. The answers are tabulated in the end of Porter's article.
See also Lewis' (36) articles in J.R.S.S. (1866) for details and account of the experiment.
Miner Gibson brought up a motion, for the first time in the
c lower house, suggesting that an address be presented to Her
Majesty representing the importance which the House attached
to the necessity of collecting —

"accurate statement of the quantity of land under
"cultivation, and the amount of its produce."35.

Gibson made a learned speech in support of the motion, quoted
several authorities and works in favour of the proposal and
instanced the events of 1837-38 when mysterious fall in wheat
prices was accompanied by bad harvests and low stocks. He
correctly attributed their occurrence, which was detrimental
to all classes, to the lack of statistical knowledge. It is,
however, curious that nothing was said of livestock, as if,
to them, it was not an important source of food which he was
then emphasising.

The motion was ultimately withdrawn because, Gladstone,
the President of the Board of Trade had assured them that
there was "unfeigned anxiety" on the part of the Government
to obtain the information. He added that various attempts

35) Hansard's Parliamentary Debates (15th April - 30th May,
1844) vol. 70, pp.92-103.
(Note: Sutton in his article (op. cit chapter 6) wrongly
observed that "the first mention ever made of agricultural
statistics in the House of Commons was by Mr. Stafford
O'Brien at the close of the last (1837 implied) session." The House took up the matter in April, 1844.)
made in the past to obtain that end had been frustrated by

"the deficiency of the machinery to which they were

"enabled to resort"

and the matter was still under active consideration.36

Guided by parliamentary interest and also driven by

its own desire, the Board, with the "sanction of the

Secretary of State" made an inquiry from the Poor Law

Commissioners if the machinery placed under their superin-
tendence might not be made available to collect, to start

with, acreage statistics of grain crops. Besides that they

were asked to advise as to the financial and other

arrangements. Ensuing correspondence revealed several

practical difficulties. One, the nature of the plan was

extraneous to the provisions of the Poor Law. Two, the

Commissioners were not sure that the Boards of Guardians

would react favourably. Three, the whole of Scotland and

Ireland as well as some of the Counties of England and Wales

were not under the authority of the Poor Law Act, but the exis-
tence of some parallel laws in Ireland and England and

Wales would cover the situation. Four, the proposed under-

taking was expensive as according to their calculations

it would/

36) Ibid. See also Report of the Lords' Committee, op. cit. (27) p. 142.
it would cost about £10,000 for 623 unions of England and Wales alone. Moreover, they considered it essential to assure the farmers that the object of the project was not "fiscal", not would its incidental expenses be a charge on local rates. Under the circumstances they doubted if complete returns could at all be obtained.\(^{37}\)

At any rate, the matter did not progress beyond preliminary inquiries about machinery. Gibson again brought up the same motion in the House of Commons, in April, 1845. He said the object of moving the Resolution at that occasion was to "elicit" from the Government "the progress they had made in fulfilling the promise given last year". Opinion was generally favourable to the object of collecting agricultural statistics. Only one member spoke against it. He was Colonel Sibthorp who said that

"the idea... that a schoolmaster should come round "upon your land and survey its production properties is "one which I never expected... let me catch a school- "master on my land - that is all. The only question would "then be whether he would venture to come a second time!"

He regarded it as an attempt "to invade the sacredness of private property". Luckily this dissentient voice was solitary/

\(^{37}\) Correspondence between the Board of Trade and other Public Departments relative to Agricultural statistics (House of Commons, 265) vol. 46, 1845. pp.1-4
solitary. Right benchers were entirely favourable to the idea but they did not know how to implement it. Gibson suggested that a Committee might be set up to examine and report on the working details. Sir Robert Peel thought that "executive Government would probably be better "able to mature a plan than a committee of the House" but promised to "lend any weight" his Government possessed "to obtain the object". The motion was again withdrawn.38

Indeed the Government now meant business. Only a few months later, most probably in November, 1845, the Board of Trade proceeded with an experiment on a small scale in the three counties simultaneously. In England two Poor Law unions, Basingstoke and Hartley in Hampshire, in Scotland, the county of Mid-Lothian and in Ireland Bailieborough union were selected for the experiment.

The Schedule used in England and Scotland was different from the one employed in Ireland. British Schedule provided space for acreage under crops, grasses, woods, waste and fallow as well as for the number of cows, sheep, swine and "other cattle". Horses were conspicuous by their exclusion. The Irish excluded livestock enumeration. The crops and other particulars/

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other particulars it inquired were also slightly different; flax, cabbage and bog for instance were conspicuous additions. It is not certain that parallel crops were returned in all the counties because the returns for England and Scotland respected "harvest of 1844 to harvest of 1845" whereas those for Ireland are printed under the headings "for the year, 1845". (Coppock is wrong in saying that the experiment in England and Scotland was "made in the harvest-year 1844-45... and in Ireland the returns were collected in 1845....." Certainly experiment was not made before November, 1845, in Scotland (cf. Lords' Report, q900) and probably also in the counties (mark the words 1846 in the reference). That was not harvest year 1844-45/.

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(39) Summary of the results of the Experiment which was tried under the direction of the Lords of the Committee of Privy Council for Trade in 1845 and 1846 to obtain agricultural statistics. (House of Commons, 458) vol.59, pp.3-9.
1844-45. In fact the date respected 1845 harvest.)

The machinery was different in the three countries. In England, the Board of Trade directly required the Boards of Guardians for the information. Meanwhile, the Poor Law Commissioners conveyed their approval and suggested that the Guardians employ officers for pursuing the farmers to fill in the schedules. In Scotland, through the Queen's Remembrancer, parish schoolmasters were asked to obtain statistics. In Ireland "a private individual" was "employed" for the work.

It is not known how long it took to get returns from Ireland and Scotland, because the compiled tables carry the date 31st May, 1847. Whether these were signed on that date after the/

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(40) Coppock, J.T., "The statistical Assessment of British Agriculture" in Agric. Hist. Rev. vol. IV, 1956. This article is an excellent review for the period 1866-1914. Some minor and a few major inaccuracies were pointed out by us to the author, Coppock. He accepted two or three positive mistakes as pen-slips. He attempted to explain one or two of them as "vagie" in the original records, and declined to agree on the "matters of opinion"Contending that he was entitled to "his own opinion". This writer indeed owes some references to Coppock. He is also indebted to the gentlemen for friendly disposition during our correspondence on the subject. However it would have been appreciated if he himself had referred to our comments in the second part of his article in which, too, we had suggested some points; which he did incorporate.
after the decision to publish was that the earliest day when all three returns had been received is unknown. The available evidence, however, suggests that the experiment "turned out successfully" in those two countries, although it was a "perfect failure" in England. Consequently, it was felt that it was hopeless to proceed without compulsory powers.\(^{41}\)

According to Coppock no returns were "received" from the Union of Basingstoke, and only incomplete from Hartley. His statement is questionable because the official version that "no returns for this union are possessed by this office"\(^{42}\) may not necessarily imply the same.

In any case, it is needless to search for the details or uses of the matter thus collected. It was only an experiment which undoubtedly failed.

On 29th January, 1847, the ball was in the hands of Stafford O'Brien. Gibson, who had twice withdrawn motions urging the collection of agricultural statistics, was at that time protecting official tickets as Vice-President of the Board of Trade. O'Brien inquired if agricultural statistics "occupied the consideration of the Government". Gibson replied/

\(^{42}\) Summary of the Results etc., op. cit. (39) p.1.
Gibson replied "a Bill on the subject would be submitted in Parliament at an early period".

In the following March, Gibson brought in the promised Bill entitled "A Bill to make provision for the collection of agricultural statistics in England and Wales". Incidentally Coppock incorrectly asserted that the Bill was "introduced by the President". In fact Gibson introduced it and he was Vice-President, not the President. As it was presented it covered only England and Wales, probably because the 1845 experiment had indicated its greater necessity in that country than in Scotland or Ireland. Gibson, however, said that "if it should appear desirable" its operation could be extended to Scotland. He, however, thought that Ireland was best left to the executive Government.

It was proposed that the machinery of the Registrar General's Department should be employed. The Superintendent Registrars were to appoint "agricultural enumerators" in their respective districts, who would prepare lists of occupiers of land exceeding three acres, to whom forms were to be sent, barring the 15th year, on or before 1st June, to be filled.

(44) A Bill to make Provision for the Collection of Agricultural Statistics in Public Bills, 1.
(House of Commons, 162) Sessual Papers, 1847, pp. 1-9.
to be filled in fourteen days. Those forms on which crops, wood, waste, fallow and number of livestock were to be returned, were to be checked and tabulated by the
examiners, before they were forwarded to Superintendent Registrars by 1st July. The Superintendent Registrars were
to verify and have them sent by 10th July. Penalties were
to be imposed both on officials and farmers if they were
negligent of complying with the provisions of the Bill.
The examiners were to be paid 50/- per 100 schedules
filled up for their district, and the Superintendent
Registrar at the rate of 250 for every 500 paid to their
respective examiners. Classification and publication
of returns was to be done by the Registrar General of
Births, Deaths and Marriages, but it was the Board of
Trade to exercise over-lead authority. The Board was to
be authorised to alter the limit of 2 acres to 3 acres, to
decide whether it was desirable to collect the returns
annually or against longer intervals, and to add to or
subtract from particulars of the proposed schedule, which
was almost the same as was used in 1945 experiment, only
hay was dropped, "bestroot" and "meadows" were added and
a regrouping of some crops was done. The classes of livestock
were, however, materially changed; horses were still not in-
cluded. It is ridiculous that "Schedule A" which was to be
filled by/
filled by occupiers did not provide space for "calves", "lambs" and "swine", whereas "Schedule B" which was to be "filled up in the form" so received back as aforesaid (Schedule A implied) required them to be inserted. Similarly "beans and peas" and "tares or vetches, clover and lucerne, meadows and pastures" were inquired together, were required to be shown separately in Schedule B. What is more amusing is the fact that no reference was made to this anomaly during the debates on the Bill. The importance of the subject seemed to be accepted by the House, but certain objections such as additional expenditure amounting to £40,000 (cf. Parliamentary Debates, vol. 97, p.540) on the office of the Registrar General, which was already disturbing twice as much annually, the exclusion of Scotland and Ireland from the Bill which was considered to detract from the "value" of the Bill, etc., imparted an impression that sufficient interest was not excited to enable the Government to pass the Bill. The Bill did not, therefore, reach a second reading.

Shortly after, "great apprehension of famine" was felt in/

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(45) ibid. See also Hoskyn's article (a.q.) on Agri. Stat. p. 558.  
felt in Ireland. The Administrative Government addressed a letter to the Treasury on 22nd July, 1847 saying that "It feels strongly impressed with the importance of causing accurate statistical information to be procured" and requesting sanction of £400 for this measure. It is gratifying to note that the Treasury responded promptly! The very next day sanction was granted. This was the beginning of continuous collection of agricultural statistics in Ireland, a detailed reference to which will be made in the next chapter. Two main factors which facilitated the comparatively early and successful institution of a systematic and regular collection of agricultural statistics in Ireland than in Britain were the absence of big landlords who could have agitated against the measure, and secondly the event that, in contrast to Britain, the machinery of constabulary was centrally paid in that country.

In Britain, too, great interest in the subject had been excited. The Royal Agricultural Society in Scotland called on the Government to initiate collection. The English Society's /

(47) Return of the Particulars of the Names in which £2,000 was expended in Ireland, in Obtaining Statistical Information Relative to the Agricultural Produce of Ireland, etc., (House of Commons, 401-1) Vol.47, 1852, p.1.
Society's deputation waited on the Prime Minister "probably in the 1940's" to press the question. The Highland Society approached the Government in 1947. At first it memorised the Secretary for Home Department, who referred them to the Board of Trade. A formal meeting between the Secretary of the Society, Maxwell, and the Vice-President of the Board, Gibson, took place in May 1947 when Maxwell presented the Society's proposition that the expenses of the measure should be met by parochial assessment. Both were devoted to the subject. Gibson told Maxwell that the Bill he had proposed for England and Wales, which provided for expenses from a Central Fund, would be extended also to Scotland. But the Bill never passed even for England and Wales, and therefore, nothing resulted from it.

Incidentally it may be stated that according to Coppock the Society's "representatives had had an unofficial meeting with the Vice-President of the Board". He is wrong in assuming that the meeting was "un-official" and also to use plural for "representatives". Only the Secretary had the meeting.

Coppock appears to have been misled by Bowring's evidence to the/

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(48) Coppock, op. cit. (40), p.11.
(49) Report of the Lords' Committee, op. cit. (37) 03, p.3.
to the Lords' Committee (q.996) in which he twice used the words, once "unofficial" and again "not official". At one of these places, when Bevering said that the Society urged upon the Government the advantages of collecting agricultural statistics "in an unofficial way", even he himself, used the word loosely, if not wrongly. The whole approach was official. The Society "memorialised" the Home Department and then "sent" the Secretary on its behalf to progress the matter. At the other place (q.996) he had said that the Society corresponded with the Vice-President of the Board for the best means of proceeding in the case of Scotland. "The correspondence was not of an official nature".

Here Bevering's reference is to correspondence, and not the "meeting" which was definitely official, as the surviving Minute Book of the Society for 1847 would substantiate.

Sinclair's country was not content with plans and promises. Preparation of two statistical accounts of Scotland without similar ones for England is a testimony of Scottish taste for

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(50) H.S. Unpublished Minute Book of the Royal Highland and Agricultural Society for 1847. It was examined in the Society's office, 8 Eglington Crescent, Edinburgh.
taste for statistics. In 1849, the defunct East of Berwickshire Farmers' Club made an effort to collect agricultural information for their county. A similar attempt made 18 years earlier in England by the Magistracy of the County of Norfolk had failed. But, as one would have expected in view of the experience of statistical accounts, the measure in Berwickshire was successful; nearly every parish made returns.51

The schedule issued in Berwickshire could not be seen, but inferences suggest that it was pretty detailed. It is, however, not known if livestock was also enumerated. The machinery employed was the parochial police, whose services had been placed at the disposal of the Farmers' Club by Police-Superintendent. Total expenses incurred on the project were nominal, being less than £5.52

Although silence prevailed over England and Wales, the question was again raised by the Royal Highland and Agricultural Society of Scotland in their meeting held on 11th February, 1852. As a result a six-man deputation, headed by Duke of Buccleugh called on the President of the Board of Trade in/

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51 Lewis, op. cit. (92) in Chapter 6 p. 397.
52 Supra and Report of Lords Committee P.IV and Q.911.
Trade in the following June. Consequently the Society was asked to prepare a pilot project. It was done. The estimated cost for three counties, Roxburgh, Haddington and Sutherland was £900. It was approved at a conference of the Board of Trade held in February, 1858. At that conference representatives of the English Agricultural Society were also present, but their exact role and reaction is not known.

The Highland Society immediately proceeded with the business. Arrangements were made to issue a detailed schedule by the first day to farmers occupying holdings of more than 2 acres. The schedule asked the total acreage of each farm, arable acres and acreage of different crops of fallow, grass, sheep-walk, waste, houses, and garden roads, fences etc.

A return of wood and agricultural machinery from the proprietors was taken exclusively. On the side of livestock, apart from all other classes, milk cows were distinguished from "other cattle" and the number of horses was also ascertained.

The three counties were divided into enumerators districts comprising several parishes having similar agricultural conditions. One enumerator was appointed in each district.

No definite/

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(53) See Minutes of the Royal Highland & Agricultural Society of Scotland – See Minutes dated 11th February, 14th May and 11th June, 8th December, 1852 and 4th and 25th March, 1853. See also Maxwell's (Q 4) and Beverings (Q 913, 915) evidence to the Lords Committee of 1855.
No definite remuneration was promised, but they were all paid by Maxwell in the way he judged proper, keeping in view the amount of work and extent of responsibility. His discretion was generally applauded. Each enumerator was provided with a committee of farmers representing every parish to give general assistance and especially in framing estimates of yield of crops which were not directly inquired from the farmers. The Committee members worked honorably.

The schedules were delivered, collected, checked and tabulated by the enumerators before they were transmitted to the Secretary who finally consolidated them for the Board of Trade. In the event of farmers failing to make return, the enumerators were required to fill the form on the basis of such information as they could procure either by inspection or through an inquiry from the neighbours or both. Recourse to it had to be had in only three cases in the three counties.® The whole inquiry into matters of fact such as the quantity of land and stock as well as matters of opinion/
of opinion such as estimates of produce was successfully accomplished by 19 November, 1853. Total outlay was £337/-/8 out of the sanction sum of £300.

The Board of Trade desired to progress a parallel experiment also in England, for which £1100 were set aside. Opinion was asked of Sir John Walshan, an Inspector of the Poor Law in Norfolk, whether it could be done through the Boards of Guardians. His "unhesitating opinion" was that statistics could be collected through the Guardians with "less friction" and "much less cost". Although in Scotland the inquiry had commenced in May, and for England the Board's plan had not approval, yet it was not before September that actual work was started in England in two counties, Norfolk and Hampshire. In the latter county supervision was entrusted to Hanley, opposite number of Walshan in Hampshire.

As a rule relieving officers and clerks of the Board of Guardians were to provide the machinery. Statistical Committees parallel/

parallel to Scottish Committees of farmers were set up. In a few places where help of the guardians was unavailable, enumerators were appointed especially for the job. Fixed payment per 100 schedules was made on a uniform basis both to the enumerators and classifiers. The total outlay for obtaining statistics from these two counties was 3550.

The English schedule and procedure to fill it was basically the same as Scottish. No change was made in the livestock section; as for the crops, “chicory” and “hops” were added, “turnip seeds” was dropped. Permanent grass, however, was differently defined in the two countries. It was issued to 15000 occupiers of land exceeding 3 acres in Norfolk, and to 8500 in Hampshire. Material difference exhibited in the English information was that additional particulars were collected by enumerators from local rate books. It included extent of parish, extent of woods, and acreage of land below 2 acres, enumeration of which was not made in the schedules. Another striking difference was the absence of yield estimates, which unlike Scotland, were not made in England in 1853 (of Parliamentary Debates Vol.131, 1854, PE/1899.)

With a view to securing better response, option was given to occupiers to make returns directly to the Inspectors of the Poor Law instead of doing it through the enumerators. The same measure was also adopted in Scotland at a later date.
Permission was also given to make a joint return for more than one farm if occupiers thought they would not like to reveal the particulars of their individual holding. Much use of these concessions was not made. Only 6 or 10 made direct returns, and none jointly. 98

It was not before January and March, 1854 respectively that returns from Hampshire and Norfolk were sent to the Board of Trade. From Norfolk 97 per cent of the schedules were reported as returned, and from Hampshire only 92 per cent. It included also the schedules filled in by enumerators themselves. The latter percentage which was also adopted by Coppock (a. q.) is correct in round figure, but the way it had been arrived at is arithmetically incorrect (cf. Harleys' Report). The experiment on the whole was regarded as successful because in none of the official efforts made in England in the near past the results had been as encouraging.

Consequent upon success in both the countries the Board embarked on an enlarged experiment in 1854. Machinery and schedule remained practically the same; the work practical in emphasised. The coverage in Scotland was extended to the whole country and in England it was restricted to nine countries, Norfolk, Hants, Suffolk, Wilts, Leicester, Berks, Worcesters/ 99

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Worcester, Brecon and York (East Riding) together with two Welsh counties, Salop and Denbigh. It is remarkable to find that none of the English counties selected for the experiment were those from which returns were obtained during Napoleonic wars. For the first time in England, but only in the two counties which were embraced in 1853 inquiry yield estimates were obtained. The occupiers in Scotland were to send the return directly to the Secretary of the Highland Society in 1854. It was optional in 1853. Another alteration made in 1854 as stated by Maxwell, to the Lords Committee (Q.32) was that "in 1854 we made rent and not extent, the line of demarcation.......". Schedules in 25 Lowland counties were sent to persons paying a rent of £10 and upwards, and to those paying £10 and upwards in the seven Highland districts (cf Lords Committee Q32). In England the lower limit of 2 acres was maintained. Out of £48,000 voted for procuring agricultural statistics in the United Kingdom in 1854, £4,000 were allocated to England, and £6,000 and £3,000 respectively for Scotland and Ireland, at that time Southern Ireland was also included.

(59) Parliamentary Debates Vol.135 (Session 1854) PP.1033-1036.
In Scotland the inquiry was assisted by nearly 11,000 farmers including 107 enumerators. The outlay was £4,300. "Owing in great measure to the indefatigable exertions of Mr. Hall Maxwell" the results were highly satisfactory, only one-fifth per cent failed to make return. The collection of Scottish Agricultural statistics therefore, successfully continued with minor changes in the schedule until 1857 when Treasury’s demands — some genuine and some hypocritical, on Maxwell to surrender account for every penny expended on the project resulted in termination. Initially Maxwell assured that "good care" will be taken to comply with accounting instructions. But later, when frivolous objections were raised by auditors on 1855 accounts, Maxwell felt offended. Over sixty letters issued from both sides, and discontinuance of the measure was the consequence. The incident was unfortunate, but it is difficult to throw the entire blame on the Treasury (as Coppock did) or vice-versa. It is, however, true that Treasury disregarded the fact that there are rules and rules, but it is also certainly true that Maxwell was determined to show that the honest and the conscientious are ever sensitive. In their letter dated 11th January 1856, the Board of Trade had withdrawn all demands for previous accounts, vouchers and receipts and hoped/

and hoped that in future the accounts would be systematically maintained. Absolution, however, did not assuage Maxwell's anger. Two days later he submitted whole correspondence on the subject to "enumerators and members of the statistical committee" among whom he was very popular. He also presented it to "general meetings" of the Society among whom he was reputed for unquestionable honesty. So much so that sometimes blank cheques used to be given to Maxwell.\(^61\) His popularity and reputation could not but bring him a ready endorsement to his stand from all quarters. The general feeling was that official requirements were "inconsistent with the voluntary and almost gratuitous character of the co-operation" which the Society afforded.\(^62\) National press shared this view in no uncertain terms. It flushed with great resentment.\(^63\) The sober view was that the Government was "technically right" but substantially wrong.\(^64\)

In England:

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(61) cf. Minute of November 30, 1853 in the Unpublished Minute Book of the Royal Highland & Agricultural Society where four blank precepts are stated to have been issued to the secretary.


(63) "Mercure", "Edinburgh Advertiser" dated 15 Jan,1853 and "Evening Post", "Daily Express" "Scotsman" and "North British Agriculture" dated 16th January 1858. "North British Agriculture" wrote leading articles under the title "DED Tapsie Run Mad".
In England and Wales success lagged far behind hopes. Out of 118,237 applied for information for 8138 or 7 per cent no return could be obtained. Taking extreme cases, York (East Riding) responded satisfactorily. Nearly all returns were received. Hants and Wilts were worst. About 17 per cent went entirely unaccounted. Failure in Hants was especially regrettable where the experiment was repeated under unchanged supervision of Hanley for the second time, and who reported that owing to "considerable disinclination on the part of farmers" the return was less successful and satisfactory than it was in 1953.66-67 Disinclination on the part of farmers and weakness of machinery of the Guardians suggested that it was impolitic and inexpedient to rush without a pause. All Inspectors "concurred in saying that it would be utterly useless to attempt to obtain agricultural statistics without "subjecting parties to penalties who refused to fill up the "schedules left with them".66 Although in December 1954 67 when the returns were still in the course of progress the President of the Board of Trade in reply to a question in the House of Commons stated that "if the present experiment turned out/
"turned out satisfactory, it would be further extended" in England, yet in view of the subsequent failure, again in reply to a question on 11 June, 1855, the Vice-President of the Board stated that "as the experiment had not succeeded .....the President of the Board of Trade has given notice of his intention to move for the appointment "of a Select Committee in the other House.....". The same day the matter was moved and the Lords appointed in 1855 and not 1854 as Coppock assumed, Select Committee, as was suggested 10 years earlier by Gibson in Commons "to inquire into the best mode of obtaining accurate Agricultural Statistics from all Parts of the United Kingdom". The Committee completed its report by 29th July 1855 of which the following is an epitome.

(1) Systematic collection of agricultural statistics should be an object of national importance and utility;
(2) Returns should be compulsory under penalty; (3) Board of Trade should obtain returns through the Poor Law officers in England, and Wales, the Highland and Agricultural Society in Scotland and constabulary in Ireland. (4) The schedule should provide space for all classes of livestock and for crops of each description, which should be issued by 15th July. Estimates of produce should also be framed during November.

(5) The/
(9) The Board of Trade should be empowered to modify, if desirable, the 1854 schedule. (8) The inquiries should not be directed "to below holdings of 2 acres" in England and Wales. In other countries the current method was to continue. (7) Parochial rate-books should be accessible to officers employed in the collection. (6) Provisions of the Act for taking Corn averages should be strictly imposed. (5) Central Government should defray expenses and (10) A bill embodying these recommendations should be introduced into Parliament at an early date.

On 31st July 1855, £10,000 were voted for agricultural statistics. On the occasion a question was asked if statistics were in England and Wales were also to be collected. It was revealed that pending the consideration of "legislative enactment" recommended by the Lords Committee "nothing would be done" in England. Consequently, no statistics were collected during 1855, and for several years that followed.

For reasons unknown, no action immediately progressed on the Report. Over seven months later, on 4th March, 1856, Lord Stanely introduced a Bill into the Upper House on the proposed project. The estimated expenditure was £25,000 per annum. It was based on the Committee's Report. The only main departure from the Committee's recommendation was that instead of the Board of Trade, the Poor Law Board was authorised to

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72. Lords Journal, Vol.66. P.54. It was read for First Time.
exercise certain powers. A brief debate on the Bill took
place on 11th March and was discussed clause by clause on
4th April 1856. 73 During discussion some amendments with
respect to the time of filling and simplification of the
schedule were adopted. Only one amendment suggesting
that chief authority should rest with the Board of Trade,
the House was divided, but the notion was negatived by 18
votes to 13. 74 The bill, as amended, was passed not
withstanding some opposition, but without division of the
House by Lords on 8th April and was sent to the Commons
for their “concurrence”. 75

It might be stated that when the Bill was before the
Lords petitions praying that the Bill say not be passed
into law were submitted by occupiers and owners from
Leicestershire, Lincoln and Louth. But they were all laid
aside (of Lords Journal Vol.88, 99 and 205).

The Bill passed first reading in the Commons on 11 April
(Hansards Vol.141, P.570). It came up for the second on 19
June 1856, when the Hon. Member for Louth, from whose
petition against the Bill had been sent to the Lords caused
adjournment notion to be moved, which was ultimately withdrew,
although/

73. Parliamentary Debates. Supra pp.82-83. (Jan.-March 1856)
Vol. 140, PP.2207-2226.
74. Parliamentary Debates and Lords Journal (supra) P.82
(March-May) 1856)Vol. 141 P.463.
75. Supra Lords Journal, P.97 and Parliamentary Debates,
Vol.141. PP.639-639.
although the second reading was postponed to the following day (Hansards, Vol.142, PP.1727-1729). On that occasion the same member again rose to say that many members intended "to oppose the Bill on the second reading and to object to its being referred to a Select Committee" and proposed deferment. Postponement was generally supported, but not because all of the speakers intended to oppose. Nothing was pointed out against the Bill itself, except in one case who disapproved "compulsory principle". Incidentally Coppock's assertion that "many" supporters of the Bill "were unwilling to accept the sanction of compulsion, or doubted the suitability of the Poor Law Board" is not supported by debate although it is a plausible deduction. In view of the delaying tactics which were persistently being played the Bill was withdrawn with the understanding that its consideration would be entrusted to a Committee "at the beginning of next Session". Such a Committee was in fact not appointed.

Parliamentary interest did not disappear. On February 10, 1857, question was asked in the House of Lords if the same Bill was again to be brought in. Fast failure was attributed to the proposed machinery of the Poor Law Board and strict terms of the Bill. Lord Stanley, who had originally proposed the Bill to the Lords that guided by "the opinion of many/"
of many people" he did not intend to bring in any Bill,
but would give his support if it was introduced by someone
else.77 A few days later a similar question was asked in the
Lower House, when the Vice-President of the Board of Trade
replied that there was "no intention to introduce a Bill this
Session".78

By May 1857, Caird started bowling. His first over was
light. It inquired "whether the Government intended to
take any steps for collecting agricultural statistics in
England". The Vice-President of the Board of Trade "was not
aware that the Government had any such intentions".79
Caird held his end firmly and accurately. Only two months later,
he brought in a Bill in the Lower House. It differed
materially from that of 1856. Returns to be obtained on 1st
June were made optional. Enumeration of livestock was
excluded. Only acreage under crops was to be ascertained.
Lower limit of holdings to which the inquiry was to be
directed was raised from 2 to 5 acres. Provisions were made
to test accuracy and assure privacy of individual returns.
Total estimated expenditure on the project was reduced by
£20,000 to £20,000. Abstract return was to be published by
August 1/

(77) Supra (Feb–March 1857) Vol.144, P.421.
August 1. Suitability of the office of the Registrar-General in preference to the Poor Law Boards was pleaded, saying that the latter had thrice failed, in 1845, 1853 and 1854. The former was, in the nature of its working, a "statistical office, unconnected with rates or taxation". It had its officers in every county. It was popular among farmers. The first reading of the Bill was made on 21st July 1857, and "was ordered to be read 2 (second time) on Wednesday next and to be printed". Surprisingly enough "next Wednesday" did not arrive until months dragged by. Its second reading was ordered on 4th April 1858. The printed Bill did not embody exactly the same provisions as were revealed by Cairds at the time of first reading. Main alterations were change of machinery from Registrar General to the Board of Trade and a reduction in estimated expenditure to about half. The Board of Trade was authorised to appoint "inspectors of Agricultural statistics" who among other duties "shall make District visits from time to time and shall be empowered to list the accuracy of Returns". Where no returns were made, the Board was empowered to authorise any one to enter upon defaulters' holding for inspection and making return.

(80) Supra (July-August 1857) Vol.147. PP.195-201.
During debate Caird also referred to Scotland where returns had been recently discontinued. He suggested that failing the Highland Society to resume the work, similar "plan might also be extended" to that country where "school-master of parish would be most competent man to furnish the requisite information" but there was opposition to the whole measure itself, to its expenditure and especially to the clause providing for authorised persons to enter defaulter's holding for making return. Suggestions were also made to drop the subject altogether from the Parliament, and let the job be done by Royal Agricultural Society of England, alike of its opposite numbers in Scotland. Delaying tactics in lengthy debate were again employed by suggesting postponement of Second reading for "six months". The House was divided, 261 agreed to put off its consideration for six months, where as there were only 125 against it. The six months elapsed without witnessing the subject again brought up in the House. In fact the Bill was never re-introduced. Instead, Caird moved a resolution on 24 February 1859 that the Government should collect acreage statistics.

Supporting

(82) Supra. (Feb.–March 1859) Vol.152, p.769.
(83) Parliamentary Debates (Feb.–May 1859) Vol.149 PP.1871–1919
Speeches of Caird and Fookes are interesting. See also Page 763 where Caird showed interest in Scottish Statistics also page 463 for similar information.
Supporting it Caird announced that the Bill be last introduced carried approval of the Royal Statistical Society, and the Resolution he now intended to move met objections raised in the Parliament against the Bill. The Resolution was implicit. It only said that it was "advantageous to public interest" that "Government should ascertain and publish periodically agricultural statistics of Great Britain". Not that it embodied any suggestion on mode or machinery to implement it. Caird, however, in the Parliament proposed that collection be made by Registrar-General along with population censuses. Beginning may be made in 1861, and continued decennially thereafter until benefits accruing from it justify annual collection. To illustrate practicability of his suggestion Caird instanced the Census of 1851 when farmers on request but at their option, had returned size of farms and number of agricultural labourers. But there seemed determined opposition and the Resolution was lost with 163 to 152 votes.84

Failure did not stop Caird advancing. In 1860 he secured unqualified support from the London Session of the Int. Stat. Congress on the desirability of collecting agricultural statistics, at least, quinquennially.85 The same years Corn

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84 Supra (Feb.–March 1859) Vol.152. PP.730-739.
Corn Crops failed. It provided him with a new handle, and on April 1861, he rose to ask the Secretary of Home Department if in view of the "Deficiency of the last harvest" the Government would endeavour to ascertain acreage under crops. Outside the Parliament he had suggested to the Home Secretary to employ constabulary for the task, as was done in Ireland. In reply, the Home Secretary said unlike Ireland constabulary in England was not under the control of "county justices" and was not paid from "consolidated fund", and that was an incident which forbade the Government to employ them. He, however, stated that he intended to consult Chairman of Quarter Sessions. 85

Accordingly a circular letter was issued on 5 May 1861. It suggested that constabulary might be used for the collection of agricultural statistics. Opinion was also sought on the extent and frequency of collection. A suggested schedule for crops was enclosed for consideration. Only breadth of acreage under crops was proposed to be ascertained. 87 Of the fifty-nine to whom this letter was addressed, thirty favoured the collection to the employment of police. Twenty one expressed no opinion as to their advantage.

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85 Supra (March-May 1861) Vol. 163. PP.539-539.
87 Copy of circular sent by the Secretary of State to the Chairman of Quarter Sessions in England and Wales with reference to the Collection of Agricultural Statistics etc. (House of Commons 205) Vol.40, 186. PP.1-31.
advantage, six deferred the question to later consideration and two positively opposed the idea. Majority being disinclined to assist the measure through police, the Government asked the Registrar-General to prepare a plan and its cost. The proposed plan was estimated to cost £15,000 for one enumeration of acreage, in England and Wales. It was considered a heavy pull upon the purse and shelved. Calmness prevailed in the House for about one year.

On June 7, 1964, Caird brought up another resolution. To drive the thin edge he changed its wording making it less binding by deleting "that Government should ascertain" and limiting it to say "that the collection and early publication of agricultural statistics of Great Britain would be advantageous to public interest." On this occasion Caird made different suggestions, but stressed on sample enumeration with the help of Ordinance maps. He thought 15 districts containing 125,000 acres each would be fairly representative for practical purposes, of changes in acreage and estimated production of the country even though the whole acreage was not exactly known. It gained merit on two points. The cost was only/

(90) Supra (May-June 1864) Vol.175. P.1362 et seq.
was only £3000 and there was no necessity of requiring returns from individual farms which was regarded inquisitorial.  

General trend of speeches was hardly hopeful. Nothing can, however, resist persistence. Caird pressed for division. Much against the wishes of the Government of the day the resolution was carried by 74 to 62 votes, possibly many abstaining.

It is interesting to observe that although the Lords Committee had recommended "Legislative enactment" for all parts of the United Kingdom, the consequent Bills were principally designed to embrace only England and Wales. Caird however, in both of his resolutions, one lost in 1859, and the other now passed stretched them to Great Britain perhaps because of the discontinuance of the Collection of returns in Scotland since 1857. But the resolutions urged the necessity of collecting only acreage under crops. Livestock was excluded. About nine months after the Resolution was passed, and when Caird had inquired in March 1865 from the Board of Trade as to what steps had been taken to give effect to theResolution, he was told that arrangements were in hand to obtain "the acreage under cultivation by voluntary returns". Livestock was still out of picture. On 8th June next (Lewis incorrectly makes the date 12th June 1865) however, £10,000 were voted to defray the cost

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(91) Ibid.
of acreage statistics of Great Britain.93 Meanwhile, outbreak of cattle plague assumed serious situation. A Royal Commission for inquiry into the origin, nature and treatment of the disease was appointed on 29th September 1865. Scarcely four weeks elapsed that the Commission on 26th October addressed the Board of Trade representing "the importance of obtaining correct information respecting the number of horned cattle and sheep."94 Gibson, the first man to move the subject of agricultural statistics in the Commons about 20 years earlier was the President of the Board. He had advocated the collection of livestock statistics besides acreage.

In all probability, he seized the opportunity by immediately attending to Commissioners suggestion so as to cover what Cairds Resolution had left out and with which Gibson was definitely not pleased (cf. Debates). A week after they had written the letter to Board, the Commissioners also submitted their first formal Report. It contained six recommendations, one of them said that "it was highly desirable that steps should be taken for obtaining periodical returns of "the horned cattle and sheep within the area of every parish of Great Britain,..."95 On 3rd November96 1865

93 Supra (Apr–June, 1865) Vol.179 P.1312.
94 infra. Appendix E. P.180.
95 First Report of the Commissioner Appointed To Inquire into the Origin and Nature etc of the Cattle Plague with the Minutes of Evidence and An Appendix (House of Commons 3591) Vol.22, 1866, P.xviii.
96 Supra. P.180.
the Board of Trade replied to the Commission that early steps were being taken to gather requisite information. By May 1866 such returns had been actually collected and published. It is singular that livestock which always remained in the background at the time agricultural statistics were discussed, was in fact enumerated a couple of months earlier than the crop acreage during the continuous collection of agricultural statistics since 1865.
It has been stated in the preceding pages that official, annual and continuous collection of agricultural statistics commenced in 1847 in Ireland and in 1866 in Britain. Between then and now the United Kingdom witnessed fast changes in economic processes both at home and abroad. This is an event which increases demand for statistics. During the same periods the country was twice involved seriously in great wars. It circumstanced acceleration to the demand for more, more accurate and more up to date statistics. Moreover, recognition gradually grew fuller and wider that to be statistically informed about agriculture in days of surplus as well as scarcity was as important as about military in peace and war. The former being as essential for economic planning as the latter is to defence. The combined forces of all these events: economic, defence and popular opinion made itself manifest in persistent official efforts to establish a better statistical system. Different devices have been used to gain the object; Acts were passed, machinery was attuned and coverage was extended. This chapter is devoted to the study of these efforts and their effects.
We begin with legislative enactments. Before the official inception of the collection of agricultural statistics even in Ireland, Gibson, in 1847, in his unsuccessful Bill had pleaded for legislative sanctions in England and Wales to work the system effectively and efficiently.

The first Volume of Irish Returns of Agricultural Produce also hinted at "Powers of an Act of Parliament" for the same reasons. Several more opinions were expressed both in the Parliament and outside that there must be certain penalties if projects of the kind were going to be effective. The Lords Committee of 1855 endorsed this view in unambiguous terms, but when measures had been taken into reality all had fallen together. The returns commenced and continued voluntary in the whole of the United Kingdom until 1918, when under Clause 15 of the Corn Production Act, 1917, they were made.

1. Watson, Prof. J.A.S., "Scientific Progress and Economic Planning in Relation to Agriculture and Rural Life" in "Report of the British Association for the Advancement of Science" (Presidential Address to Aberdeen Session) London 1934. The address illuminates important changes in British Agriculture since 70's of the 19th Century.

2. Returns of Agricultural Produce in Ireland in the year 1847 (H. of C.) Vol. 57, 1847/8, P.IV 923.
compulsory. It is curious that failure on certain occasions to get satisfactory returns such as those of Poultry during 1884-1886 did not invoke such an action. Amazing is also the fact that in 1906 and on subsequent occasions when returns from all industries were obligatory under Census of Production Act, 1906, agriculture was excepted on the pretext that analogous information was attainable through optional returns. Some additional particulars were, however, added to the Schedule during 1908. It remained voluntary. The pretext was, nevertheless, founded on optimism. Complete returns were not being made about these times. In the gross amount the failures were 3 per cent. It is singular that even the inclusion of the Clause 15, which made the returns obligatory was not designed to eradicate any of the intrinsic defects of the returns. It was a coincidence. The Bill of the Corn Production Act, 1917 which provided

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4. See various Vols. of Agricultural Statistics for Gt. Britain up to 1912.
5. A Bill for Encouraging the Production of Corn and for purposes Connected therewith (House of Commons. 84) Vol. 1, 1917-18, P.265. See also the Public General Statutes passed in the 7th and 8th year of the reign of H.M. King George V, London, 1918. Chapter 46.
minimum guaranteed price for wheat and oats sold was amended in the committee so as to make it payable on acreage under those crops instead of their quantities sold. An M.P. Scott, at the Committee stage, proposed on July 1, 1917 that the returns be made compulsory as a necessary Corollary of the amendment. 6 No discussion or comments followed immediately. A month later the President of the Board of Agriculture proposed a "New Clause" in the Bill asking for "Power to Require Annual Agricultural Return", not only for wheat or oats which were eligible for guaranteed price, nor for all the crops but also for livestock. It is surprising that this important "New Clause" was quietly introduced, especially when other amendments were much debated and disputed. Final Act embodied this clause and was applicable to all the three countries with certain modifications here and there. The administration of the Act as a whole rested with the agricultural departments in the various countries who were also responsible for agricultural returns for their respective divisions. It

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is, however, ironical that its enforcement in Ireland is not mentioned in the First Annual Report upon the Agricultural Statistics which contains a fairly detailed history of the returns in Ireland since 1847. It is rather negatory on the point by observing that in spite of the recommendations of the Irish Agricultural Committee the "Government refused to give any financial inducement to farmers to increase their area under cereals" and that "reliance was again placed on voluntary measures stimulated by propaganda". The absence of its mention is conspicuous particularly because reference has been made to Tillage Orders of 1916 and 1918 which without financial aid, aimed at similar ends. Certainly the Act applied to Northern Ireland (It was confirmed by Mr. J. Shanks of Agricultural Statistics Branch N. Ireland). The returns became compulsory for the first time in the whole of the United Kingdom in 1918. Earlier to that the Defence of the Realm Order 15D9 issued in

November, 1916, yielded statutory powers to obtain agricultural statistics, but these were perhaps not used. In official language, however, the returns were obligatory in 1917 "Under an order made by the Army Council". 10

Coming back to the Corn Production Act, 1917, it provided for more powers in as much as they extended to commodities other than wheat and oats. It is suggestive of the fact that an enactment for compulsory returns was regarded desirable beyond the requirements of the Act. The Act itself was to "Continue in force until the end of the year 1922" unless it was amended, extended or repealed. The Agriculture Act, 1920 which, among other things amended this Act by guaranteeing higher prices for wheat and oats gave it a renewed lease of life. The compulsory return was now to continue under the amended form "until Parliament otherwise determines". 11

Only a few months had elapsed since Agriculture Act was passed that the national economy suffered a

paralytic stroke. Prices showed a vertical fall. Financial position suddenly deteriorated and active demand came from other industries especially coal for similar subsidies as were provided to cereals. The Government was, therefore, impelled to bring in Corn Production (Repeal) Bill which received Royal Assent in August, 1921. Thus with the repeal of Corn Production Act, 1917 statutory powers to obtain agricultural statistics disappeared.

The returns were optional in 1922, and for the three succeeding years. Occupiers began to make them "in a rather dilatory fashion": an event to which change in the field machinery in England and Wales in 1919 from that of Inland Revenue officers to that of Part time Crop Reporters might also have contributed. For the first time compelled by reasons of defective return under optional system the Government brought in Agricultural Returns Bill in February 1925. It was essentially a revival of Clause 15 of the repealed Corn Production Act, 1917. The Bill was easily passed, but it did not extend to Northern Ireland. Why Ireland was left out is a question to which we know no

definite answer. Exception of Ireland could be
due to the mode of filling the Schedules by constabulary as against occupiers in Britain under which
"dilatory fashion" was less likely to occur. It could
also be due to political unrest that followed partition
of Ireland. Either sounds plausible, and perhaps it
was a bit of both.

By virtue of the new Act returns became compulsory
in Britain in 1926. Better late than never: the demand
made several decades earlier was eventually supplied.
In Northern Ireland, on the other hand it remained
optional until a corresponding agricultural Returns
(N.I.) Act, 1939, \(^{14}\) was enacted. The Irish Act at
least superficially did not have the same genesis as
British.

The Bill was justified on two grounds; war and
administration of Tillage Order, 1939 which required
the farmers to increase their tillage area by one-tenth
of total arable area. Undoubtedly reasons were cogent.
But the opposition imagined it unnecessary on two
grounds. One that the Tillage Orders of the First World
War had successfully worked without any legislative
sanction and secondly that, as the sponsors admitted,
the/

\(^{14}\) The Public General Statutes passed in the 2nd &
3rd year of George VI, London 1940, Chapter 35.
the returns were being faithfully furnished, without any compulsion, by the farmers. The opposition was more apparent than real. The Bill was passed by 12 votes to 5 in December 1939.15

It is laughable that during the debate on this Bill one or two speakers in the parliament stated that owing to first world war agricultural returns were not collected for about three years, and that nothing was lost in that. The statement was simply untrue, because such a cessation in annual returns did not occur during war. Whether the speakers bluffed the audience in an attempt to oppose the Bill, or they had confused their information with the years 1919-1922 when due to political unrest only sample returns through postal system were obtained, is not known. That the statement was allowed to go unchallenged, is nevertheless, an unhappy reflection on the knowledge of politicians about recent history of agricultural statistics.16

The Irish Act went a step farther than its corresponding British Act of 1925 considering also such powers in Britain as were given under part V Clause 34 of the Agricultural Development Act, 1939,

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16. ibid.
which wielded certain additional powers in connection with the collection and use of agricultural statistics. Under British Acts of 1917, 1920, 1925, and 1939 as and when they operated the occupiers were legally obliged to make return only of acreage of various crops, number and description of livestock, number and description of workers on farms, whether occupier was an owner of a tenant. Any supplementary information was to be requested on Voluntary basis. For example, some voluntary information was collected during the census of Production of 1930.\textsuperscript{17} The Irish Act additionally applied to poultry, agricultural machinery, fertilizers and feeding stuffs, etc. True, that in Britain similarly wide powers to obtain elaborate returns were available under Defence Order (67) of 25 August, 1939, and especially Agricultural Returns (Scotland) Order dated 27 September 1939 and Agricultural Returns Order dated 30th September 1939.\textsuperscript{18} The latter respected England and Wales.

It is amusing that order for compulsion in Scotland, the birth place of statistics in this country, preceded England/.

\textsuperscript{17} The First World Agricultural Census (Inst. of Agric.) Rome, 1930. P. 533.
\textsuperscript{18} Statutory Rules and Orders 1939. PP. 773-777 and 890-892.
England and Wales. One would reasonably have expected otherwise in view of war strategy as well as English indifference to statistics in earlier times. With the cessation of the war, however, these Orders became null and void, yet the returns remained compulsory under Agricultural Returns Acts of 1925 and 1939 in Britain and Northern Ireland respectively.

The year 1947 was reached under these arrangements. The Labour Government now introduced a Bill - reminiscent of Conservative protectionist legislation of the thirties. It provided assured markets and guaranteed prices. It was described as "Agricultural Charter" and claimed to push agriculture up from the "downs" to which it had so painfully fallen in a century of "ups and downs". In spirit it sought to cure the grave endemic instability of prices that had been the bane of agricultural commodities for years. The Bill was passed without division in spite of the voices aired against it.

One of the objections against the measure was that farmers were being granted privileges and guarantees without asking any thing for the state in surplus profits which were to accrue from state assistance especially when they were favoured in respect of Income Tax.

Tax and freed from Excess Profits Tax. The objecting voices proved weak.

An efficient administration of the Act necessitated collection and use of agricultural returns more extensively. Powers for the purpose were provided under Clause 77 and 78 of the Act and defined in Agricultural Statistics Regulations of 1948. This Act repealed British Agricultural Returns Act, 1925, but it did not extend to Northern Ireland in as far as clauses 77 and 78 were concerned. Two years later, in 1949, an act giving guarantee to farmers against the loss or risk in return to the extra efforts they were asked to make, corresponding to British Act of 1947, was passed also in Northern Ireland. The exclusion of Northern Ireland from certain clauses of Agriculture Act, 1947 is to be traced to the option given to that country if she would choose to adopt them. Another reason for keeping off 77 and 78 clauses which respected agricultural statistics could be found in the existence of the Act of 1939 which provided much of those powers. The Irish Act 1949, though amending slightly did not repeal the Agricultural/
Agricultural Returns Act, 1939, as the British did to that of 1925. Presently, the annual returns are compulsory in Britain under Agriculture Act, 1947 and in Ireland under Agricultural Returns Act, 1939 as amended and defined from time to time.

In a nutshell, legislative provisions pleaded for since before the commencement of official collection were ultimately found essential by reason and experience. It is hardly rash to remark that in Pakistan, too, suitable statutory powers were a pre-requisite to any mode of collection if improved results in the field of statistics were the aim. We wonder if measures analogous to Agriculture Act, 1947 should not be successfully tried in Pakistan, not only for the purpose of improving statistical system but also to steer "Grow More" Campaigns, such as that launched for Cotton in 1955. The writer of this thesis was closely associated with that Campaign and is in position to say that it did not satisfy hopes. It has been his conviction that had some statutory powers been provided, and subsidy assured at end products as against at cultivation stages, as was the case, the results would have been better. However, apart from its statistical requirements, that is a matter incidental to the present study.

The/
The next mentioned device towards a better statistical system was the machinery or organisation which, like any other country, the administrative Governments used for agricultural statistics in the United Kingdom. It can be studied in two parts. One concerns the central authority which usually engages itself in collation, abstraction and publication. It may add to or substract from its "usual" duties but central machinery implies central direction. The other concerns field organisation, which feeds the central authority. Each is interlocked with the other for proper functioning of the official or even unofficial statistical system in agriculture. Neither of the two organisations has been uniform in the United Kingdom, nor for long times even within Britain. In fact, within each country tuning has had to be done from time to time to keep the system running. A resume of changes follows.

In Ireland the central part was installed in the Board of Works in 1847, and for the three succeeding years. In 1851, when agricultural statistics were concurrently collected with general population census, its functions were transferred to the Census Commissioners. From that year onwards successive Registrars-Generals/
Generals did the job in Ireland up to 1899. The powers and duties of the Registrar General for Ireland and Irish Land Commission with reference to the collection and publication of agricultural statistics and of returns of average prices of agricultural produce were delegated to the Department of Agriculture and Technical Instruction under the Act of the year in 1899. 22 By the devolution of powers effected at the time of partition of Ireland in June 1921, under the Government of Ireland Act, 1920, the Department was replaced in Northern Ireland by the N.I. Ministry of Agriculture, which, through its statistical branch set up in 1923, has been providing central direction for agricultural statistics.

The field machinery in Ireland remained unchanged for a long period although its suitability was sometimes questioned. 23 Between 1847 and 1953 the Royal Irish Constabulary was the field machinery. Only during four years were their services unavailable. The years were 1919 to 1922 when "disturbed state of the country made/22. First Annual Report, op.cit. (6). P.5.
made it impossible to spare the services of police". For the rest of the period the police visited holdings and filled in the particulars of the schedule on personal inquiry from the occupier or other person competent to give the information. The police also framed estimates of yield in consultation with hundreds of farmers. During "disturbed" years, however, certain farmers were requested to make estimates. The same arrangement works in Southern Ireland up till the present. But in Northern Ireland in 1954, and thereafter, the police has been relieved of the work. The schedules are issued directly to the occupiers about 95 per cent of which return them satisfactorily. Previous to that some of the quarterly returns were also collected in this manner, which is identical to Scottish method. Actually, this postal procedure was tried even earlier, during 1919-1924, for the first four years to obtain sample returns only and for the last two years to collect sample returns, concurrently with complete returns. In these years the number of occupiers who made returns was made to the original method of getting the schedule through police up to 1953. From 1954, Agricultural Instructors are supplying the yield estimates.

The/
The same Instructors have been framing some estimates of yield on county basis since 1923 which had been up to 1953, used as check data for estimates made by police.

In Britain from 1866 to 1882 the Board of Trade was the Central machinery. Change for the better began to be demanded in 1879 when Lloyd, president of the Association of the Chamber of Commerce moved a resolution in the Commons to the effect that there should be a distinct department of the Government to deal with agriculture and commerce exclusively. Among the anomalies which would be removed or reduced with the measure being taken into reality reference was made, interalia, to agricultural statistics. The existing arrangement was declared absurdly incongruous in as much as agricultural statistics were maintained by a department "mainly connected with ships and railways". In spite of Government opposition the resolution was carried by 71 votes to 65.24 But before any action was taken the Government was changed in the following year. The demand was rapidly revived. In 1881, Lopez moved/...
moved almost the same resolution in the lower House. He drew attention of the House to all anomalies to which Lloyd had referred, and curiously enough in exactly the latter's words in reference to agricultural statistics. The resolution was accepted without division. A few months afterwards Privy Council Agricultural Department was set-up.

The new department was in effect a renamed Privy Council Veterinary Department which had been known as Cattle Plague Department between 1866 and 1870.

This new Department replaced the Board of Trade's interests in agricultural statistics in 1883. A few years experience pointed to the need for a bigger and more autonomous department adequately to deal with matters connected with agriculture. A Board of Agriculture on lines similar to the Board of Trade was the consequence. On this official Board of Agriculture established in 1889 under Board of Agriculture Act, 1889, devolved the responsibility for central direction of agricultural statistics. It may be clarified/

25. Parliamentary Debates See the speech).
28. Supra.
clarified that there had existed a Board of Agriculture during 1793 to 1822, but that was a private or at best semi-official institution. The new Board was official and unconnected with the old. The new Board was designed to take over duties of "any Government department relating to Agriculture". It naturally took the place of Privy Council Agriculture Department as provided under Clause 2 (2) of the Act.²⁹ It is remarkable that with the new departments coming into being agricultural statistics began to expand in scope. The institution of estimates of yield coincides with the creation of Privy Council Department and has continued, enlarged and improved. From the year of inauguration to 1911 the Board provided the Central Organisation for the whole of Britain. Its name was, however, changed to Board of Agriculture and Fisheries in 1903. In January, 1912 there was set up a separate Board of Agriculture for Scotland under Small Holders Acts 1911.³⁰-³¹ Section 4 (3) of that Act substituted the Scottish Board in place of the Board of Agriculture which had since 1889 been responsible for entire British Agricultural statistics.

³⁰. Supra. (1& 2 Geo.V) 1911, Chapter 49.
statistics and which was still to continue to do so in England and Wales. About seven years later, in England and Wales, too, the Board was replaced by a Ministry erected in that year under Ministry of Agriculture and Fisheries Act, 1919, a ministry which was renamed as Ministry of Agriculture, Fisheries and Food with the amalgamation of Food Ministry in 1955. This Ministry has been the central machinery in England and Wales as from its inception besides constituting a co-ordinating office for all-country statistics. In Scotland, the Board was supplanted by a department under the Re-organisation of offices (Scotland) Act, 1926,32 which among other things provided for the transfer of powers and duties relating to agricultural statistics. The Scottish department continues to be the central machinery in Scotland since 1929.

Briefly speaking, on the respective agricultural departments, boards or ministries has devolved the work of central organisation as from their creation in the third quarter of the 19th century. Although their establishment was justified on several ground not excluding agricultural statistics yet in the subsequent changes in the form of re-organisation and re-orientatic there/

there was little direct concern with agricultural statistics. Nor were agricultural statistics effected merely on account of these changes, although provision of more staff may have contributed towards their better compilation and digestion. It is tempting to observe here that in spite of, or perhaps because of frequent changes in agricultural organisation in this country it never seems to have been regarded desirable to transfer the duties connected with agricultural statistics to any department other than agricultural notwithstanding the fact that there has existed a central statistical officer since January, 1941, and a separate Scottish central department for the last five or six years. The primary duty of Central Office is the collection from various departments of regular series of figures on a coherent and well-ordered basis and to maintain a general liaison between different departments and organisations. These central departments are not officially entitled to interfere with routine matters but without their concurrence changes in the schedule are inadmissible. Frequently, unofficially, aid is sought and obtained. Any major change/
change in the existing procedure, however, requires their official concurrence and approval. In practice their jurisdiction on various departments seems hardly more than that of the F.A.O. on various countries! It is a precedent which merits serious consideration of the advocates in Pakistan that the work of central machinery should be transferred from ministry of agriculture to the Pakistan Central Statistical Office which itself is a part of a relatively less effective ministry: the Ministry of Economic Affairs.

The field machinery had been supplied by the Excise officers of the Board of Inland Revenue from 1866 to 1918 in England and Wales and up to 1933 in Scotland. Those officers distributed, collected and made parish summaries for their respective districts before transmitting them to the Central Organisation.

Another set of field machinery took birth in 1884, the

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* It may be stated that preharvest estimates of yield (forecasts) commenced after the first war. At present estimates of crop yield start in July in Britain and in August in Northern Ireland. Final estimates in Britain are made in November, in Northern Ireland final estimates are made for hay in August, and for cereal crops and potatoes in October, and Root Crops and flax in November. The reports received from a sample of parishes or districts are weighted before produce is worked out for the whole country.
the first year when besides ascertaining acreage and number of livestock, estimates of yield began to be framed. They were part-time crop-reporters selected from land-agents, farmers corntraders and other similar categories of competent people. The crop reporters besides furnishing estimates of yield, which they used to make after consulting hundreds of farmers and others were also helpful in supplying information in respect of such holdings as were not given by occupiers. The number of the crop reporters in Britain was over 200 up to 1918 which was increased to over 300 in 1919 when additional duties were imposed in consequence of Inland Revenue officers being relieved because the officers of the Board of Inland Revenue had in that year withdrawn their assistance on the ostensible pretext of heavy call on their duties. It is doubtful if that was the only reason because their opposite numbers in Scotland continued to assist the inquiry up to 1932. One might suspect that departmental politics caused the cleavage.

From 1919 onwards the field machinery in the two countries of Britain was different. In England and Wales part-time crop-reporters were given the duties hitherto carried out by Excise officers: each of the reporters was responsible for 30-40 parishes. The same arrangement existed up to 1949 when crop reporters
reporters were relieved by the whole-time district agricultural officers of National Advisory Service, which was set up under Agriculture (Miscellaneous Provisions) Act, 1944 "for advice and instruction" on agricultural matters. Section I of this act which provided for the creation of field service did not extend to Scotland or Northern Ireland. The number of the district officers in England and Wales has been about 380 and as such they exceed the number of crop-reporters; their immediate predecessors. These officers issue, receive, collate and forward parish statistics, frame crop estimates, supply information on crop conditions during growing season and keep an up-to-date register of occupiers of agricultural holdings.

In Scotland the things were not identical. From 1919 to 1932, the old arrangements worked satisfactorily. In 1933 and every year thereafter when services of the Excise officers were unavailable their work unlike England and Wales was not passed over to the crop-reporters. The department of agriculture itself began to issue and receive the schedule from occupiers directly. Such a course may have been regarded feasible in view of the relatively small number of returns which were to be received. The number of occupiers of holdings exceeding one acre was less than 76,000 as against/
against nearly 400,000 in England and Wales during early thirties. The estimates of yield, however, continue to be supplied by 43 crop reporters, who are either farmers or having contact with the farming community. They are each remunerated according to the agricultural importance of their area comprising roughly 20 parishes. Although there could be no serious objection to the validity of data supplied by the very different types of machinery in the two countries, yet the official label which the two establishments carry may not be uniformly read by the occupiers who supply basic information.

Broadly speaking the three countries in the United Kingdom bear much physical, administrative and political similarity to the two provinces of Pakistan. Different types of central and field organisations have worked; and satisfactorily for all practical purposes. There has existed a fourth arrangement in the detached Islands. Their details are unknown to us and unimportant for this study. All seems to have worked well, and had it not been so efforts must have continued to bring about uniformity. This is a promising precedent for Pakistan where the present set-up of

of official services as well as tenurial system of land which fashions the pattern of statistical organisation, especially in the field, renders it inexpedient to create a uniform machinery in the two provinces without incurring much additional expenditure.

Of the three devices; enactments, machinery and coverage only the last remains to be now examined. It puts on a tridimensional setting: its faces being the time, the places and the particulars. The time has again two aspects for our interest. One is the date or season of obtaining statistics and the other the frequency of securing them.

In Ireland tillage and livestock statistics were requested in August in 1847 and for several years that followed, the produce returns, however, were made in October-November. It was admittedly "too late for the extent" because crops had by then been removed from the soil. In 1858 it was stated that "before 1857 the Returns of Tillage and livestock were obtained in August-September. It is however, now considered that the beginning of June ...... is the most suitable time to ascertain the acreage under crops and the number of/

37. Returns of Agricultural Produce, op.cit. (2) P.V.
of livestock". No precise date of the collection of these returns is mentioned in the annual volumes of Irish Statistics before 1867 when it was stated that "the collection of statistics commenced on the first of June by nearly 4,000 enumerators....They visited upwards (of) 600,000 holdings".

Even here the reference to date did not imply anything clearly. Ambiguity arises from the method of enumeration, because enumerators could not possibly make the return for all holdings in their charge on any single day. Probably it meant that the figures, as reported in the returns, related to the first of June. How far this nicety was in practice observed is difficult to say. One fact which is certainly revealed is this that the date of enumeration was shifted back from August-September to June. Whether it was to push it nearer to the British date of enumeration or only experience fashioned this "suitable" change for securing early information is again a matter of guess.

The first of June has ever since been maintained for the/

38. Supra. 1858. PXIX (we owe this reference to Mr. James Shanby of Northern Ireland)
the main return in Ireland in spite of the fact that meanwhile couple of shifts in the date were made on the other side of the water, and also notwithstanding the major recent switch from personal visitation to postal method of getting the returns. The produce statistics, however, have been separately collected during harvest seasons, and presently final estimates of yield in Ireland are collected for hay in August, cereal crops and potatoes in October and root crops and flax in November. Pre-harvest-estimates of crop yield start in August, which is a month later than Britain (Marais's op.cit.36).

With regard to frequency, basically there had been only one major annual return until 1931, when in connection with the agricultural census a return was obtained for the number of livestock in January in all the three countries. Previously, at the time of Agricultural censuses additional particulars used to be inquired through the June enumeration. Again in 1934 (in England & Wales in 1935) a similar winter census was made for providing up-to-date information for the operation of pigs Marketing Scheme and for the proposed introduction of marketing schemes of the agricultural produce in the country. Once installed the winter return continued unbroken for many years. In Northern/
Northern Ireland a September return was begun in September in 1935, and annually thereafter until it was discontinued in 1952. In April, 1936, a spring return also commenced, which regularly continued before it was finished also in 1952. Their institution and continuity during pre-war, war and post-war years appears to owe in large measure to the occurrence of the Second World War. The additional returns were due on the first day of January, April and September in Northern Ireland. They were mainly confined to livestock. It was only the January return which was obtained on a 100% basis through the instrumentality of police. In scope it extended to certain items other than livestock. The remaining two returns had been obtained through postal method and were limited to a changing sample of about 20 per cent of which nearly 50 per cent used to supply the information requested. Between 1946 and 1951 to the spring and autumn returns questions on agricultural labour were added. From 1951 onward, when questions on labour were/

were dropped from the winter returns, some items of poultry were substituted in their stead. Sometimes, the same return was also used for ascertaining extent of acreage under vegetables etc. From 1949 onwards the winter census also used to be made through postal method in which farmers were required to return completed schedules to the N Ireland Ministry. Only June return was now made by the police, but from 1954 they have been relieved of that duty as well. The winter and autumn returns dropped in 1952 have been revived in 1956, but now their scope is limited to pigs and poultry.

In Britain the first annual return of livestock was collected on March 5, and that of acreage on 25 June 1866. From 1867 both returns were simultaneously collected on 24th or 25th June. The date was changed to 4th June in 1877 for "earlier publication of returns". The fourth day of June has been continued to be the enumeration day of the main annual return for agricultural statistics in Britain.

As regards frequency, the number of return per annum has been practically one in Britain until 1931, when/

when a winter return of livestock was gathered. This
number, however, excludes special returns occasion-
ally made which will be shortly discussed. In Decem-
ber 1933 and since December 1935 there has been
obtained a winter return. Beginning with 1939 their
number increased to four. The winter census was begun
with the main object of "estimating the probable
future supplies of home produced meat". About 34 per
cent of about 400,000 occupiers furnished returns.
It is to the credit of the late generation of English
farmers that they responded better than Irish farmers
where the corresponding figure for voluntary return
for 20 per cent sample was only 50 per cent. The
institution of quarterly returns is attributable to
the war. These returns were to be made on the 4th day
of March, June (the main return), September and
December. It may be noted that the dates for winter
and spring returns in Britain had been substantially
different from those of Ireland. Up to December 1952,
unlike Northern Ireland all the four returns were
obtained from 100 per cent occupiers although as early
as

44. Agricultural Statistics for England & Wales for
as 1947 official intentions to make inquiries on sample basis without undue sacrifice of accuracy" was expressed and also sampling was actually used in National Farm Survey of Scotland in early 40s. In scope they varied. From 1953 onwards, however, England and Wales decided to collect quarterly returns, except June, from a sample of one-third of the agricultural holdings. The sample was a changing one. The June return was to continue as usual. Another point worth remarking about English returns is that except that of June all schedules have been directly issued and received by the Ministry itself. The June schedule was completed and returned through, at first excise officers, then crop-reporters and lately by district officers of the National Advisory Service. It is remarkable that forecast of acreage under Major Crops asked in March returns yield fairly dependable results.

Beginning with 1953 Scotland adopted a different course. The returns have been obtained twice yearly; in June and December. Both are collected on 100 per cent basis, and directly from the farmers. Winter return emphasises on livestock statistics though numerous.

45. Agricultural Statistics 1939-44, United Kingdom, Part I, HMSO, 1947, p.6. Caird in the 19th century have suggested the use of Sample. See Chapter VII.
numerous items extraneous to livestock have been included from time to time.

Variations in the frequency between English and Scottish returns has expectedly accompanied certain differences in the scope of the Schedule. To illustrate the point in view, in England and Wales major questions on agricultural machinery are asked through the June return, and subsidiary particulars are inquired through quarterly returns. This avoids too many questions in one questionnaire, which is a good thing to do. But whether it is too many questions in one schedule or too many schedules in a given period that should be adopted is a matter of differing opinions. Scotland preferred the former and complete particulars are included biennially in the June return. Both methods have advantages of their own, but there are disadvantages too.

Besides the returns obtained in the three countries discussed above there have been made agricultural census. The first one took place in 1903, the second in 1913. The data of the latter were not published owing to the outbreak of the first world war. The third census, and quinquennial thereafter, was conducted in 1925, 1930 and 1935. Subsequently the June schedule was extended largely and calculations of/
of national productions have been made annually which was facilitated by the expansion of the schedule. (See Agri: Stat: for England & Wales for 1935).

In recent years much emphasis is being placed especially in England and Wales, on the use of sampling and yield data of milk and eggs. It is claimed to have much improved and simplified by this procedure where changing samples are selected every month. Since 1956 the yield of cereals is also being estimated in England experimentally by the use of stratified sampling. Both identical as well as changing samples are selected for the purpose. The former is reported by district officers while the latter by the farmers. The replies are amalgamated before "raising".

In principle the stratification of holdings for estimating cereal yields is based on March returns which represent a 33 per cent changing sample of some 371,000 agricultural holdings in England and Wales. In total there are roughly 120,000 holdings of which all holdings of over 50 acres and one third of under 50 acres together numbering about 70,000 holdings in all are included in the sample for yield. These 70,000 holdings are divided into five size groups including one group reporting no cereals in March return.
It is to be noted that the yield reported from these holdings are not a result of any physical weighings, nor are they based on anything comparable to "crop cutting experiments" which are being adopted and encouraged for Pakistan and several other countries. On questioning we were told that such a course has not been adopted for several reasons. Firstly it would increase the physical work of field staff, secondly the farmers are likely to object to cut and thresh a piece from the centre or corner of their field, thirdly, the results of crop cutting experiments would not be comparable with the available series of yield statistics which are based on human judgment and, fourthly it is maintained by certain people that crop cutting experiments are more representative of biological yields than average yields of a country. However, an answer to this last objection could be found in resorting to regression analysis.

Besides general there are particular limitations of sampling in its application to agriculture. Undoubtedly/


47. Palea, H. "Some Sampling Problems in Agriculture" in Incorporated Statistician for July 1955 (we saw this paper in a reprint). It explains the difficulties the agricultural statisticians would face for adopting sample studies.
Undoubtedly the statisticians of this country are aware of them more than most, yet there seems to exist great enthusiasm not only to supplément but even to replace complete enumeration by sample enumeration. We are not competent to comment on this aspect but we wish them success.

From the "time" we pass to "places". It refers to the areas or holdings embraced by a return.

One can easily appreciate it that imposition of certain limit on the unit of enumeration in order to save labour and expense is highly desirable provided that it does not affect the results materially. There could be no single rule uniformly applicable to all the countries and much less in countries where type of farming and model size of holdings substantially differs such as the United Kingdom and Pakistan. It was, perhaps on such accounts, that limits in Britain and Ireland, having contrasting sizes of holdings, have been different. In Britain, in 1666, the returns were collected from occupiers of holdings exceeding 5 acres. In 1667, since the livestock was also to be enumerated through the same return, with a view to including livestock on smaller holdings, schedules were addressed to "all occupiers" of agricultural holdings.
The following year fundamentally the same practice was followed but a clarification was made by prescribing that the schedules were to be collected from "all holdings of more than small pieces of garden ground. It did not alter intentions but emphasis. Probably, inclusion of small holdings was found cumbersome, and therefore, in 1869 the inquiry extended to "holdings of and above one quarter of an acre". This limit was raised to 1 acre in 1892 because difficulty was felt by the Board of Agriculture in discriminating between agricultural holdings and detached allotments and plots. It is questionable why the same change was not made earlier for it would not have omitted more than one tenth of one per cent of the total cultivated area. 48 This limit has been continued in Britain since 1892 for annual enumeration though returns or estimates have sometimes separately been made for holdings below that limit. Apart from the size limit of holdings nothing seems to have been allowed to escape the enumeration knowingly although several holdings of over the statutory minimum acreage were discovered to/  

48. Agricultural Return of Great Britain etc. London 1892, PP.VI & VII.
to have always escaped until as late as 1941 when rationing of feeding stuff, became associated with the completion of returns. It was on that occasion that many holdings were found to have been enumerated for the first time.49

It must be observed here that the task of maintaining a correct and complete register of occupiers of agricultural holdings, though simple in theory, is extremely difficult in practice. It would be more so in countries where holdings are small, and the owners are free to sell, mortgage or rent their lands freely and where agricultural years are less clearly marked. The chances of omission of some holdings under such a system are as great as those of duplicated returns for others. It might seem that the creeping in of such discrepancies would be very probable in Pakistan, but luckily this would not be true, at least in West Pakistan. In that province, constituting three-fourths of land surface of the country, the land revenue and irrigation water charges in most of its districts are associated with the enumeration of acreage under various crops on a holding. The fact that water charges for/

for each crop substantially vary ensures a careful distinction under each description provided care is exercised and deliberate misreporting is not indulged into by the elaborate machinery which has existed for years. In East Pakistan, however, reporting some one-third of the total cropped area care must be taken to avoid these conceivably probable discrepancies because there does not exist the like of revenue machinery in West Pakistan. Neither is land revenue calculated on the same basis nor are there many crops raised with artificial irrigation for which enumeration would be essential for calculating its charges.

Coming back to the coverage of places, in Ireland, 1847 and for many years thereafter returns were collected from occupiers of all agricultural holdings irrespective of size. During 1848 however, owing to political disorder the counties of Waterford, Tipperary and Metropolitan districts of Dublin were omitted. No limit of size was imposed for long time possibly because the holdings as a rule were small, relatively and absolutely. It was presumably for the same reason that when the limit was imposed on the unit of enumeration it was one quarter of an acre as against one acre in Britain. Presently, holdings exceeding one quarter of an acre are embraced. In the passing it may/
may be told that in the Isle of Man and the Channel Islands limits were comparatively higher and altogether different than either in Britain or Northern Ireland. 50

A third feature of coverage was the particulars of the schedule used to obtain agricultural statistics. The acreage under principal crops and the number of principal classes of livestock has been ascertained as from the annual official inception of agricultural statistics. For Northern Ireland series of estimates of yield per acre and produce of crops are also as old as the official system itself. Neither the acreage under important crops of all descriptions nor the number of livestock of all important species was enumerated for early years. But as the demand for more, more up-to-date and more accurate statistics increased for either of the three main reasons namely economic defence and popular interest, the schedule expanded. Besides embracing additional crops and species of livestock the schedule grew in size by the sub-division of existing categories. Parenthetically it may be remarked that when/

when the demand was put by defence requirements, the schedule enlarged spectacularly and spontaneously. It is undeniable that enlargement has been gradual, and it has taken place in all the countries though not uniformly nor simultaneously. In Irish schedule for instance additions have been fewer than the British because the original schedule was pretty elaborate. The particulars included in the schedules do not correspond with each other entirely but in the main they do not differ much. In fact it is not as much the commodities that always make the difference. Sometimes the definitions of classifications of headings such as those of grasses may matter more, and it is likely that two apparently same sets of figures may not be so in reality.

It is laborious and perhaps also needless to undertake a detailed survey of the schedule item by item and year by year. It is, however, deemed interesting and instructive to setting forth its scope. The emphasis would be on scope rather than details because we consider that in the present study which aims to recommend improvements to official system in Pakistan, the study of individual items would not much contribute for many reasons, notably for the place of agriculture in national economy which materially differs. Then there is the difference of crops/
crops and livestock raised as well as their utilization. An illustration to the point; unlike the United Kingdom with due considerations of variation in British and Irish conditions, agriculture in Pakistan supports a great majority of the population and is the back bone of economic structure of the Country. It provides employment to some 80 per cent of about 80 millions of population and brings in over 95 per cent of the foreign exchange. As regards crops, cotton, jute, sugar cane, rice, tea which has never been included in the British or Irish Schedule for obvious reasons must appear on top in Pakistan. Similarly take the case of pigs in the United Kingdom and buffaloes and camels in Pakistan. Added to that is fact that since utilization of certain agricultural produce vary in the two countries, the particulars must necessarily also vary. Take for instance the case of cattle. In the United Kingdom one must distinguish between meat and milk producing animals. But in Pakistan beef will not be an equally important item of enumeration. It should be the strength of draft cattle we should know there. More could be added, but let this suffice.

This review, therefore, is a work and a blow.

It is based on the study of either annual volumes of
of agricultural statistics or the schedule or both. Individual items are not referenced, in order to avoid heavy foot noting. Besides that two articles, one by Coppock and the other by Britton and Hunt, both already quoted, have also been freely consulted for this section of the study. Further, the study is limited to British schedules in the main although it does not preclude certain references to Northern Ireland.

In Britain in 1366, the questions asked in the schedule inquired utilization of area of holdings under sixteen heading and total number of three species of livestock, cattle, sheep and pigs. Horses were excluded although their number had been ascertained in Scotland during 1654-57 and in Ireland since 1647. However, the total number of particulars was about a score. It shortly began to increase. Flax was added in 1368 and horses were included in 1369. Orchards appeared, for the first time in 1671. Acreage of Market Gardens and area of woodlands was first enumerated in 1672. Tobacco was added in 1686. Particulars about mountain lands came in in 1877 and ten years later, small fruits made appearance in the schedule. Between these two dates hops were inserted in 1680 and Poultry in 1684. Additions of new items continued.
continued. In 1904 onions and chicory in British schedule, 1913 rhubarb and mushroom in Scottish Schedule and in early 20's agricultural labour were the new items. At the time of the first agricultural census of 1908 the schedule was further extended. We can not include nearly as much about additions as we could have if space permitted. There is just too much material, particularly because all of the additions did not stay in for ever. Some were dropped for good, others to be re-included and there were still others which once included continued to be the subject of annual inquiry continuously. Nevertheless, few notable examples had better be mentioned. The number and size of holdings was ascertained in 1870-1875, 1880, 1885, 1889, 1895 and again 1903 when this item became a matter of annual treatment. The number of cottages having gardens attached to them was inquired in 1872 and 1873, but never again. The extent of woods and plantations was determined, invariably through special and separate schedule, during 1870-71 1880 (revised in 1881), 1883, 1891, 1895, 1905, 1908 in Britain and in 1913 in England and Wales and in 1914 in Scotland. Inquiry into wood lands was undertaken during 1921-26 by the Forestry Commission in Scotland; a parallel inquiry in England and Wales was put/
put aside unfinished. A fresh survey of British Forests was successfully made in 1942 by the Ministry of supplies. In Ireland woods and plantations have always appeared in the annual agricultural schedule. Particulars regarding poultry in Britain was included during 1884-86 and then in 1908, 1913, 1921, 1924 before 1926 when they began to be included annually. In Irish schedule the number of poultry has been determined since much earlier times. Questions were asked to find the number of silos constructed for six years; 1883-1889. Return of unoccupied arable land was collected in 1881 and once again in 1887. Inquiry was also made to discriminate between the occupiers "farming for pleasure" and farming for business in 1908. From 1908 onwards questions have been added to determine the number of holdings owned or mainly owned by occupiers. These were dropped, perhaps as a measure of war economy, in 1914 but revived in 1919 in England and Wales and a year later in Scotland. England and Wales discontinued this inquiry in 1925 whereas Scottish Schedule embraced the question in an unaltered form up to 1949. Agriculture machinery had been the subject of inquiry in 1908, 1913, and 1931. Returns were voluntary on those occasions and results were not wholly reliable. In 1942 again machinery/
machinery census was made under 76 items. This time the return was obligatory. It has continued with slight variations in the schedule biennially since then. In Northern Ireland the agricultural censuses of 1925 and 1931 listed some particulars respecting agricultural machinery. Similarly some information was also collected in 1941 and 1943 but the first complete survey was made in 1944 and from 1947 there had been an annual inquiry of limited scope in that country which ceased in 1951 when these questions were transferred to January schedule which has been continued with extended scope biennially. In Britain it is to be pointed out, census of tractors was taken during 1937 and 1939. Acreage under forests and the number of sheep and cattle grazing on them was ascertained in Scotland in 1929. Also a special inquiry through over 77,000 schedules was made into electricity and water supply on the farms in Scotland in March 1943 and September 1948. Corresponding information in England and Wales was gathered through National Farm Survey during 1941-43. Particulars about labour were first inserted in the schedule in 1908, and were repeated in 1913 and 1921. They were annually included between 1923 and 1942 and inquired oftener since September 1942. In 1941, questions about rent and/
and length of occupation were included in the schedule.

The foregoing brief, but no means complete, narration sets forth the scope of agricultural schedule and agricultural statistics available in the United Kingdom. But that is not all. Two other "important contributors to the field of statistics" and data beside agricultural returns and data collected annually through the schedule, remain to be described. They are National Farm Survey and Farm Management Surveys.

The National Farm Survey was made in England and Wales in 1941-43 and in Scotland it was to be completed by March 1942. It was occasioned by needs for data for the "replanning and reconstruction" which was required in the post war period. The survey was directed to estimate the "potential productivity of farms in question". It extended to 14 per cent stratified sample of farms exceeding 5 acres in size in Scotland and to every holding of over that size in England and Wales. The data was collected by personal visits by technical officers of the county, War Agricultural Executive Committee or their representatives in England and Wales and for paucity of their opposite numbers in Scotland by/
by staff of field workers. The schedules used in the two countries were materially different in their scope. In Scotland all attention was focussed on land itself and England and Wales emphasis was "as much on the farmer as on the land". The matter collected comprised descriptive and numerical answer under numerous headings such as situation, soil, drainage, equipment, water and electricity supplies, management etc. and was gathered without statutory obligations. The provincial Advisory Economists attached to the Universities of Agricultural Colleges collected, collated and scrutinised these data. In Scotland they also assisted the framing of the schedule.\footnote{51}

Much in keeping with the Scottish reputation for financial aspect of business as well as statistics the Farm Management Surveys commenced in 1928 in Scotland about 8 years earlier than England and Wales where it commenced in 1936. The Agricultural Returns and the National Farm Survey "were confined to/\footnote{51. \textit{Agricultural Survey of Scotland}, H.M.S.O. Edinburgh, 1946. P.5-6. A copy of Scottish Schedule is reproduced PP.6-7 of this publication.}
to physical and organisational characteristics of farm to the exclusion of financial data". The Farm Management Surveys intended to supply the missing link thereby enabling a wise management of resources. Through the willing and voluntary co-operation of farmers, data are collected on the "purchases of livestock and livestock products, payments for feed, seed, fertilizers, labour and other outlays made in the process of production; the acreage, productions and sale of crops, sale of livestock and livestock products and other sales; births and deaths of livestock; and an opening and closing inventory of crops, machinery, livestock and equipment". The data are treated anonymously. The accounts are received by the provincial agricultural economists, who every year decide about the number of accounts which should be collected from each of the 10 provinces in England and Wales. The methods of collection and sampling are different at different places although the data is designed to arrive at the same ends.

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52. Hunt or Britton op.cit. ( ) P.63.
53. The Profitableness of Farming in Scotland (issued by Department of Agriculture for Scotland), Edinburgh, 1931. P.5.
The number of accounts annually collected in England and Wales is about 2000 to 3000, in Scotland and Northern Ireland it is around 550 and 350 respectively. These accounts facilitate the appreciation of "relative efficiency" of farms of different sizes and types, although their coverage seems too limited to afford representative conclusions. Besides that, statistical material has also been occasionally gathered by the Ministry of food and by the Milk Marketing Board since their creation especially on milk and meat.

Apart from those outside contributors to the fund of agricultural statistics, the annual schedule itself has grown much in size during the course of 90 years it has lived and lasted. Disregarding new additions and discontinuation of some of them, the schedule to-day is nearly six times larger than it was at its birth. The enlargement is partly due to the later inclusion of new items which grew to occupy "boxes" such as poultry, labour and machinery, and partly due to the subdivision of old items such as crops and livestock. As an example of the latter case there was only one question on cattle in 1866. It asked their number on the holding. In 1956, there were as many questions/
questions on cattle alone as were the number of total particulars in 1866.

It seems useful to answer why certain particulars were included only occasionally or periodically in the schedule. The reasons are more than one. At times a question failed to evoke response. This was the case with Poultry during 80's of the last century. Sometimes it was only time utility which a question commanded. The number of prisoners of war and woman land army during war is a case of the type. The inclusion of certain question was thought unnecessary because the reply was not expected to reveal any quick fluctuation. To this class belong perennial fruit trees, woods and plantations. It may also be due to an attempt to save the expenditure of time and labour without lagging far behind the actual knowledge of things. Agricultural machinery, now enumerated biennially, may perhaps be an instance. The schedule ought to be kept brief with a view to driving wisely the thin edge of the wedge. Perhaps omission of horses and labour to begin with was to wait till occupiers were mentally prepared to part with more information. Institution of yield estimates not earlier than 1884 in Britain may be classed here under/
under that category. Omission of some important items and inclusion of relatively less important ones might sometimes root from incorrect conception of the agricultural importance by the schedule makers. This is a reason inseparably mixed up with another cause resulting in the same discrepancy namely the difficulty in obtaining a particular information. Yields of milk and meat appears to have been deferred for long time primarily on that account. There is another cause too. The importance of an item may not justify its inclusion oftener than it was necessary to confirm that a particular commodity was really unimportant. A probable case is the enumeration of goats which has been attempted sparingly in the United Kingdom. There could be political reasons, a positive example of which had better not be given.

One more important point must be investigated in the study of official agricultural statistics. It is this. Do agricultural statistics collected in this country during the past 90 years yield a comparable series of data? The answer is NO and instances are innumerable to substantiate the answer. The comparison has been vitiated by one or more than one of the reasons given in the following.
It may have affected a part or the whole of the schedule. It would require weaving of a tangled web to show a definite repercussion of each of the "reasons" vitiating comparison. Much substantiative material will be found in Coppock's article frequently referred to in the foregoing. A summary of those reasons would suffice.

First, abolition and reimposition of the minimum size of holdings annually enumerated make the data incomparable. Secondly initially strong and less vehemently but still alive, reluctance of farmers to part with the information. Thirdly, prevalence of local weights and measures, the interpretation of which is known to have sometimes caused confusion. Fourthly, introduction of certain new items and subdivisions of established headings also disturbs comparability. Fifthly, the changes in the boundaries of farm, enumeration district, parish, county and even the country. Sixthly, ill defined definitions of certain items which were sometimes left to varying interpretation by occupiers and enumerators. Seventhly, grouping and splitting of different heads. Eighthly, incomplete enumeration either deliberately or unavoidably or unconsciously. Ninthly, the nature of the return, whether compulsory or obligatory; each/
each gives the figures a different slant.

Examples to substantiate these reasons which vitiated comparison of data are not far to seek in the preceding pages and their repetition therefore, seemed needless.

Before concluding this chapter it is a matter of obvious relevance to observe that the unsatisfiable demand for more, more accurate and more up to date statistics still remains theoretically unsatisfied in the United Kingdom. The number of total agricultural labour force, for example, is unknown. Also unknown are the quantities of most of the agricultural commodities sold off the farm. But for almost all practical points of view in the statistical fund the United Kingdom is rich enough to satisfy to a great length, the trio of demands, put by economic, defence and popular interest.

It must not escape our memory that of the three points; what matter was collected, how it was collected and what use of it was made, we yet have to deal with the last. It is, therefore, not amiss to recount the uses of agricultural statistics and data collected in the United Kingdom: it being admitted that to narrate them very precisely is impossible. The most potent/
potent use of Annual Returns, National Farm Survey and Farm Management Surveys is to be found in the administration of Agriculture Act, 1947, and Cereal Deficiency Payment Scheme introduced in 1954. These measures provide for exchequer support to agriculture of the order of £200 millions annually through guaranteed prices and assured markets for, in terms of value, over 80 per cent of agricultural produce. Previous to their coming into force, and also since their existence, besides similar uses such as administration of (Corn Production Act 1917) and Agricultural Act 1920 the data has aided careful planning and use of national resources - land, livestock, management and equipment. Another use to which it has been put, and which could only be stated but vaguely, is its application in administering of day to day state affairs during peace and war alike. A quantitative apportionment of the utility of statistics in various projects is, however, inherently impossible.

CHAPTER IX

ORIGIN AND DEVELOPMENT OF AGRICULTURAL

STATISTICS IN PAKISTAN

The origin and development of agricultural statistics in the United Kingdom has been reviewed in detail in the preceding Chapters. In Chapter I of this thesis a parallel but brief review of the stages of development of agricultural statistics in Pakistan was also envisaged. The present Chapter is accordingly devoted to a study of the background in which collection and compilation of these statistics was organized, the needs they were designed to serve the methods employed and the uses to which the mass data, thus collected, were put.

Pakistan, as is known, is politically a young country. It emerged as a result of partition of British India in August, 1947. It, therefore, appears logical and to some extent unavoidable to review the system of statistics during times prior to 1947 for India as a whole. By India in the following pages is meant the Indo-Pakistan Sub-continent.

Indian agricultural statistics date back to ancient period. The truth of this fact could be traced to
the Sanskrit Classic, Artha Sastra made in ancient times. The collection of agricultural statistics essentially rooted from land revenue which was the main source of finances for the State. The compilation of agricultural statistics, therefore, developed as a by-product of land revenue system. Assessment and collection of revenue on the basis of land use was done by the village headmen who functioned as revenue collectors. This system was prevalent before the 11th Century. It continued during the Hindu period when one sixth to one twelfth of produce was taken in kind as revenue. During war and emergency this share was raised to one third. Data regarding acreage or production of crops was a pre-requisite for the assessment of revenue. Although exact details are not available, there are strong indications to the effect that as far as agriculture was concerned the collection of statistics was limited to estimates of production of crops. As regards their use it appears that these statistics only facilitated the assessment of land revenue.

Then came the Muslim period. The systematic collection of agricultural statistics is believed to have originated during this era. The purpose of collection was mainly fiscal. The military power of Muslim Rulers and the Imperial Court at Delhi depended entirely on land revenue collection and as such the government was naturally interested in land tenure, output of agricultural crops and the taxable capacity of the land-owners. Moreover the Muslims by inclination were interested in all sorts of statistics. In the words of Lord Meston, "the Muslims were as appreciative of exact statistics as Hindus were indifferent to them."

It was during the reign of the Muslims that the country was divided into Subas (provinces), Sarkars (districts), and Parganas (tehsils) and a regular account of finances and resources of the State began to be maintained. But purpose of collection and use of these figures by Muslims was hardly different from that of Hindu governments preceding them.

The system of revenue collection in kind worked well until the increased production of agriculture necessitated large staff and other facilities for its collection. Moreover, as the harvest time for a

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large number of crops was the same, the collection of revenue in kind needed a big storage accommodation, which was badly lacking. This led the State to consider different measures for a systematic and easier collection of land revenue. The first step in this direction was "Estimation" by which State's share, to be collected at convenience, was determined by forecasting the yield after inspecting the standing crop. The second step was "measurement" according to which a given quantity of the produce was collected per unit of area. These measures made revenue collection cheap and convenient and at the same time yielded useful agricultural statistics, albeit as a by-product.

Agriculture further expanded. Collection of revenue in kind became impracticable because of the bulk involved. It necessitated making the demands in cash and measurement of land to assess those demands equitably. The earliest attempt in this direction was made by Emperor Sher Shah (1541-1545). He enforced measurement of land and fixed standard yields for 'good', 'average' and 'bad' harvests per unit of area, but standards for all crops and areas could not be fixed during his short reign. The next and a more

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3. Riaz, A.G. op. cit (18) in Chapter I.
successful attempt was made by Emperor Akbar (1566-1605). In his times all demands were made in cash, the grain value being computed on 'average' prices. He invented his own measurements and obtained estimates of yield for all major crops and declared one-third as State's share.

The area sown to each major crop was recorded every season by the revenue officials and the revenue was collected according to approved rates. But this uniform system being rigid proved very hard for regions of low agricultural productivity. The rigidity was, however, reduced a few years later by dividing the kingdom into four divisions according to productive capacity, for each of which yield was separately estimated, and revenue liability differently fixed.  

The Classics of this stage was "Ain-e-Akbari", compiled by Vazir (Minister) Abul Fazal during 16th Century. Its data were collected by various administrative departments and edited by Abu Fazal with his own comments. It embodied varied type of information right from the "specific gravity of metals" to "recipes for the Emperor's favourite dishes", but its value as a document of agricultural statistics lies

4. Supra.
in Part III entitled "Regulations for Revenue Department" and in a later chapter where the revenue assessment of the whole Empire is catalogued.

Whereas the statistics collected during Akbar's reign represented a considerable improvement both in quality and quantity over the ones previously collected, the data given in the Ain-e-Akbari are, however, far short of the statistical requirements today for various reasons. The vague and undefined entries coupled with indeterminate changes in civil boundaries have rendered it merely a document of historical interest. Similarly, the exact structure of field machinery which was responsible for its collection remains unknown. Nor do we know the methods of actual collection in detail. Appearances suggest that local chiefs made some local arrangements for the collection of this information. All these factors taken into consideration would lead one to think that Ain-e-Akbari is Domesday Book of Indo-Pakistan Sub-continent in several aspects.

Then came the British Rule. The British continued the land administration of Emperor Akbar in the beginning. But after the complete dissolution of Moghal Empire, the British introduced radical changes in land revenue system which has since been continued
with minor changes through ages.

Since land revenue administration is closely related to the statistics relating to land especially of the crops raised, its main features may profitably be described here. These may be divided into three main stages:

(i) A Cadastral Survey of each field is made with the help of which record is prepared in respect of each village showing separate holdings, their area and rights, obligations and arrangements connected with its ownership;

(ii) Assessment of land revenue; and

(iii) Collection of land revenue.

The first two stages are called settlement of land revenue. For the settlement of revenue, acreage of field, net produce and/or net assets are calculated. This entails determination of cropped area, the cost of cultivation, the average yield of crop and the grain prices. It may be remarked that although one of the causes of backwardness of livestock, forestry and fisheries statistics in India and Pakistan could be traced to its entering into trade on a comparatively small scale, yet it is mainly due to the indifference of the Government because these items did not affect its finances directly, and substantially.
In pre-British period in some of the provinces revenue was collected through landlords. The British Rulers in these provinces conferred ownership rights on the landlords on the analogy of British land ownership system. The province of Bengal, part of which now constitutes East Pakistan, like other part of southeastern India, represented this system of land administration. The Government collected from landlords the land revenue which was fixed in 1793 in perpetuity and these areas were called as 'permanently settled'. This system was 'fraught with more evil consequences' than any other form of land settlement. Collection of agricultural statistics in any form was not necessary for administering this system and was, therefore, abandoned. Moreover, this fixity was found incompatible with the expanding needs for funds for financing welfare and development programmes. It was, however, not until 1938 that this system was reviewed when the Land Revenue Commission under the Chairmanship of Sir Francis Floud recommended its abolition. It is curious that the Royal Commission on Agriculture in their big report submitted in 1928 made no reference to the subject of land reforms. Over a decade later, in 1949, Muslim League Agrarian Committee dealt with
the subject and in 1950 East Bengal State Acquisition and Tenancy Act was passed with a view to eliminating intermediaries in revenue collection who had grown up under this system. The implementation of the provisions of 1950 Act is still going on.

Holt Mechnzie's Scheme of land settlement was introduced in 1822 for areas which now constitute West Pakistan, along with many other areas of India. Under this scheme the settlement was to be made and revised periodically, varying from 20 years to 30 years in different provinces. Agricultural statistics of certain types are an integral part of this system and are used primarily for assessment of land revenue.

The village accountants locally called patwaris and tezodars were responsible for maintaining agricultural records. They were holding hereditary posts and most of them were incapable of performing the duty for want of proper skill and education. However, compared to permanently settled areas, this system yielded more and better agricultural statistics.

Except the agricultural statistics that were being collected as a bye-product of data collected for land revenue, unlike Britain, no thought appears to have been given to the desirability of any additional data until 1807, when the East India Company resolved
that "we are of the opinion that a statistical survey of the country ........ would be attended with much utility". These were the days of activity in the field of agricultural statistics in the homeland of the Company.

Dr. Francis Buchanin was appointed to implement the recommendation. He was provided with an efficient staff but the known part of the plan had three limitations viz. one priorities were not assigned to different types of statistics; two arrangements were not made to allow more use of the available information nor was assistance of agencies already existing sought; and three, provisions were not made to publish the data collected through the survey.

Dr. Buchanin worked for seven years, but the details as to how he carried out field work are not known. It is true, however, that he never compiled a statistical account of the country as was done a few years earlier by Sinclair in Scotland or as was being attempted by Shaw in Ireland. In 1816 the manuscripts were sent to England but nothing was done to them until 1839 when the East India Company's Court of Directors engaged Mr. Montgomery to inspect these manuscripts and prepare a publication. The "History, Antiquities and Statistics of Eastern India" published in three
volumes in London was the result. It contains accounts of only 9 districts situated in the single province of Bengal. The material, more or less resembled, "the Statistical Account of Scotland" which may in fact have inspired its preparation.

During the early decades of 19th Century besides Buchanin's work some travellers and gazetteers also published some statistical information. Many of them were British who attempted it without having visited the country. Their coverage, as it would be expected, was narrow and incomplete. Although contemporary, they were hardly a match to Young's Tours or Cobbels Rural Rides. Another contemporary source of statistical information was the Annual Administrative Reports. The main source of agricultural statistics still lay in the land revenue records.

Official interest in statistics was manifested for the first time in Lord Elgin's Resolution issued in June, 1862. It mainly referred to Trade Statistics, but there was also a quaint reference to agricultural statistics. It proposed that collection of agricultural statistics be better done by societies "aided and encouraged by the Government but self-managed and

5. op. cit. (1) P.2.
voluntary". In the same Resolution a six man Statistical Committee for recommending forms and regulations for collecting Indian Statistics was also appointed. This Committee reported thrice and proposed certain sets of forms which were mainly based on the recommendations of International Statistical Congress held at London in 1860. In response to the allusion in the resolution to statistical societies the Agri. Horticultural Society of India offered help for obtaining agricultural statistics, perhaps in an attempt to follow the footsteps of the Royal Highland and Agricultural Society of Scotland, but it never seems to have materialised.

The next good to Indo-Pak statistics came from International Statistical Conference. In 1874 the Secretary of State for India sent to the Government of India a copy of questionnaire issued by the French Ministry of Agriculture on behalf of the International Statistical Conference held in February, 1874 with a view to obtaining comparable agricultural statistics. The relevant data for India were not available and consequently in August, 1874, the Government of India was asked by the Secretary to improve the recording system. Sir Edward Buch, Secretary to the Board of Revenue, most probably influenced by this demand,
suggested that better educated village accountants and a larger number of supervisors should be appointed if better agricultural statistics were to be obtained. He also proposed the appointment of a provincial officer exclusively for this work. Much progress did not immediately follow, the exact reason for which is difficult to assign.

The need for reliable agricultural statistics was further emphasised by the seven famines which occurred during later half of the 19th Century. So much so that the Indian Famine Commission of 1880 in their report expressed the opinion that no effective action could be taken to check famines unless accurate and up to date agricultural statistics were available. It recommended that statistics should be collected for each village and computed for each tehsil, district, province and the whole country. The Commission was of the view that village accountant in temporary settled areas was the best agency provided he was brought on a better footing with clear cut duties. It also recommended the appointment of a Provincial Director of Agriculture to advise the Government on statistical matters related to agriculture.6 This

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may be regarded as a transition in the purpose and use of agricultural statistics from that of a purely fiscal to that of partly economic. It is pertinent to mention here that the Famine of 1847 alone was responsible for the initiation of the collection of agricultural statistics in Ireland.

It would be unfair not to mention Makens Caird who was one of the members of the Famine Commission. A perusal of the record of evidences taken by the Famine Commission leads to the thought that Caird was as much anxious to improve statistics in India as he was in the United Kingdom, where sixteen years earlier in 1864 he had successfully caused a resolution that agricultural statistics should be regularly collected by the Government. On one or two points Caird and Sullivan, another member, wrote a note of dissent, but on the urgency of agricultural statistics they had unanimity with other members of the Commission.

Apart from the need for statistics of food production and requirements to avert famines, need for having better and more agricultural statistics became necessary on economic grounds from early sixties of the 19th Century on account of agriculture.
in India became commercialised; which change occurred due to the closing of America as a source of cotton supply for Britain followed by the opening of Suez Canal in 1869. As a result, with the passing of time, India became one of the largest exporter of agricultural commodities like cotton, jute and tea to the areas which were previously fed by America and were now linked by the Suez Canal. However, rough and rude the statistics that accrued from revenue records they must have provided a broad basis for trade policy.

In compliance with Famine Commission's recommendations in December, 1881, the Government of India issued a Resolution recommending the creation of an agriculture department in each province, but due to reasons unknown the mention of agricultural statistics did not receive any prominence in this Resolution inspite of the fact that this department was mainly to concern itself with agricultural statistics according to an earlier resolution issued in June, 1881.

A conference of agricultural officers held in Calcutta in 1883-94 evolved the proforma for agricultural statistics consisting of 8 tables. These were first compiled in 1894-95 and published in 1896.
under the title "Return of agricultural statistics of British India". These tables became an annual feature with some modifications effected first in 1888 and later in 1891. Meanwhile, in 1885 the recommendation of Sir Edward Buck was implemented in an attempt to improve agricultural statistics when duties of the village accountant were defined, his academic qualifications were fixed and supervisory staff was strengthened.

Some improvement in agricultural statistics was further effected in 1895, when the Government of India set up a statistical bureau and decided to place agricultural statistics under the control of a Technical Director General of Statistics who would "deal with them continuously on a uniform plan". The Director General of Statistics was charged with duties among other things to collect, collate, examine and publish in digested form the following returns:

1. Annual returns of agricultural statistics;
2. Quarterly and Annual returns of inland trade;
3. Quinquennial returns of crop outturns;
4. Monthly statements of imports of wheat, cotton, linseed and indigo into the port towns of Karachi, Calcutta and Bombay.
5. Forecasts of cultivation and of outturn of crops;
6. Returns showing the state of cultivation of plantations; and
7. Miscellaneous tabular statements.

About ten years later in 1905 the post of Director General of Statistics was abolished and the work was transferred to a new officer designated as Director General of the Department of Commercial Intelligence, Government of India. In 1912 when the headquarters of the Government of India were transferred from Calcutta to Delhi, the Department of Commercial Intelligence was re-organised. It was felt that statistics should preferably be dealt with separately from commercial intelligence. Consequently, the Department of Statistics under the Director of Statistics was created in 1914. This department was made responsible for agricultural statistics besides trade and tariff statistics. Whether these frequent changes were made only in an attempt to improve agricultural statistics is difficult to believe.

The Director of Statistics brought about certain improvements in the commercial statistics besides bringing out the following three useful publications:

(1) A manual on the Preparation of Crop Forecasts in India;
(ii) A collection of Orders Relating to the Registration and Publication of Statistics Relating to the Sea-Borne Trade and Navigation of British India; and

(iii) A guide to the Statistical publications of Government of India.

Eight years later in 1920 Imperial Statistical Conference was held in London. It made certain recommendations for improving agricultural statistics in the whole Empire. Apparently, numerous new activities were afoot but financial stringency of 1921 remained as a bottle-neck for further improving and strengthening the activities. As a measure of economy the department of statistics was again amalgamated with the department of Commercial Intelligence in 1922, an arrangement which continued till 1947 when Pakistan came into being. Since then the task of agricultural statistics became the responsibility of the Central Ministry of Food & Agriculture. Also some statistical publications were discontinued. It appears that the frequent re-organisation was made more with a view to obtain statistics cheaply rather than efficiently.
One great step forward during these time was the institution of quinquennial livestock census on a uniform basis first taken in 1919-20. During the period 1880-1919 the data in respect of livestock were collected rather haphazardly while in some provinces no such data were collected until 1912-13.

The data in respect of crops, livestock and implements thus collected were published in the Annual Agricultural Statistics of India in two volumes; one related to British India and second to Indian States. The data included in these volumes, comprised total land area and its classification, the area and crops irrigated, total area under forests and each important crop and number of livestock, implements, the incidence of land revenue and harvest prices.7 Provincial Season & Crop Reports (annual) were another important publications for similar information. But they were not issued in respect of states. Moreover, their publication is much behind time. Their coverage has been further up set owing to the unification of West Pakistan provinces since 1955.

In 1925 pursuant on resolution in both Chambers of the Central Legislature, an Economic Enquiry

Committee (India) was appointed to enquire into the adequacy of available data and advisibility of supplementing it with or without an economic enquiry with a view to estimating economic conditions of the people. The Committee issued a 106 point questionnaire to 622 persons. Only 106 replied, of which 60 were officials. Numerous witnesses from almost all the areas were also examined. The Committee also visited six provinces; all of them now a part of Bharat.

The majority report stated that statistics relating to trade, communication and finance were fairly satisfactory and recommended that data on agricultural production, (Agri., pasture, dairy farm, forests, fisheries, etc.), wages income, cost of living and indebtedness should be supplemented. It also recommended a provincial bureau of statistics under the direct control of a central authority. It further recommended that there should be statutory powers, as is the case in the United Kingdom, for the collection of statistics which should be published in an Annual Year Book of Statistics.8

The note of dissent was written by one of the members - Prof. Brunnet, in which he paid considerable attention to agricultural statistics. The main points of dissent were that whereas the main Committee favoured the idea of appointing of Revenue officials as the field machinery, the Professor suggested departmental agencies, a recommendation also made in 1953 by Scheltema an F.A.O. expert for Pakistan. Secondly, Professor Brunnet was of the opinion that the coverage of the schedule should be restricted to main crops while minor items like vegetables, private forests and fisheries should be excluded from enumeration.

It was on the whole a valuable and fairly exhaustive report but one finds difficult to take seriously one or two of the suggestions of the main report; for example, it was mentioned that the 'horses' used for 'ploughing' and 'transport' should be distinguished in enumeration. Anyone with some knowledge of the local conditions would agree that such a distinction does not exist for other draft animals what to speak of horses which are rarely used for ploughing purposes in this country.

9. Supra.
The Government appreciated the recommendations of the Committee in general, but in view of financial and administrative considerations thought it advisable to invite first the views of the provincial Governments.

The provincial Governments responded slowly and coldly. Before any recommendation of the Enquiry was finally adopted and implemented, the Government of India appointed in 1926, a Royal Commission on Agriculture to examine and report on the conditions of agriculture and rural economy in India and to recommend methods of improvement of agriculture, which naturally included 'agricultural statistics'. Consequently, many of the recommendations of the Economic Enquiry Committee were superseded by those of the Royal Commission.

The Commission examined the entire field of statistics relating to land utilization and crop acreages, trade statistics relating to livestock and implements as well as vital statistics. It received information on a questionnaire from as many as 783 persons and examined 893 evidences, both within India and in the United Kingdom. The Commission reviewed the working of statistical system in India and concluded that Indian 'Statistics' are, in short, "a compromise between what is ideally desirable and what is actually obtainable".  

Their main recommendations numbering 38 on the subject can be broadly summarised as under:

1. Publication of data and issue of forecasts should be expedited. Also forecasts should be translated into vernaculars.

2. Classification of areas and formulae for apportioning area under mixed-crops and determination of their yield should be clearly defined.

3. Yield estimates should be based on larger and randomly selected crop cutting experiments. This work should be transferred to the department of Agriculture after they had appointed statistician on their staff.

4. Livestock census should be taken periodically and simultaneously in all the provinces on a uniform basis.

5. Agricultural departments should be strengthened with the appointment of statistical officers.

6. Land revenue staff should continue to be the primary reporting agency for agricultural statistics in temporary settled areas while in permanently settled areas the method and machines used for collecting jute statistics for which special staff existed should be extended to other crops.
7. A separate central department of statistics as was also recommended by the Economic Enquiry Committee in 1925 for computation of all India statistics and to advise the provincial governments should be set up.

8. Coverage in respect of crops and areas should be extended.

The progress made on various suggestions since 1928 is discussed in seriatim:

1. The data still do not become available to be issued in time; when collected they are not published in time. Schelma, an F.A.O. Expert, in his report had illustrated the magnitude of delays for 13 major crops that occurred in the issue of forecasts to point out that there is a long time lag in the due date and actual date of publication of forecasts. In 1953 dates of forecasts were shifted back and the name of 'forecasts' was changed to 'estimates' in an attempt to catch up with the schedule. Although this postponement detracted from the usefulness of the forecasts the desired success has not been attained. These estimates are issued in both parts of the country in respect of about a dozen of crops. Their number varies from a minimum of two estimates for

comparatively less important crops to four or five for major crops. The data of these estimates travel through a long channel from field to press although some of the agencies through which it passes seldom contribute towards their improvement. A short cut is therefore desirable.

While instructions are given for apportioning the area to different crops when the yield rate applied for calculating production of each crop is not adjusted. The significance of the absence of such adjustment could be judged from the fact that a pure crop yields about 25 per cent more than if sown mixed, yet in calculating total production this differentiation is not made between the pure and mixed sown crops which gives rise to an over-estimation of yield.

The translation of forecast into vernaculars is still to be started although the importance of national languages is strongly and frequently emphasised by politicians in public.

The condition factor which indicates prospects of crops during a given season with reference to a "normal" is reported in "Annawari". The concept of the "normal" lacks uniformity as it varies from 12 annas at one place to 13 annas at other and 16 annas at still others. It should be 16 annas at all places.
2. The same old classification of areas continues to be the basis in all parts of the country which still have some ambiguity regarding the terminology being used. Nor does one particular term mean exactly the same thing everywhere. The apprehension of the Commission and also of Economic Appraisal Committee that there was some mix-up in the areas reported as "not available for cultivation" and "culturable waste" should not be limited to only these headings but can equally be applied to many others.

3. Officially the estimates of yield are still mainly based on the same old 'subjective' methods. In this method the average yield per acre is framed by the personal judgement of the officials of the Revenue Department. The formula followed is acreage times normal yield times condition factor. They base their judgement on the figure of normal yield, which is determined by conducting crop cutting experiments by the departments of Agriculture and Revenue.

According to official instructions, the fields selected for crop cutting experiments should be of an "average fertility" bearing an average crop. The normal yield is fixed on the basis of 5 years data of these experiments by the Director of Land Records. The limitations of this method are obvious. The
small number of crop cutting experiments is not a reliable basis for generalisation. The figure of yield is not statistically worked out. Moreover, selection of fields on which experiments are conducted is 'purposive' and not random. Again, even this method is followed only in West Pakistan.

In East Pakistan, estimates of production are subject to greater errors because of less satisfactory acreage figure. The estimates of yield are framed by Presidents of Union Boards, many of whom are illiterate. Their figures are personal opinions based on the assumption that "there is average yield on an average soil of the locality in year of average \[\text{character}\]." The rules meant for calculating average provide for weighting, but it is seldom followed in practice. It is encouraging, however, that crop cutting experiments based on random sample survey procedures, first tried in 1942-43 on paddy and jute, have been carried out on a number of crops in recent years.

In the areas now comprising Pakistan the technique has been tried most in the old Punjab on wheat and cotton. A belief persists in the country that official estimates of acre yields were under-estimates in good years and over-estimates in poor years. Compared with
the survey results the official estimates are under estimates except in case of cotton. The difference between the official estimates and estimates of sample surveys varied from 2 to 40 per cent in case of cotton and about 6 to over 50 per cent in case of wheat. The work of estimating normal yield per acre however, continues to be the responsibility of both agriculture and revenue departments and its transfer to agriculture department as visualised by the Commission is still an affected even when the appointment of agricultural statistician has been made. The entire field of farming estimates of livestock and forest production is lying practically virgin.

4. Not only the livestock census is not taken simultaneously in all the provinces as recommended by the Commission but also the work on usual quinquennial census has been slashed in recent years. Livestock Census of 1940 was disturbed by War, that of 1945 were published very late owing to partition of the country before its results were ready for the press.

A brochure based on 1945 census was published by the Central Cooperation and Marketing Department in 1945. No livestock Census on all Pakistan basis has been conducted since 1947. The quinquennial livestock census which fell due in 1955 was conducted on proper lines only in the old Punjab, Bahawalpur and sind area. In the remaining parts of West Pakistan wrong proformas were used and the information remained unusable. The quinquennial livestock census was not taken in East Pakistan. Serious efforts were not made to conduct the livestock census in an attempt to combine it with the general agricultural census which has been contemplated since March, 1952 and is now expected to be taken in 1960. For the forthcoming agricultural and livestock census, preparations are now in hand and a separate organization has been entrusted with the task of holding the census aided by Census Advisory Committee of which the author is a member. A general outline of the draft schedules is as under:

(a) Status of the farm.

(b) Number of members in the cultivator's household and number working on the farm.

(c) Hired labour.

(d) Size of holding and fragmentation, if any.

(e) Whether cultivator is owner, tenant with heritable rights or tenant without heritable rights.

(f) Break up of total holding into:
   (i) Self-cultivated;
   (ii) Rented for cash;
   (iii) Rented for share.

(g) Share of landlord in expenses and income.

(h) Mode of irrigation and area irrigated by various sources.

(i) Power used on the farm—mechanical and animal.

(j) Total cropped area under different crops.

(k) Number of various kinds of trees on the farm.

(l) Acreage manured during the year by different manures.

(m) (i) Number of animals.
    (ii) Number of animals used for work.
    (iii) Number of poultry birds.

(n) Kinds of fodder used and sources of supplies.

This will, if it goes through, be the first complete agricultural and livestock enumeration in Pakistan since its establishment.16 It is unrealistic to be very optimistic about its results in view of the meagre technical knowhow available in the country and a general lack of awareness of the need for such a census.

16. The original plans for a complete enumeration have, how, after a year's preparations, been changed to a sample census. This change has been
This is the first census in Pakistan and many experiences have yet to be gained.

5. The departments of agriculture have yet not been properly staffed with agricultural statisticians as visualised by the Commission. The need for such a provincial agency was reiterated by Agricultural Statistical Conference held in December, 1950. A proposal framed to implement this recommendation in 1951 did not strictly conform to the suggestion and on that pretext the Ministry of Finance declined to approve it. A high level Agricultural Conference held at Karachi in August 1956 again emphasised this subject and set up a small committee to go over the problem and chalk out a comprehensive programme for action. Consequently an Agricultural Statistician has been appointed in the West Pakistan department of Agriculture and the scheme for setting up a bureau of Agricultural Statistics in Agriculture Department, East Pakistan has been approved. A provincial bureau of statistics has been established in each province of the country - in East Pakistan in 1949 and in

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made on the excuse of affecting savings disregarding the discounts in the validity of data from a sample census designed in the absence of a proper framework.
West Pakistan in 1957. It is hoped that overlapping and confusion would be avoided when agricultural statisticians are in position in the departments of Agriculture. The Bureau of Statistics in West Pakistan has made a going with the project of estimating accuracy of acreage statistics. It gives birth to apprehensions that duplication of effort may not be completely eliminated.

6. In permanently settled areas the problem of setting up a primary reporting agency is different from that of temporary settled areas because revenue staff is not in position in the former. There are two sources from which acreage and production figures are presently obtained: (1) through the administrative set up in which primary reporting is done by Presidents of the Union Boards (Union consists of 10 to 17 villages), or local watchmen (many are illiterate); and (2) through the field organization of the department of Agriculture. The Royal Commission had proposed that a cooperative attempt on the part of producers, manufacturers and consumers should improve the situation of Statistics. It did not, however, elaborate this proposal although it expressed itself against 'employing a special statistical agency' on the ground of heavy cost.
At the same time the concluding recommendation was that arrangements then applied to the Jute should be extended to all crops. It is not explicit whether the recommendation favoured the Presidents of Union Board who then used to report Jute statistics and about which the Commission was informed that various "jute interests were dissatisfied" or it favoured the reinstitution of the Jute Clerks, a service which was retrenched in 1923 as a measure of economy. Presently, jute acreage is calculated from the Government licences issued for this crop. Lately, however, the Union Presidents have been doing this work for all major crops, but this has left the situation far from satisfactory. In 1944-45, through an elaborate machinery, a plot to plot survey was conducted. This survey strongly demonstrated the defects in current statistics of East Pakistan, which is clear from the fact that whereas 29.5 million acres was considered as the total cropped area before the survey, the survey revealed that it was 38.6 million acres. It represented under-estimation 23.6 per cent.\textsuperscript{18} It was contemplated that this survey would

continue for three years but it was abandoned after the first year on the recommendation of Rowland Committee. Now that the Revenue Settlement Organization set up for implementation of 1950 Land Acquisition is being followed up by a Land Revenue Department on the pattern of old Punjab (West Pakistan) Revenue Department the bringing of East Pakistan on the same footing as West Pakistan in matters of agricultural statistics is easily possible. We shall revert to this subject later.

In temporary settled areas which means the whole of West Pakistan, the primary reporting agency since 1895 has been the Village Accountants locally known as natwaris or tapeadars. It is interesting to note that for about one-third of the area of West Pakistan or some 67 million acres, no classification of the use of land exists and these areas are accordingly termed as non-reporting areas; most of these remain unsurveyed so far. For certain areas, only acreage figures are collected and nothing is known about production, number and type of livestock, extent of forest, etc., etc.

The quality of the statistics reported by the revenue officials (village accountants) is often questioned mainly for the following reasons:
(i) They are overburdened with multifarious duties, particularly since partition, and, therefore, do not afford the time which is required for efficient collection, compilation and reporting of crop statistics. Of all his work, reporting of agricultural statistics is still the least important and less prone to checking than any other item of work. He, therefore, reports without much responsibility.

(ii) In many cases their jurisdiction is above this manageable size. This point was illustrated by Afzal in a paper in which he calculated that if faithfully done the task of mere reporting crop areas after visiting different fields, as required under official instructions, would take 80-100 man days of each patwari. Then there would be summarisation and tabulation.¹⁹

(iii) By inclination and being low-paid, they are tempted to care more for ownership records rather than the acreage, number of livestock and similar statistics of which they seldom realise the importance. Moreover, since acreage statistics directly affect water charges and other government dues he is suspected of obliging the farmers by under-reporting.

¹⁹. Afzal, op. cit. (14).
(iv) The crop cutting experiments which the Patwaris and the supervising staff are required to conduct as furnished in the Land Records Manual are not actually carried out. A visual estimation, on the other hand, is applied for the yield.

(v) The lengthy definition given to a "normal" crop is at least very vague from the point of view of a statistician. It is inseparably bound up with high personal bias.

(vi) Patwari having definite sympathies with cultivators is inclined to under report because reporting of current yields in years of good harvest might mean increase in assessment particularly in areas where the land revenue is fixed annually.

7. A Central Statistical office was established in Pakistan in 1950, but the collection of agricultural statistics was not included in the list of its functions. The Central Agency for Agricultural Statistics headed with the Directorate of Statistics of the Ministry of Food and Agriculture, which was renamed as Directorate of Agricultural Economics and Statistics in 1953 as was recommended by Agricultural Inquiry Committee of 1951.

i) Compilation and issue of crop forecasts on all Pakistan basis.

ii) Compilation and publication of a quarterly Weather & Crop Report containing current
statistics of rainfall, temperature, humidity, water supplies and other factors having bearing on agricultural production.

(iii) Maintenance of up to date statistics on forests and livestock.

(iv) Assessment of production and requirements of food in the country.

(v) Initiating farm management and cost/production studies.

(vi) Supply of agricultural statistics to official and unofficial agencies both at home & abroad.

(vii) Advising the Government on trade policies as far as they affect agricultural production.

The duties of this Directorate are:

(a) Maintenance of the import and export prices of the agricultural commodities.

(b) Duties on imports and exports of agricultural commodities.

(c) Forests: (i) outer area of produce; (ii) protected area; (iii) animal grazing and forest;

(d) International Statistics

(e) Temperature and rainfall.

(f) Area under various crops.

(g) Production of various crops

(h) Estimates (forecasts) of area and production of various crops.
(i) Classification of area into culturable waste, fallow, forests, etc.
(j) Classification of area into irrigated and unirrigated, etc. etc.

The Directorate itself has no direct control over primary reporting agencies. Prior to October, 1955 it has been wholly dependent on data obtained from the Provincial and State Authorities as under:

(i) The Secretary to the Government of East Bengal Department of Agriculture, Cooperation and Relief, especially the Director of Agriculture. Recently the department of cooperation and Relief has been given to a separate Secretary.

(ii) The Revenue Commission in Baluchistan.

(iii) The Revenue and Divisional Commissioner, N.W.F.P.

(iv) The Secretary and the Revenue Commissioner to the Government of Sind, who submits the data to the Directorate of Agriculture.

(v) The Food and Civil Supplies Department in Punjab, especially the Directorate of Agriculture, which issues joint crop estimates with the Director of Land Records.

(vi) The Revenue Departments in Bahawalpur and Khairpur especially the Director of Land Records.

In October, 1955, however, all the Provinces and States of West Pakistan were amalgamated into one Unit namely, West Pakistan Province. Consequently two Directorates of land records were created - one for Northern Zone comprising Peshawar, D.I. Khan, Rawalpindi, Lahore, Multan and Bahawalpur divisions,
and the other for Southern Zone consisting of the remaining four divisions. The Directors of Land Records have not yet taken over fully the function of coordinating and reporting agricultural statistics for their zones.

The Central Statistical Office set up in 1949 does not engage itself in agricultural statistics. Nor does it, however, appear now essential in view of the existence of a Director of Agricultural Economics and Statistics in the Ministry of Agriculture. It may be mentioned that Economic Appraisal Committee in 1953 had recommended the transfer of this work to C.S.O.

8. Coverage in respect of items reported and total reported area has hardly made much progress since 1928. The statistics were, at that time, compiled under the following heads:

1. Total area.
2. Classification of area.
3. Area under irrigation.
4. Area under crops and specification of crops.
5. Livestock, ploughs and bullock-carts.
6. Incidence of land revenue.
7. Harvest prices.

and they have continued unchanged. Forecasts on the other hand have been abandoned in respect of one or two crops. Coverage of areas is far from
satisfactory. As much as 83 million acres or 41 per cent of total area of West Pakistan is not at all reported.

Besides the above mentioned current statistics no other agricultural statistics form a regular activity of any department. The 'basic statistics' as they may be called, such as those relating to the size of land holdings, their number, form of tenure, utilization of area, types of implements and machinery are not presently collected regularly nor statistics of agricultural labour find any place in annual official collections. Scattered and scanty information on these topics can be obtained only for certain areas and that too for certain back years.

So far reference to price statistics has not been made not because they are not needed but because their collection and improvement is comparatively easy and also that their present stage is nearly satisfactory. Moreover, commodity prices are as much trade statistics as agricultural statistics and, therefore, attempts to better them could also originate from trade circles.
It will be seen that the main problems of official agricultural statistics today are practically the same as they were before and at the time Royal Commission on agriculture submitted its report in 1928. Where progress has been made, the tempo has been slow. No new problems have been discovered during subsequent investigations made by various institutions and individuals. The only development of significance has been the field of sampling technique, which was not emphasized by the Commission. Even this technique has yet to be perfected and standardised under our conditions. It suffers from some serious disadvantages, for example, in this method there is always a sampling error which increases with decrease in the size of sample. If the sampling error in a sample study is desired to be reduced from 10% to 1% the size of the sample would increase by at least 100 times which shows that increased accuracy in sampling can be achieved only by adding to the cost in geometric proposition. Then highly technical staff is one of its pre-requisites, and it also fails to provide an inventory of each member of the universe.

However, in the main, the same remedies as suggested by the Royal Commission appear to be most plausible and practical to achieve improvement in the agricultural statistics.

In recapitulation it may be remarked that collection of Agricultural Statistics began with the purpose and for the use of assessing land revenue. The part of individuals and academies like that in Britain and Ireland in the development and improvement of agricultural statistics is hardly visible. The reason for collection and improvement has been the same until today. Unlike the United Kingdom defence seldom played a significant part in the expansion and improvement of Agricultural Statistics. Economic reasons did give some fillip, but their influence was never strong enough to produce conspicuous results.

Demand for Agricultural Statistics for economic uses, however, is now dictating its importance which is manifest in the setting up of provincial and central statistical advisory bodies and bureaus and approving of the scheme for the appointment of agricultural statisticians in Provincial Departments of Agriculture besides the huge plan now under execution for an
Agricultural Census. In the long run, however, unless the field machinery is overhauled, preferably replaced, the desired results are difficult of attainment.
CHAPTER X

RECAPITULATIONS AND CONCLUSIONS

The present study was undertaken to examine the incipient form of agricultural statistics and their development in the United Kingdom. The methodology and machinery employed and the material used have been passed in review with a view to exploring the possibility of improvement in the basic and current agricultural statistics in Pakistan in the light of experience gained since 11th Century in the United Kingdom.

It has been found that the development of agricultural statistics in the two countries has taken place in a very different background.

In the United Kingdom the first known effort at collecting and compiling agricultural statistics was made only for England during the reign of William the Conqueror at the tail end of 11th century. The objectives of such a compilation has been assigned such motives as fiscal, economic or even defence (Chap.II). The original attempt was followed by prescribing numerous types of tax returns by various sovereigns. These returns incidently yielded some agricultural statistics. Similar returns were also collected by ecclesiastical administration in respect of various estates, mainly during 12th to 16th century (Chap.III).
About the 18th century the task of collecting agricultural statistics was taken up by non-official individuals. Their main object was to know the truth about the land in which they lived (Chap. IV). As time passed, the individuals were joined by the press and academies (Chap. V). As the 17th century moved into the 18th century, the importance of agricultural statistics had been sufficiently recognised and financial assistance out of public funds began to be made available for the purpose (Chap. V & VI). This brought about a change in the status of this activity from a non-official to semi-official level. Along, the Government had been continuously requested to take up this work officially because of its economic importance. At the close of 18th century food scarcity and considerations of defence brought about a change in the official attitude and the Government made the collection of agricultural statistics. This era lasted about a decade. It was, however, as late as 1864, that in spite of its reluctance, the Government took upon itself the sole responsibility of collecting agricultural statistics on a regular basis. Other agencies; individuals, press and academies also continued their contribution during certain years. The period during which these agencies
functioned had been long, but undefined and overlapping through all these centuries. In Ireland, however, the Government had, on its own initiative, started collection of these statistics since 1847. Here the necessity was dictated by an imminent famine.

During this evolutionary period the scope and accuracy showed a general improvement. Today, agricultural statistics in Britain, although far from perfect are fairly accurate and dependable for all practical purposes.

In Pakistan, on the other hand, there were in effect no gradual or overlapping stages of development. The heat and turmoil engendered by domestic warfare, successive invasions from abroad and a rather frequent change of ruling dynasties, precluded the establishment of any fixed traditions for the collection of agricultural statistics. The rulers lived on the land as it were, and collected by way of revenue, in cash or kind, on purely arbitrary grounds. The counterparts of individuals, press and academies of the United Kingdom were conspicuous by their absence. Recently, however, trade organizations have started the collection of certain statistics of area and produce of particular crops in which they are interested. Such statistics, though fairly reliable, have till very
recently been a closely guarded secret of the individual firms collecting them. It must, however, be mentioned that the statistics compiled by the trade in Pakistan can not be compared, both in extent and coverage, to the statistics collected in U.K. by Petty, Young and Sinclair or the Time or Physico-Historical Society, Royal Highland and Agricultural Society and Royal Statistical Society.

With the advent of the British rule in the Indo-Pakistan Sub-continent, the need for accurate agricultural statistics was felt currently with the settlement of the land tenure system. The different systems of land tenure in different parts of the sub-continent introduced variations both in the system of collection and the coverage of agricultural statistics (Chap. IX) A succession of famines in different parts of the country, necessity for purposes of defence of an alien rule and economic considerations mainly relating to the supply of raw agricultural produce for the British industries brought pressure on the Government for collection of accurate agricultural statistics. Curiously, it was left to Caird, a member of the Indian Famine Commission of 1880, who had previously laid the foundations of the official agricultural statistics
In the United Kingdom in 1864, to bring home to the then Government of India the necessity of compiling similar statistics in the Indo-Pakistan Sub-continent.

In the United Kingdom, the scope and validity of data depended on the exigency of circumstances which necessitated their collection. Press commentaries and private criticism incited improvements. Two main examples of this nature discussed in this thesis are the comments of the Journal of Ministry of Agriculture on estimates of Young (Chap.V) and Venn & Vigour controversy on English official statistics (Chap.VI). In the beginning, the statistics were collected by the 'Visititation' method. With the lapse of time, it gave way to 'Correspondence' method.

In Pakistan the necessity of agricultural statistics for purposes of defence was not so great during the British regime as defence strategy was formulated in White Hall and the overseas territories had hardly any separate defence problems. Britain ruled the seven seas and men and materials could be easily moved, in time of war from one part of the World to the other. The position was, however, materially changed during the World War II when 'India' became the hub for the defence of South East Asia. The War Book
then framed paid close attention to agricultural statistics. This Book has been under constant review since then. The Agricultural statistics included in this Book are, however, only those which are compiled by the Ministry of Agriculture as a matter of routine. With the emergence of Pakistan as an independent country the exigencies of defence should, in the near future, demand an improvement in the accuracy of agricultural statistics.

In order to perpetuate the method of collecting agricultural statistics in the United Kingdom the "rules of business" were compiled in a book form called Domesday, at the end of the eleventh century. This book stands out as a model of clarity of thought. During the 19th century this book was published and it provoked such a great deal of interest that literally thousands of books were later published either as apologia or in elucidation of the original book (Chap.II). The only treatise of this kind in Indo-Pak sub-continent is the Ain-i-Akbari compiled in the reign of Akbar the Great during the 16th century (Chap.IX). The latter, however, suffers greatly in comparison with its British precursor in matters of content, material and format. It may also be mentioned that no other book dealing with
the contents of *Ain-i-Akbarn* has so far been published except possibly Douie's Land Revenue Manual which deals with a much bigger subject.

As regards coverage the number of items in the United Kingdom, has increased from sixteen in 1866 (the number varied in earlier days) to about one hundred and forty at present (only main schedule). The frequency of enumeration increased from periodic attempts in early days to annual enumeration from 1866 onwards, and later to quarterly and even to monthly compilation during war days. With the changing pattern of agriculture from arable farming to livestock farming, the enumeration of livestock assumed more and more importance. In earlier compilations, such as those made for the Domesday or later by individuals or during official pilot surveys during 1832-1857 or those attempted along with population census, certain areas had been left out (Chap. VII). Un-reported areas, however, became negligible during official era of collection. The official machinery employed in different parts of the United Kingdom has been changing from time to time. Its set up has also differed from place to place, from clergy to school master, from police to revenue officials and farmers. The changes both
in respect of items and frequency as well as machinery have been made and adjusted as experience dictated and circumstances warranted.

In spite of repeated famines and major and minor wars in the Indo-Pakistan Sub-continent, no expansion in either coverage of items or frequency of enumeration has taken place since 1934, when official compilation was first started on the recommendation of the Famine Commission. More than one third of the land area of Pakistan is still classed as non-reporting. Only half hearted attempts have been made to enumerate livestock, the importance of which to agriculture is far greater in Pakistan than in the U.K. The Schedule of decennial population census has never gone beyond the determination of agricultural labour force although some profitable information could have been obtained through this machinery. The official machinery has practically remained unchanged as from its very inception. Dependence has always been and is still being placed on visitation method for reasons of low literacy among farmers. Probably in view of the nature of statistics, and object for which these have been collected a change was not justified. The first casualty in any economy drive invariably fell on
the organization for the collection of agricultural statistics with little regard to consequential deterioration in efficiency and accuracy. The irony of the situation is that, in Pakistan, agriculture sustains the economy of the country and yet the people in power are not fully alive to the necessity of accurate and up-to-date agricultural statistics.

The explanation of the differences in the evolutionary stages in the compilation of agricultural statistics in the two countries lies mainly in the social structure and economic background of the people. On the one hand, we have a virile insular community with poor agricultural resources. The struggle for existence during the renaissance period of Europe and later during the industrial revolution was such that only those who dared were able to uphold and improve their standard of living. The British community, mainly due to organised thought and action, beat the other nations of Europe and won for themselves an Empire on which the sun never set. It is, therefore, no wonder that in agriculture as well as in trade and industry, they kept accurate records and improved upon them as time went on. In the Indo-Pakistan sub-continent, on the contrary, we have a disorganised society, trodden down by superstition and a pray to pseudo religious dogmas. On top of this,
successive invasions from the North through the centuries, even before the time of Alexander the Great, kept the population in turmoil. The dead hand of the past lay heavily and killed initiative. Internal strife and dynastic rivalries kept the population in a highly strung atmosphere. Under such conditions it was no wonder that scant attention was paid to the collection of agricultural statistics and vast population suffered in silence the pangs of hunger and poverty at comparatively short intervals. Such calamities were patiently taken as unwelcome visitations of the Wrath of God and nothing was done about them.

In short, the economic history of the two countries under reference, their agricultural and agriculturists and their politics has been so different that development in all fields of human activity were bound to be different. Under such circumstances, although it will be unrealistic to deny fundamental value of British experience yet it will be optimistic to assume that it would be of any specific application to Pakistan. Pakistan, therefore, must plough a lone furrow and gain experience by making mistakes. What makes it essential for Pakistan to make a beginning in its
own way can be illustrated in numerous ways. The areas to be reported in Pakistan are larger by more than six times that of the United Kingdom, so also are the number of heads of livestock to be counted. The model size of holding is small. This also adds to the volume of the task. The people are illiterate and, therefore, unable to return the schedule by mail or even to furnish correct information on interrogation. The pattern of agriculture is mixed farming, and varies from province to province and even from district to district. It is, therefore, unlike Britain, incapable of being reported in a uniform or single questionnaire on a province wise basis. The schedule has got to be bilingual not as a fancy as is the case in Wales but as an unavoidable necessity. Again, agriculture of the United Kingdom is predominantly livestock husbandry as against crop husbandry in Pakistan. The chief contribution of livestock in the U.K. is meat, pork and dairy products whereas in Pakistan its greatest contribution is the production of draft animals. Besides, the determination of irrigated, waterlogged and saline acreage must take the pride of place in any schedule for the collection of agricultural statistics in Pakistan. In the U.K. such soil conditions are
simply not known. Similarly cotton, jute and water buffaloes which are of great economic importance in Pakistan are not so in the United Kingdom. Reverse is also true in respect of certain items. The difference in the nature of items to be included in a schedule in Pakistan necessitates framing of different type of questions which may have to be revised in the light of experience.

At present the system of agricultural statistics from collection to dissemination in the United Kingdom is complete in almost all practical aspects. The coordination is done at two stages; firstly, for England, Scotland and Ireland separately and secondly, for the three areas combined. The latter stage was introduced in 1941. It has complete triangular coverage with respect to area covered, items included and the frequency of reports. There is multipurpose compilation to meet demands of different organisations and departments of Government of Pakistan, the coordination is ineffective both at Provincial and Central levels. It is more so at the Central level because of long geographical distance between the two provinces. The position at the provincial level is also very unsatisfactory because intra provincial work is not fully coordinated. The coverage is incomplete in all the three phases.
and is more so in respect of livestock and forests. The collection of Agricultural Statistics is still designed to serve the purpose of assessing government demands. The situation at present is that Pakistan is yet to make an earnest start with the collection of basic statistics and for removing rather glaring defects from its current statistics. The basic information on the number and characteristics of people engaged in farming, the number of agricultural holdings and their characteristics such as size, form of tenure and geographic distribution, etc. are either not available or are out-dated and unreliable. Most of this information should be collected by carrying out a complete agricultural census in conformity with the Resolution of the Food & Agriculture Organization of the United Nations. This will provide the basic information which should be kept up to date by means of sample surveys during the inter-census period. Agricultural conditions do not remain static and hence the need for a full fledged agricultural census along with the population census every ten years. The sample survey mentioned above will involve two types of work; firstly the statistics which are annually collected by land revenue officials for revenue purposes should be compiled from their records. Examples of this class are number and size
of holdings, types of tenure, number and type of implements, etc. Secondly, collection of statistics from the field should be made periodically for such items as utilization of agricultural produce, credit facilities and crop rotations, etc. In fact the nature of the work involved is the same as special inquiries or periodical supplementary questionnaires in the United Kingdom which has been discussed in detail while analysing the British main schedule and its supplements (Chap.VIII). The extent of coverage and frequency of collection during sample surveys would be determined on the basic principle of importance of individual items together with the length of time in which significant changes occur in the structure.

The work of collection and compilation of statistics both during the decennial census and the sample surveys can either be entrusted to the same revenue agency as is presently engaged in West Pakistan, and a parallel of which is being established in East Pakistan, or a new machinery should be set up. It cannot be denied that certain types of crop statistics are a part of the routine duties of revenue officials. These statistics have been found to be fairly reliable when collected under effective supervision. Moreover,
it cannot be denied that the revenue officials are highly trained and can be depended upon for good team work. The difficulties in getting additional work from the existing revenue agency are, however, great at present when this staff is already overburdened with routine duties and the organization is not in position in East Pakistan as yet nor is West Pakistan covered completely. As such it appears to be necessary that a new agency has to be set up. Should the new machinery supplant or supplement the existing one or should it be employed for whole time or part time are matters which require immediate attention. The balance appears to be in favour of establishing a supplementary and part time agency for the collection of agricultural statistics. The field work under such an agency could be entrusted to rural school teachers, the policemen or Imam Maajids (counterpart of clergymen). All these agencies have, at one or the other time, been employed for similar purposes in the United Kingdom and certain other countries.

Most of the police-men in Pakistan are not literate nor are they mentally suited for this work. Their number in rural areas is also rather small. The public confidence for parting with their private information to the police is grossly lacking. The
police can, therefore, be ruled out. As regards the Imam Masjid it is an un-organised institution. Most of them in the rural areas are rather low on the social ladder and many of them are illiterate. In view of this the Imam Masjid cannot be employed for the purpose in Pakistan. The agency of rural school teacher, however, can be employed for the work. They have basic education and a rural outlook. As a class they are respected and, in general, they command the confidence of cultivators. They can, therefore, be relied upon for accurate statistics. The confidence reposed in them in Pakistan is akin to the confidence by the British farmers on the University staff for February Reviews. It may also be mentioned that the school teachers have, in the past, been always drafted for work in the population census. They have, thus, acquired valuable experience in this type of work. The schools are closed for a couple of months every year and the teachers have time to do this work. They are the only organised society numbering more than 100,000 men and women and are scattered all over the country side. The teachers are relatively low paid and, therefore, the promise of a small remuneration for this work will be sufficient inducement to them to do the work with interest.
A few selected topics on the lines of Supplementary Questionnaire, used in the United Kingdom, should be addressed to the school teachers every year. This will permit continuity of work and will also facilitate discharge of duty of teachers efficiently. To get the best out of them a short training course should be arranged for those interested in taking up this additional work. Their help in the improvement of estimates of production and agricultural statistics will also be invaluable to which a reference will be made later.

The difficulty which is likely to arise is that of administrative control, because the teachers are employed by Government as well as the local bodies and private organisations. Even the Government schools are under the administrative control of provincial education departments and not of the ministries or departments of agriculture which are responsible for collecting agricultural statistics. To overcome this difficulty and to achieve a systematic working arrangement with this machinery they may be approached through the Universities or Boards of Secondary Education with which their schools are affiliated. The role of British universities in collecting agricultural statistics is a good precedent and a trial
on similar lines should be made in Pakistan. There is really no wide departure from previous practice as the Post and Telegraph Department in Pakistan is already employing the school teachers in rural areas for postal work by paying a small remuneration. The present scheme is, therefore, likely to be well received by the persons concerned and its success is almost assured. Any difficulty which may later arise during its working can be smoothed out. The co-ordination at provincial and central level for the basic statistics should rest with the department of agriculture in the provinces and their Directorate of Agricultural Economics & Statistics in the Ministry of Food & Agriculture at the centre.

As regards current statistics, the major defects at central and provincial levels are enumerated and remedies suggested in the following paragraphs.

The main task of a central office for agricultural statistics is direction, coordination, analysis and dissemination. For the establishment of such an office in the U.K. people like Purdy, Baines, Dudfield, Bowley, Drage and many others
struggled hard for well over half a century. (Chap. VI) In Pakistan, public opinion has been lacking and because of lack of pressure from any quarter only a work-a-day arrangement for coordinating the small number of agricultural statistics has been in existence in the Central Ministry of Agriculture since August, 1947. A small Directorate of Agricultural Statistics has been looking after this work. The fore-runners of this office had been located in different departments of the Government of undivided India since 1895. With a view to making this office more effective and useful it was converted, in 1953, into Directorate of Agricultural Economics and Statistics (Chap. IX). The objective of the Central office has not been adequately fulfilled so far mainly for two reasons: first, the technical staff sanctioned for this office is inadequate and all the posts have never been filled up. Particularly the senior posts have remained vacant and on that account the function of 'direction' has not been discharged and the work of analysis has badly suffered. Secondly, there is no administrative link between the field machinery and the Central Office. The political slogans for provincial autonomy for the last few years have been cutting at the roots of its establishment. At
present, therefore, either for want of such a liaison or for lack or total absence of field machinery in the provinces the central office has been handicapped in getting the required information. The stage of 'coordination' and 'dissemination' of statistical information has therefore never been reached.

The work of this Directorate has been in the main limited to the issue of forecasts with respect to major crops numbering fifteen in the beginning and only thirteen at present. Even these have been issued much after the scheduled dates. In order to lessen the confusion, the dates for the issue of different forecasts were revised in 1953. This revision failed in its objective because the reports from primary reporting agencies could not be expedited. In short the pentagon of defects as narrated by Drage in the paper to the Royal statistics Society in 1917 (Chap.VI) then applicable to the United Kingdom is today applicable to Pakistan.

The salient features of Agricultural Statistics in two parts of the country are:

**West Pakistan**

1. The estimates of production of crops are made on the basis of a few selected and indifferently supervised crop cutting experiments. A quinquennial
hypothetical normal yield is the basis for yield estimates which are reported in a non-uniform Annawari notation. This is not a sound and scientific method as it has a strong element of subjectiveness.

The variations between pre-harvest and post-harvest estimates of production is sometime as high as over 25 per cent, e.g. estimate of the cotton crop during 1957-58. This situation does not permit of timely planning for procurement or disposal of produce.

2. Estimates of production of mixed crops are made on the same basis as those for pure sown crops. Mixed crops usually give a lower yield and as such the present method of calculating production of mixed crops results in over-estimation. The recording of acreage under mixed crops is also far from satisfactory inspite of the very detailed instructions on the subject.

3. The annual compilation of acreage and production statistics of crops is limited only to thirteen major food and cash crops on an all-Pakistan basis. The coverage is, therefore, limited. Little is known in respect of production of other food and cash crops as well as fodder crops, inspite of the fact that at certain places their
acreage statistics are annually collected by the Revenue officials.

4. A technical coordinating agency at Provincial Headquarters did not exist until recently and, therefore, the coordination at that level has been suffering. It is now being set up in the provincial department of agriculture. This agency unlike that of Down’s Survey of 1654, has taken very long to emerge. Its full strength is yet not in position.

5. The primary reporting agency for agricultural statistics, numbering only about 10,000 Patwaris, is inadequate to cope with the demands for agricultural statistics. In several places it is yet to be established. The supervision of the work is ineffective. The inadequacy of the staff can be better appreciated when compared with the number of clergymen employed by Sinclair for the preparation of first Statistical Account of Scotland or the number of farmers who fill in their own annual schedule in the United Kingdom.

6. In West Pakistan only about 60 percent, as against 98 per cent in the United Kingdom, of the area is reported under the existing arrangements. Statistical information in respect of the reported areas is incomplete in certain respects and
generally inaccurate. More often than not it is belated.

7. The enumeration of livestock unlike in the United Kingdom is given very little importance. The situation is understandable since livestock products enjoy great importance in the daily food of the British people. This is not so in Pakistan. But the importance of the livestock, particularly because its being a source of power in Pakistan, is even more than in the United Kingdom. The recent gradual fall in yields of food crops in Pakistan is being attributed to lack of bullock power, yet enumeration of livestock is limited to a quinquennial effort which does not follow a uniform pattern. The time taken for its compilation has been unduly long everywhere and its publication has been the privilege of the blessed. Same is true of forests.

8. Certain headings, under which statistics are compiled at present, are ambiguous. For example, the terms 'culturable waste' and 'forests' are differently defined in different areas. This is a similar situation to that which was faced by the enumerator in early days of official collection in the United Kingdom in respect of certain terms like 'permanent grasses' (Chap.VIII). This vitiates comparability of statistics.
9. In certain spheres of activity the jurisdictions are not clearly defined. The proposed 1952-53 agricultural census could not be held because the Ministries of Agriculture and Economic Affairs were interested to undertake the work (Chap. I). Similarly the Directorate of Statistics set up in West Pakistan is at present engaged in checking the accuracy of wheat acreage as reported in the past (Chap. IX). This work should most appropriately be done by the Department of Agriculture through agricultural statisticians. Non-spelled jurisdictions lead to duplications and postponements which may give lead to abandonment.

East Pakistan

1. The acreage statistics are collected and compiled simultaneously by the civil and agricultural service of the province. The former uses the machinery of the Presidents of Union Boards while the later that of the Union Agricultural Assistants. The two sets of figures reach the Director of Agriculture through different channels. It is, however, unfortunate that neither the civil servants nor the agriculture assistants frame these estimates after inspecting individual holdings. These are only broad estimates. A plot to plot survey conducted
in 1944-45 revealed an under-reporting of cropped area of the province by 23.6 percent. In 1956-57 jute production indicated a variation of about 25% between two estimates. These incidents clearly show the deficiency and the need of a primary reporting agency. It might be remarked that the above differences are twice as big as the differences in Young's estimates for England and Wales, for which he was severely criticised. (Chap.V)

Under the State Acquisition Act a revenue machinery is now being established in East Pakistan. It will have 4,000 Tehsildars and Assistant Tehsildars in addition to 2,000 Assistant Seasonal Tehsildars who will be appointed for six months in a year. In practice the Tehsildar will be counterpart of Tehsildar and Zappadar in West Pakistan. In the same set up the counterparts of Kanungos in West Pakistan will be Circle Inspectors and their number would be 334. This machinery should be geared to do the same work in East Pakistan as the revenue machinery in the West Pakistan has been doing.

2. The quinquennial livestock census has not been held since 1945 inspite of the fact that importance of livestock to provincial agriculture is extremely great. The forest statistics are also
being collected indifferently not withstanding
the fact that by far the largest part of forest
wealth of the country is located in East Pakistan.

3. There is no coordinating technical agency
like the one now being set up in East Pakistan.

RECOMMENDATIONS

Centre

(1) The central office should be strengthened
with staff and appointments to the existing
vacancies made without delay.

(2) An effective liaison between the provincial
and central offices should be immediately created.
This should be done by setting up one small
committee for each of the two provinces which should
consist of heads of the provincial agricultural,
animal husbandry and forest departments with one
member of the Board of Revenues as its Chairman.
The Director of Agricultural Economics & Statistics
should be the Member-Secretary of both of these
committees. Private individuals having interest
with agricultural statistics should be co-opted
on it as members. These committees should have a
strong say in all administrative matters and
should be the technical fountain-head for the entire
system of agricultural statistics in the country.
(3) The dates set for the issue of crop estimates should be strictly adhered to. The officials failing without reasonable excuse to keep up the dates should be liable to a fine for default. Persons giving knowingly incorrect or belated information should also be punished.

There appears to be a good case for an act on the lines of clauses 77 to 81 of the Agriculture Act, 1947 in Pakistan which would enquire everyone in the link of collection, compilation and dissemination of agricultural statistics to be faithful and efficient.

West Pakistan.

(1) The estimates of yield should be based on results of randomly selected crop cutting experiments which should be conducted under technical supervision and effective field control.

The system of Annawari notation of reporting crop conditions for forecasts or estimates should be changed to actual area under crop or expected yield in mounds per acre. In no case the present non-uniform system of Annawari system should continue. The services of rural teachers should be used as part-time reporters as was the case in U.K. where part-time crop reporters proved very useful. The school teachers should
base their reports on field inspection and consultations with growers. This will narrow the gap between actual and estimated production.

(2) The acre yield of mixed crops should be correlated with those of the pure sown crops for arriving at correct estimates. A series of crop cutting experiments under the supervision of provincial statisticians in the Department of Agriculture should be conducted specifically for this purpose.

The instructions as embodied in the settlement Manual for recording areas under mixed crops should be carefully followed.

(3) The coverage of agricultural statistics should be gradually broadened so as to have full information on all the facets of Agriculture. Such ready to hand information will be very useful for purposes of planning agricultural production.

(4) The provincial coordinating agency now in the process of being created should be provided in full strength without delay.

(5) The number of Patwaris and Tapedaras should be increased in reporting areas and their appointments expedited in places which are agriculturally productive but are non-reporting at present. The
supervision of their work should be made more effective. All the non-reporting areas should be surveyed by a complete enumeration at first and then such areas as are not available for cultivation should be classified as such.

Part time help from among 50,000 rural school teachers would supplement the field agency for basic statistics in particular and additional current statistics in general. The teachers should be given suitable honorarium for this work.

(6) The coverage of area in West Pakistan should be extended to all agricultural and forest areas. It is only then that agricultural statistics will serve their purpose.

(7) The enumeration of livestock should be annual and that of livestock products, biennial. The forest statistics should be collected quinquennially.

(8) The terms which are not clearly defined in the existing schedules should be clearly defined so that no ambiguity remains. This will facilitate comparability.

(9) Jurisdiction of each department should be clearly set down as a safeguard against duplication or overlapping. This will save energy and expense.
East Pakistan

(1) The revenue machinery being set up to watch the implementation of the State Acquisition and Tenancy Act should serve as the field machinery for the collection of agricultural statistics. The Assistant Seasonal Tehsildars should be appointed on a round the year basis and their additional time should be devoted to agricultural statistics.

The Circle Inspectors should supervise the work of agricultural statistics.

A supplement to this machinery should be found out of about 65,000 rural school teachers who should be called upon to help on a part-time basis.

(2) Livestock and forest statistics should be given more attention than at present. The frequency of enumeration should be simultaneous and the same as has been suggested for West Pakistan.

(3) The provincial Agriculture Department should be equipped with agricultural statisticians as is now being done in West Pakistan.

(4) All those deficiencies which have been noticed in West Pakistan are also occurring in East Pakistan. The remedies suggested for one province apply equally to the other.
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