A STUDY OF THE CORRELATION CLUSTERS OF THE PERSONALITY TRAIT RATINGS OBTAINED WITH A SAMPLE POPULATION OF 200 MENTALLY DISORDERED PATIENTS.

THESIS FOR THE DEGREE OF Ph.D.

by A. B. MONRO, M.D., D.P.M.
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INTRODUCTION.

The impulse to attempt this study arose from difficulties encountered in psychiatric practice, the chief of which was the problem of proving the efficacy or inadequacy of various methods of treatment. To do this it was necessary to compare matched groups, whose composition necessitated a struggle with diagnostic and prognostic criteria which were difficult to define, and still more difficult to secure agreement about. In the course of preparing certain clinical studies (not referred to in this thesis) it became clear to me that this problem arose largely from a general movement in psychiatry away from a rigid Kraepelinian classification of mental disorders, a movement partly due to concern with mental illness in an earlier and less crystallised stage than that met with in the asylums of past decades, and partly to enlargement of the scope of psychiatry to include many less serious disturbances, which fitted uneasily into classifications evolved in earlier periods. This was no doubt all to the good, but led to the tendency to assess cases in terms of psychodynamics, theories of which were often applied according to the convictions of the psychiatrist concerned, rather than on any objective basis.

In this situation the work of Cattell (1946), who was at one time engaged on clinical work himself, appeared to hold out hopes of advance, not so much by reason of the results claimed, as on account of his optimistic confidence that modern statistical methods could help to establish a new order equal to the demands of the changed conditions. Personally, I was also influenced
by the consideration that clinical medical advance has
been most rapid since clinical practice and the fundamen-
tal sciences of physiology, pathology, etc, have been
closely linked. While entertaining no false hopes about
the early establishment of a similar relationship between
psychiatry and psychology, I felt that an attempt to
apply modern psychological methods to psychiatric problems
was fundamentally sound.

BRIEF HISTORICAL SURVEY.

A survey of the literature shows that there are relativ­
ely few correlation studies and factor analyses in the
psychiatric field.

One of the earlier major attempts was made by Moore
(1929). He felt that the diagnostic categories of psy­
chiatry were poorly defined, and developed a schema for
the quantitative measurement of various emotional manifest­
atations and cognitive functions. He also recorded the pre­
sence or absence of a number of symptoms. Finally, he
examined 367 patients in regard to 41 variables of the
types mentioned. From the intercorrelations between these
variables, he extracted eight factors by using Spearman's
tetrad difference criterion, and equated these factors to
eight psychiatric syndromes which are now of only histor­
ical interest. It is interesting to note that he found
himself forced to use a labour saving technique, by
selecting for computation only those correlations likely
to be significant, while discarding the rest. Also, he
clearly considered the possibility of using a form of
cluster correlation technique as a midway stage in his
factorial analysis, but rejected it on the grounds that
his 41 variables were manageable without such aid.
It must be admitted that this work made little impression on psychiatric thought or practice. He gave no description of the sample examined, and the reader is left to infer that they were schizophrenics and manic-depressives. The process governing the selection of symptoms to be rated was left obscure. Modern work would require a higher standard of sophistication in the choice of variables. It is, however, impossible to cavil at Moore's conclusion that "Certain general factors exist in the mental disorders", though his argument that these relate to neurological defects of a fixed character is more open to doubt.

Eysenck (1944) made a factorial study of 700 neurotics, and the Department of Psychology of the Institute of Psychiatry, London, has continued its activity in this field since. It would, however, be premature to say that this work has as yet greatly influenced psychiatric methodology or practice. Cattell (1946a) offered a re-interpretation of Eysenck's factors. Burt (1947-8) described a factor analysis of temperamental traits for a group of normal children and a group of psychoneurotic patients.

Wittman, Sheldon and Katz (1948) published a study of the relationship between constitutional variations and psychotic behaviour reactions. Correlations were claimed to exist between certain types of psychotic reactions and the well-known "Sheldon's Types" of body build, namely endomorphy, mesomorphy and ectomorphy. Correlations were also shown to exist with the temperamental categories described by Sheldon, namely Viscerotonia, Somatotonia and Cerebrotonia. Evaluation of this work would require detailed consideration of the bases of Sheldon's
work, a task altogether beyond the scope of this thesis.

Linford Rees (1949) applied statistical methods to the problem of comparing three matched groups to determine the relative efficacy of three methods of treatment. He used an item sheet of 300 items and a modification of the Worcester, Massachusetts, Rating Scale, together with the Rorschach Test, the Thematic Apperception Test, the Wechsler-Bellevue Scale and Vigotsky's Concept Formation Test. The results were worked out with the help of Hollerith punched cards. Some criticism can be levelled at the nature of the data chosen for quantification, but this paper is noteworthy as it made a decisive contribution to a clinical problem by dismissing from the psychiatric scene a form of treatment for which considerable claims had been made.

Linford Rees (1950) published another study on "Body Size, Personality and Neurosis" in which he used factorial analysis in relation to bodily measurements, but not traits of personality. Thurstone (1951, Personal Communication) wrote, "One of my students, Dr James Degan, recently completed an interesting multiple factor study of psychotic symptoms and Dr Rimoldi, an Argentinian physician and psychologist, is now making a similar analysis of psychosomatic symptoms. The Degan study is going to press soon as a Psychometric Monograph".

Lorr, Wittmann and Schanberger (1951) used factor analytic methods in relation to the problem of prognosis in schizophrenia. They used a rating schedule derived from a review of over fifty studies dealing with prognostic factors in schizophrenia. The ratings were intercorrelated and the resulting matrix was factored by the centroid
method. Three factors were obtained and interpreted. It was claimed that the use of this prognostic scale resulted in more accurate prediction than that achieved by ordinary psychiatric judgment.

It would be tedious to go into the more remote historical background, beyond noting that clinical research of the kind attempted in this thesis has been made possible by the interaction of two dominant trends in the psychological work of recent decades, namely factor analysis and the study of personality.

Although factorial analysis was introduced by Spearman in 1904, it is the more modern works which have been mainly relied on in relation to this thesis. Chief among these were Thurstone (1935, 1944), Burt, (1940) and Holzinger and Harman (1941). In relation to the study of Personality Allport (1937) was regarded as having achieved classic status, while the work of Cattell (1946) was given great weight. His combination of clinical experience with active research was relevant to the problem of this thesis, and his conception of the "Personality Sphere" with its related comprehensive trait list seemed to offer a fresh approach of a more sophisticated nature to clinical problems.

It would be idle to deny that among clinicians there is considerable opposition to the use of statistical methods as advocated by Cattell, but an awareness of the need for some improvement is clearly stated by Sargent and Slater (1950) as follows: "In psychiatry today we have reached a curious state of affairs in which we are aware of the value of a number of treatments but do not
understand their indications. We can, indeed, get a considerable amount of guidance from established systems of diagnosis and classification. The schizophrenic patient, for instance, cannot be treated on exactly the same principles as the neurotic. But the indications provided in this way are not by themselves sufficient, and are actually neglected by some clinicians. We should be able to add to them more refined methods of assessing therapeutic needs. This is, unfortunately, not common practice; and what we see instead is the application of rule of thumb and personal bias.

It is against this background, and with full appreciation of Thurstone's dictum that any study of this kind is to some extent a gamble, that I have attempted an enquiry which strikes me, in my less adventurous moments, as rash, or even presumptuous in its scope.

**PLAN OF THE ENQUIRY.**

It is generally agreed that it is impossible to describe personality without using trait terms. Cattell (1946), says on page 59: "Clinical psychology has always taken traits - as descriptive elements - for granted, turning its interests to the syndromes that may be made out of their patterning. When one comes to the end of the clinical approach, however, and begins to follow the penetrations which modern psychological method has made into the subject of personality description and measurement, he is forced at once to take a more sophisticated view about the nature of traits, to enter upon an entirely new vista of concepts
and a new discipline of thought.

Difficulties and disagreement arise when precision in the use of the term "trait" is attempted. In order to avoid, on the one hand, a long discussion of doubtful profit on the nature of traits, and on the other an unduly imprecise use of the term, I have for this enquiry largely accepted the theory of traits propounded by Cattell (1946) on page 59 et seq. This implies accepting Cattell's definition of a trait on page 61:

"A trait, whether unique or common, is a collection of reactions or responses bound by some kind of unity which permits the responses to be gathered under one term and treated in the same fashion for most purposes". Equally it implies acceptance of his proposition on page 71 et seq that covariation is the basis of real functional unity. There is a large measure of agreement between Cattell and Eysenck (1947) who on page 28 defines traits as "Observed constellations of individual action tendencies".

I have also accepted as a working hypothesis, Cattell's division of traits (page 78) into source traits, corresponding to factors, and surface traits, corresponding to clusters; also his contentions (page 131) on "The Hierarchy of Trait, Type, Factor, Cluster, Syndrome and Trait Element", and the summary of these views expressed in the table on page 133 and the ensuing paragraph:
## TABLE 6.

**THE HIERARCHY OF TRAIT TERMS.**

<table>
<thead>
<tr>
<th>Traits, (or general traits, or Personality Characteristics)</th>
<th>Syndrome, or the character of a type, or Trait Configuration.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A comprehensive term for Structure)</td>
<td>Trait (Normal) or Symptom (Pathological)</td>
</tr>
<tr>
<td>Deduced from Behaviour)</td>
<td>Trait Element (Operational Unity, Atomic Unit of Behaviour).</td>
</tr>
</tbody>
</table>

Towards Widest Reference.
Towards Narrowest Reference.

Perhaps the real basis of present practice is not comprehensiveness of manifestation but comprehensiveness beyond what common sense would expect. If a particular tempo runs through all behaviour, this does not astonish the observer and he calls it a trait. But if a person simultaneously acquires a change in cognitive endowment, an alteration in dynamic purpose, and a transformation of temperamental emotiomenality - as, for example, in general paralysis - the pattern is called a syndrome. Ascribing the distinction of syndrome, trait, and trait element (or symptom) to the number and variety of distinct modalities or aspects of behaviour involved seems at present as far as one can go in analysing the hierarchical basis at the verbal level. As we shall see later, the modality character can be given operational recognition and is no longer subjective. But temporarily the final arbiter of hierarchical position can remain common usage of terms,
as dictated by common convenience and sometimes, alas, by common misconception or failure of insight”.

The aim of this enquiry may therefore be stated to be an attempt to study the correlations observed to exist between traits in a sample of mentally disordered persons.

There proved to be no real choice between the three main methods of personality exploration, namely, rating, questionnaires and objective tests. The value of questionnaires in dealing with the mentally disordered was extremely dubious, and objective tests were not available. Other possible methods considered were projective tests and case-studies. Both were rejected, the former owing to the risk of subjective bias in scoring, the latter owing to the same risk of bias in recording data and the difficulty in quantifying observations. Having accepted rating as the best available method, in spite of obvious disadvantages, the possibilities of the method described by Cattell (1946), page 212, seemed appropriate to the task in hand. “As we have pointed out when speaking of the nature of trait elements, the individual trait is fully understood only by taking account of the patterns of traits in which it stands and of which it forms part.... This pattern may be a universe of objective measures or a universe of rated traits. The latter at present has an advantage because (a) it will be a very long time before a sufficiently wide variety of personality aspects are simultaneously presentable in
objective measurements to give meaning to the patterns (factors), and (b) the meanings obtained are more relevant to practical problems, because the ratings relate more directly to the fields of real-life behaviour in which we wish to predict. Indeed, it seems likely that objective measures will at first grow up within, and take their initial validities and meanings from, a framework of ratings. These ratings will act as a builder's scaffolding to shape the growth of research in real objective test measurements. Within this building frame the solid articulation (by correlation) between test measurement and more laboriously, objectively rated or sampled real-life performance can be worked out.

The precautions suggested by Cattell (page 213) to ensure accuracy of rating could not be applied in full to this enquiry. Professor Drever, however, considered that with my experience (sixteen years in the full-time practice of psychiatry), it should be possible to achieve a satisfactory level of accuracy if certain safeguards were adopted. The first of these was that I should constantly bear in mind the aim of describing mental disorder as a defect or deviation of behaviour in terms capable of quantification; the second, that I should rate part of the sample in conjunction with two colleagues in order to reveal the nature and extent of any personal bias; the third, that the trait terms to be used should be defined as clearly as possible in terms of actual behaviour manifestations.
The selection of a trait list to serve as a rating scale presented the next problem. That described by C Cattell (page 219) was chosen for the following reasons:

1. His contention that it was comprehensive, owing to its derivation from the Odbert-Allport trait list, by elimination of synonyms, appeared sound.

2. Psychiatric Rating scales, such as that described by Malamud and Sands (1947) all appeared to throw into relief the characteristic behaviour of mental hospital patients, while paying too little attention to the gradations of behaviour observed in ordinary people outside hospital. It was felt that this failure to deal with normal and abnormal behaviour in equal detail might introduce a bias of unknown magnitude into this enquiry.

3. The question of comparing a mentally disordered population with a "normal" one was felt to be important. It was clear that a psychiatrist was in a privileged position to find out about the behaviour of patients. They, or their relatives, would give information in the hope of obtaining relief, whereas "normal" individuals, without that motive, might well withhold it. Equally, the behaviour of patients was open to observation of a closeness which "normal" individuals would not tolerate. I therefore felt that comparison of my observations on patients with others made by myself on ordinary individuals might well be misleading.

Cattell, however, carried out his researches on a normal population with this trait list in conditions more favourable than any I could hope to obtain. It
therefore seemed to be desirable to adhere as closely as possible to his method, to allow comparison of my observations on a disordered population with his on a normal one.

4. Cattell's list seemed to offer as good a compromise as any between the conflicting requirements of comprehensiveness and compactness sufficient to allow of statistical elaboration.

5. Having regard to the following warning by Sears (1950) it seemed wise to adopt (with modifications if necessary) a tried technique, rather than try out a new one: 

"Probably no field of psychology has been more perplexing to its students, with respect to theory, than has that of personality. The raw data of molar behaviour provide such diversity that the psychologist can order his observations only by reducing the infinite multiplicity of human action to some schema containing a reasonably small number of variables. The situation is very different from that of learning, perception, or other segmental aspects of behaviour. In these latter, the variables outside the process can be ignored, left to a colleague down the hall; there is no need to conceptualise total action systems. Personality, as a field of study, however, comprises just those totalities, and hence the theorist must devise a sufficient number of variables to provide a possibility of reasonably accurate analysis but not so many that he approximates the multiplicity of traits, motives, emotions, feelings, images and thoughts as these occur in the conscious or unconscious experience of the behaving person."
Any theory is useful only to the extent that it proves useful in predicting or providing for control of behaviour; there is no right or wrong in the matter, but only convenience. Since no theory has yet proved brilliantly efficacious in ordering the data of molar behaviour for these purposes, it is perhaps not surprising that so many psychologists find themselves goaded into new attempts to construct a systematic set of personality variables.

5. Cattell (1946), referring to his own trait list, (page 245) claimed: "There is a more considerable literature of clusters already in this trait system than in any other".

6. That Cattell's work may form a useful basis for further studies, subject to due caution being used, is suggested by the following criticism by Thorndike (1950). "The reader may be somewhat hesitant to accept Cattell's characterisation of the different factor dimensions, may be somewhat disturbed at the complexity of the correlated and descriptively quite complex factors, and may be rather less prepared than the author to accept the factors in different studies as identical. In this connection, the re-analysis of Cattell's work by Banks may be of interest. In any case the work must be acknowledged as an impressive attempt to study the whole personality sphere".

Due regard having been given to all the considerations set down so far, the work of this enquiry seemed to fall naturally into five main divisions:-
1. Denotation of each trait in terms of actual behaviour.
2. The selection of the sample to be rated.
3. The rating of cases in conjunction with colleagues, to determine personal bias.
4. The rating of the experimental population.
5. The computation of results.

Each of these sections is now dealt with in detail below.
DENOTATION OF EACH TRAIT IN TERMS OF ACTUAL BEHAVIOUR.

The work of relating behaviour and trait terms was carried out in accordance with the following suggestion by Professor Drever: "There is one difficulty, a linguistic one, which has not been fully explored. The denotation of trait names in terms of actual behaviour may vary from person to person, or from group to group within a community, as may the norms used in grading people on a trait scale. I should be prepared to accept the contention that after all one must start somewhere, and regard a full-scale linguistic investigation as desirable but unnecessary. On the other hand, I think it would be worth while to go further than Allport and Cattell in specifying concretely the kinds of behaviour that are indicated by the trait norms, and submitting such a vocabulary to as many competent psychologists and psychiatrists as possible."

Most of the linguistic work was done by a group consisting of Professor A. R. Humphreys, of the Department of English, University College, Leicester, Mrs Humphreys, Mr A. G. Crammer, late headmaster of the City Boys' School, Leicester, Mrs Crammer, Mrs Monroe and myself. Two of the ladies in the group have high academic qualifications. Many suggestions were also obtained from the Philosophical Section of the Leicester Literary and Philosophical Society, under the Presidency of Dr Philip M. Leon, of University College, Leicester. I would like here to acknowledge most gratefully the authoritative help given by many individuals who spent much time and effort on this work.
The psychiatric and psychological aspects of the work were kept under review by my colleagues at Carlton Hayes Hospital. Advantage was taken of the fact that the 1950 Summer Meeting of the Royal Medico-Psychological Association was held in Leicester, in honour of the election to the Presidency of Dr K. K. Drury, Medical Superintendent of Carlton Hayes Hospital. Many distinguished psychiatrists were present at the meeting, and many valuable suggestions regarding this work were received.

Before the linguistic work was undertaken, a decision had to be reached as to whether rating should be on a two-point scale for tetrachoric correlation, or on a scale with more points for product-moment correlation. Against the former technique was the possibility of crudeness and artificiality; against the latter was the difficulty in arranging the steps in the scale, the probability that the middle ranges would mainly be used, and the formidable mathematical work that would be entailed. The former alternative appeared preferable, an opinion with which Professor Drever concurred. This decision required that the linguistic experts should frame their definitions in such a way as to differentiate simply between presence and absence of a trait.

At the suggestion of Professor Drever it was also decided to separate the poles of bipolar traits, and rate each as a separate trait. This was felt to be a possible method of determining whether correlation would bear out Cattell's claim that the opposites selected by him were indeed psychological opposites.
This increased the number of variables in the list from 171 to 284.

During the linguistic discussions certain important points emerged, the first being that it was impossible to give an exhaustive list of the actions which might lead to the use of a given trait term. One member of the group pointed out that such a course, pushed to extremes, might require, in relation to the term host "Hostile", the inclusion both of the administration of a left black eye, and a right one. In other words, it was felt to be impossible to construct a "Behaviour Sphere" to correspond to the "Personality Sphere" described by Cattell (1946).

Another point raised (by a philosopher) was that it was doubtful whether it was possible to infer the presence of a trait accurately from behaviour alone. The context of the behaviour was felt to be most important, and so was the insight or empathy of the observer. For the purposes of this enquiry, this point was felt to be adequately met, because it was to be carried out by an experienced observer, whose work would be subject to a check by colleagues.

A further item for discussion was the contention that some traits could only be inferred from the presence, either simultaneously or in sequence, of behaviour of different kinds, each type of which, if considered on its own, might lead to a positive rating on another trait. The term "Ambitious" was a case in point. The complex of behaviour which would lead to a positive rating on that term was felt to be likely to lead to a positive rating on such terms as "Energetic".
"painstaking", "Persevering", or even "Selfish" and "Kithless", not to mention "Planful". It was decided that a rating on a complex term such as "Ambitious" should not automatically carry with it a positive rating on its "subsidiary" traits; each case should be considered according to the observed behaviour. It was felt that probably some of the "subsidiary" traits would be found to require a positive rating, but that the ones to be so rated might quite well vary from case to case.

Most workers arrived at their estimates of the kind of behaviour which should qualify for a positive rating by a twofold process. They considered a dictionary definition and common usage of a given term and also recalled the behaviour of acquaintances to whom, in their opinion, it applied. The extent of the agreement between estimates arrived at separately by different people was a matter for surprise during the discussions in which these results were pooled and hammered into final shape.

Cattell (1946), on page 217, stated that he desisted from reducing his list of trait terms any further by mere inspection of meaning; he considered that if there was the slightest doubt about considering two terms as identical, it was best to keep them apart and leave the verdict to the correlation coefficient. Due weight was given to this opinion, but the dividing line between reliance on inspection of meaning and reliance on the correlation coefficient was felt to have been necessarily drawn by Cattell at an arbitrary point.
The linguistic experts wished to be free to express the opinion that certain terms were redundant on the ground that virtual synonyms were available in the list. The psychologists pointed out that if two terms had to be defined in terms of identical behaviour, the verdict of the correlation coefficient was determined in advance. Incidentally, some of the workers who knew Cattell personally when he worked in Leicester, offered pungent but friendly criticism of his use of the English language, being especially severe on neologisms. Cattell's words were, however, retained for convenience except in those cases where the linguistic experts simply would not tolerate them.

Discussion arose about the desirability or otherwise of retaining terms derived from psychological research. Even where the words concerned were in common use, it was felt that a special technical meaning had become attached to them. The term "Emotional" was a case in point. There was felt to be a considerable difference between estimating emotionality as commonly understood and estimating the factors of general emotionality and athenic-asthenic emotionality described by Burt (1938). The second of these alternatives was felt to be fraught with greater possibilities of error than the first. The final consensus of opinion was that these specially derived terms should only be used where no reasonable alternative was available. The natural preference of English scholars for established English usage contributed largely to this result.
When the work in Leicester on the list was finished, the results were submitted to Professor Drever and Dr Sameenoff for detailed criticism. Certain amendments were made in accordance with their suggestions. Later, when the list came to be used for actual rating, one or two errors, redundancies and duplications came to light and were corrected. These were very minor and were of the nature of clerical errors; their correction was of no significance in relation to the list as a whole.

When the work so far described was complete, it was found that 45 terms had been rejected as vague or redundant, while 7 terms had been added, making a total of 246 terms for which rating criteria had been provided. Of these, 24 had been changed in name, although retaining substantially the same meaning. This whole task represented a co-operative effort spread over the greater part of a year.

Before the list is set out in detail, it should be stated that consideration was given to the question as to whether those traits susceptible to testing should be tested, or rated on criteria in the same way as those for which tests were not available. On the advice of Professor Drever and Dr Sameenoff, it was considered undesirable to mix ratings and objective test results. The only exception made to this rule was in the case of intelligence, as it was felt to be pedantic to evolve criteria for a trait which has been so intensively dealt with objectively.
LIST OF TRAITS, WITH AMENDMENTS AND RATING CRITERIA.

ABILITIES, INTELLIGENCE. Alter to "INTELLIGENT". Rate those at or above the 75th percentile on Raven's Progressive Matrices Test. Add the term "UNINTELLIGENT", to describe those below the 25th percentile on the same test. This addition allows correlations to be made with both high and low intelligence.

This test is chosen for its ease of administration, an important point in view of the work involved in rating.

ABILITIES, SPECIAL ABILITIES. It was felt to be desirable to treat these in the same way as intelligence, and rate for the presence and absence of the ability. However, it seemed clear that :- 1). Norms were much less firmly established than those for intelligence, and 2). Low performance might be due to many factors other than low ability, especially in mentally disordered subjects. Ratings for the absence of abilities were therefore abandoned as too unreliable. For reasons already stated, a somewhat rough and ready method for the estimation of the ability was evolved in each case.

DRAWING ABILITY. Rate a professional artist or draughtsman, a teacher who has qualified to teach drawing, even as a subsidiary subject; a person who sketches or paints as a hobby, or who, in the opinion of a competent judge, such as a teacher or art therapist, is good at drawing.

MATHEMATICAL ABILITY. Rate a person who has passed an
exam in mathematics of a standard higher than university entrance; or one whose job requires him to use complex calculations, eg, engineer, accountant, actuary; or one whose spare time activities require the use of complex calculations, eg amateur astronomer, model designer; also one who is, in the opinion of two competent judges, a person of mathematical ability.

MANUAL, INCLUDING DIGITAL, DEXTERITY. Rate a person whose occupation involves skill in the execution of fine movements of the hand and fingers, eg, surgeon, jeweler, hosiery linker, dressmaker; also a person whose hobby requires the same skill, eg, embroidery or model making. Specify the type of skill.

MECHANICAL APTITUDE. Rate one whose occupation requires skill in constructing and understanding machinery, eg engineer or mechanic; also a person whose hobby requires similar skill. Describe the way in which the skill is shown.

MUSICAL APTITUDE. Rate a professional musician or singer; or a person who plays an instrument or sings in public, in the presence of friends or in the family circle without being regarded as incompetent; also a music critic.

PHYSICAL STRENGTH AND ENDURANCE. Rate one whose occupation is physically arduous, eg, soldier, farm labourer; or a person who engages in arduous sports or other strenuous activities. Specify the kind of activity.
LOGICAL ABILITY. Omit this term as being very closely related to general intelligence.

SPATIAL ABILITY. Rate a person whose work requires the accurate perception of shapes, eg artist, draughtsman, textile designer, architect or art critic; or one whose spare time activities require the same capacity, eg photographer; or a person who has an informed interest in any craft or visual art. Specify the field in which the skill is shown.

VERBAL ABILITY. Rate a person whose livelihood or career depends substantially on ability to speak well in public, eg politician, lecturer, barrister, showman, clergyman; rate such people unless there is clear contrary evidence (which should be described); also a person who requires to use words competently in his job, eg author, journalist, teacher; also a person who in the opinion of two competent judges shows verbal ability, eg a salesman with the 'gift of the gab', or a man sought after to conduct difficult negotiations; also a person who has passed an exam in English of a higher standard than University entrance; or a person whose spare time activities indicate verbal ability, eg a person sought after as a good after-dinner speaker, or one with a reputation among his friends as a good raconteur or conversationalist. Specify in what way the aptitude is shown.

ALERT. Rate those who show the capacity for observant concentration on their surroundings and the power of rapid appropriate action in regard to them, whether...
at work, at play or in social relationships. Exemplify.

ABSENT-MINDED. Rate those who fail to carry out normal duties or ordinary social obligations, either over a period of time or on more than one occasion, owing to lack of attention. Exemplify.

ACQUISITIVE. Rate those who desire to possess objects they value; or who make human relationships serve the end of obtaining money or objects instead of their usual ends. Exemplify.

AFFECTIONATE. Rate those who show readiness to accept others into intimate relationship, or who express their feelings freely in such relationships; also those who are affectionate in the opinion of at least two people closely associated with them, provided there is no clear
evidence of a contrary kind.

FRIGID. Alter to COLD. Rate those who make no display of feeling in relationships in which strong feelings are usually shown, eg marital, parental; also those who avoid intimate relationships and have few or none; also those who avoid display of feeling and depurate such display by others. Exemplify.

AGORAPHOBIC. Rate those who suffer from nervousness or anxiety in open spaces.

ALCOHOLIC. Rate a person whose indulgence is sufficient to reduce his efficiency at work; or who deprives himself or his family of necessities in order to buy drink; or one who feels he cannot get through the day without a drink, or one who never drinks less than three pints of beer or three short drinks per day.

AMBITIOUS. Rate those who have a strong desire for a position of recognised pre-eminence, and show it by their industry, attention to detail and readiness both to exploit others and to sacrifice present satisfactions for the future achievement of aims.

UNAMBITIOUS. Rate those devoid of the desire for a position of recognised pre-eminence, as shown, for example, by one who accepts the conditions in which he finds himself, or who shows aversion to entering into competition with others, or who fails to avail himself of legitimate opportunities for furthering his interests.
A positive rating should be given to unmarried women under 30 who repel all erotic advances or have no discoverable erotic activities, and to those over 30 without discoverable erotic interests or activities.

The figures in the last two sections are based on the work of Kinsey, Pomeroy and Martin (1948), modified by my own psychiatric experience, and that of other psychiatrists with whom I have discussed the issue.

ANALYTICAL. This term was omitted as being too difficult to differentiate from "Intelligent" and "Logical".

FORWARD-LOOKING. This amendment was preferred to the neologism "ANTEVERT". Rate if evidence of a forward looking habit can be adduced, eg planning for the future, crossing bridges before coming to them, or strong interest in prophetic or Utopian books, or in the affairs of posterity.

RETROVERT. Rate if evidence of a backward looking habit can be adduced, eg dwelling on past achievements or mistakes, preoccupation with events of childhood, or nostalgic longing for past periods of history.

ARGUMENTATIVE. Rate those who enjoy debate or verbal controversy; or who produce weighty reasons to try and establish trivial points; or who engage in verbal controversy on inappropriate social occasions, or who delight to prove others wrong. Exemplify.

ARROGANT. Rate those who are aggressively self-satisfied; or who claim an importance to which they are not
entitled and are contemptuous of the claims of others. Terman and Miles (1936) define aggressiveness as follows (Appendix V, p 561): "By this is meant the extent to which this person puts himself forward, attains his desires without reference to others or achieves his wishes no matter how much obstruction is offered". Exemplify.

HUMBLE. Rate one who is conscious of his own limitations or insignificance; or who makes no false claims to importance and gives full value to the claims of others in this direction; or who feels the need to abase himself before other people or beings whom he accepts as superior to himself.

ASCETIC. Rate one who denies himself ordinary sensual gratifications for reasons of conscience, culture or religion. Exemplify.

SENSUOUS. Alter to SENSUAL. Rate one who considers it a good thing to indulge his appetites and does not in practice make any attempt to restrain them for reasons other than expediency or dislike of the consequences of indulgence.

ASSERTIVE. The use of the term "Ascendant" by Cattell to indicate part of the field of meaning to be covered by the term assertive, led to consideration of the relevance of the Ascendance-Submission scale described by Allport (1928). It was felt that many other traits in this list besides Assertive contributed to the quality of Ascendance, among them being Courage, Poise,
Verbal Ability, Intelligence, Ambition, Enterprise, Enthusiasm and Self-confidence. It was therefore decided to make no attempt to rate for Ascendence in the sense described by Allport, but to rate for "Assertive" as commonly used, while borrowing certain criteria from Allport.

Rate a person who at work and in society expects his own valuation of his position to be accepted without question; or who in ordinary circumstances acts in accordance with his own desires; or who asserts his rights in face of trivial violation; or who makes dogmatic statements which he expects to be accepted without question, and if questioned, repeats the assertion instead of arguing or examining the evidence; or who feels irritated if not allowed to express his own ideas and is ready to oppose the ideas of others in argument.

SUBMISSIVE. This term gave rise to a discussion similar to that aroused by "Assertive", with similar conclusions. It was decided to rate a person who yields to the claims of others without considering whether the situation demands that he should; or who does not object overtly to violation of his rights, but feels inwardly provoked; or who allows others to control a conversation as a rule; or who disagrees silently with the ideas of others and does not argue.

AUSTERE. Rate one who adheres to a code of conduct more rigid and severe than is necessary to avoid social disapproval; or one with severe classical tastes and an aversion to Romanticism.
PROFLIGATE. Change to LAX. Rate a person who transgres-
ses the moral code accepted by his fellows, eg in
business or professional conduct, or in the sexual or
social sphere, because he himself accepts a lower stan-
dard as adequate or advantageous.

AUTOCRATIC. Rate one who uses such authority as he has
to ensure that his will prevails; or who exercises auth-
ority according to personal considerations, instead of
according to the principles requiring application in
his position.

BOASTFUL. Rate one who tells stories to his own credit,
which are untrue or exaggerated; or who repeats stories
to his credit which are true, to people who have heard
them before.

MODEST. Rate one who is reticent about his own achieve-
ments. Exemplify.

BROODING. Rate one who ruminates on painful topics or
emotional hurts to a degree which is observed by others
or felt by the subject to reduce his efficiency at work
or to make him curtail or refrain from spare time activ-
ities of an active or constructive kind.

UNREPINING. Rate those who take rebuffs lightly, who do
not bear malice and are not easily slighted; or those
who do not fret, feel discontent or become upset in
situations which could justifiably cause these reactions;
or those upon whom the frictions of life do not produce
a lasting response.
CAUTIOUS. Rate one who observes and attends closely to situations in which he is involved, and uses forethought to order his actions in such a way as to avoid unpleasant repercussions. Exemplify.

RECKLESS. Rate one who acts without regard for the possible consequences of his actions, who is therefore frequently taken by surprise, usually owing to lack of attention or forethought. Exemplify.

CHARMING. Rate a person who frequently succeeds in pleasing, influencing, attracting or delighting others by manner, gesture or facial expression, whether unconsciously, or by design.

CHEERFUL. Rate a person who ordinarily has a pleasant attitude or expression and has something to say indicating enjoyment of his situation; also one who likes other people to enjoy life and ordinarily acts or speaks in a way likely to produce this result, while avoiding topics or actions likely to arouse unpleasant feelings; or one with the capacity for seeing and responding to those elements in his situation which stimulate enjoyment, while not responding to those which might cause pain or unpleasant feelings. Psychiatrically recognised states of euphoria must also be included.

GLOOMY. Rate a person who is sad in appearance and shows little evidence of enjoying life; psychiatrically recognised states of depression must also be included.
CLEAR THINKING. Rate a person whose behaviour is ordinarily the result of calm, thoughtful consideration of the merits of any given case; or one who considers each situation in which he finds himself in a logical, matter-of-fact way, and appears to base his actions on reason (see Terman and Miles, 1936, p561); or one who shows evidence of the ability to plan appropriate action while under stress; a positive rating should only be given in the absence of demonstrable "wishful thinking" or clear failure of reality testing, as shown by paranoid or schizophrenic thought disorder, or persistent blind prejudice.

INCOHERENT. Replace by two terms, CONFUSED and DISORDERED IN THOUGHT.

CONFUSED. Rate one who shows impairment of comprehension, interference with elaboration of impressions, defects in orientation and retention, difficulty in activation of memories and marked fluctuation in the level of attention. At least four of these criteria must be met.

DISORDERED IN THOUGHT. Rate one who shows failure of reality testing, eg by ideas of reference or influence; or evidence of archaic (eg mythological) types of thinking; or vagueness of thought content, eg 'teleagrammatic' or metaphorical thinking as described by Henderson and Gillespie (1950), p 197. Delusions, hallucinations and complete incoherence of speech must also be included. One of the above criteria definitely present is sufficient for rating.

CLAUSTROPHOBIC. Rate positively one who is nervous in
small enclosed spaces, and is afraid of being hemmed in.

CONCEITED. Rate a person who is self-important, vain and cocky; or who does not regard other people or their ideas and values as being as important as his own; or who ignores or belittles the contributions of others to work, discussion, or social activities. Exemplify.

SELF-DISSATISFIED. Rate one who regards other people or their ideas and values as being better than himself, or his own, without critical consideration; or one who belittles himself or his contribution to work, discussion, or social occasions without real grounds. Self-deprecation, ideas of unworthiness, inadequacy, guilt and self-accusation as encountered psychiatrically must also be included. Exemplify.

CONSCIENTIOUS. Rate positively one who carries out his duties and fulfils his responsibilities, without requiring pressure or sanctions to be applied; or one who acts according to what he believes to be right even at the cost of hard work or disadvantage; or one who shows regret or remorse for lapses from duty and attempts to repair errors.

CONSCIENCELESS. Rate one who evades duties, obligations or responsibilities unless closely watched; or whose conduct is dictated by expedience, without regard to standards of right and wrong; or who shows no regret over lapses of duty and makes no attempt to repair errors or omissions spontaneously.

CONSTRUCTIVE. Omit as a vague term.
CONTENTED. Rate one who is pleased with his lot; or who feels he has enough in the way of prestige, position, money and social opportunities, or who feels that he has the chance to obtain enough of these things; or who is not straining to change his position and circumstances.

DISSATISFIED. Rate a person who frequently complains about his lot; or who feels deprived of something to which he is entitled; or who feels that he has a grievance against life; or who is eager to change his position and circumstances although there are no good reasons for so doing.

CONVENTIONAL. Rate a person who, at work, uses and values established methods, who is concerned to do the 'proper thing' and use the correct method for a given task; also one who socially is punctilious in observing the customs, the good form and the 'done thing' in the society in which he lives; also one who in the realm of thought, accepts majority or group opinions without serious critical enquiry; or one who conforms to the standards of the majority as a rule. Exemplify.

INDIVIDUALISTIC. Rate one who admires independent action more than conformity, and is often to be found in opposition to majority opinions and actions; also one who at work admires individual effort, eg craftsmanship, or individual enterprise; also one who has little regard for formality or the 'done thing' in social matters. Exemplify.
CO-OPERATIVE. Rate one who works readily with others in any sphere, at work, in domestic relationships, or socially as in clubs or societies.

OBSTRUCTIVE. Rate one who makes difficulties about working with others in situations in which co-operation may reasonably be regarded as a duty, e.g. at work, or in domestic relationships; or one who habitually attempts to frustrate the activities of others in any sphere; or one who habitually rejects a suggestion made to him and makes a counter suggestion. Exemplify.

COURAGEOUS. Rate one who faces or endures danger, adversity or pain without flinching or complaining. Exemplify.

Cowardly. Rate one who evades danger, difficulty, adversity and pain wherever possible, and who flinches or complains if evasion is impossible. Exemplify.

CURIOUS. Rate one who shows his eagerness to find things out by asking questions or making investigations, in any one sphere, e.g. social gossip or scientific enquiry.

UNENQUIRING. Rate one in whose case it is impossible to discover any sphere in which he shows eagerness to make discoveries.

CYNICAL. Rate one who seldom or never makes a generous or appreciative remark about others, but does often say things which draw attention to the weaknesses of others; also one who expresses contempt for the human race as a whole in speech or writing; or one who adheres to groups which do the same.
IDEALISTIC. Rate one who is moved by idealism in the sense used by Lord Birkenhead, (1929): "Idealism may be defined, as well as in another way, by calling it the spirit which impels an individual or group of individuals to a loftier standard of conduct than that which ordinarily prevails around him or them". Rate also a person who believes that human nature is capable of nobility or movement towards a more perfect state, and who applies this in individual situations by appealing to this tendency rather than to threats, bribes or punishments.

DEBONAIR. Omit as being covered by "Polished".

DEFENSIVE. Rate one who thinks others intend to hurt or belittle him when they do not; or who spontaneously justifies his actions or rebuts supposed slights when there is no need. Exemplify.

DUBITATIVE. Alter to VACILLATING. Rate one who shows hesitation or doubt of more than ordinary degree before making decisions, eg one who does not give a straightforward answer to a problem after being given all the relevant information and reasonable time, but answers questions with questions, talks repetitively round the subject and seeks to gain time; or one who shows a state of indecision or hesitation where no choice of consequence exists; or one who shows a pathologically state of doubt or indecision psychiatrically diagnosed. Exemplify.

DECISIVE. Rate one who is able to make a firm, rapid choice between alternatives. Exemplify.
EASY-GOING. Rate one who is satisfied with low standards of achievement for himself and others, who therefore does not make exacting demands and is easily pleased with himself and others. Exemplify.

PERNICKETY. Rate one who applies to trifles a rigorous attitude which might be appropriate in dealing with serious matters, but is quite out of place in relation to unimportant ones. Exemplify.

ECCENTRIC. Rate one who, while not in a mental hospital, has established a reputation among his fellows or neighbours for queer behaviour, which is not recognised as such by him.

FADEY. Add this term. Rate those who intemperately urge unimportant beliefs or practices. Exemplify.

EFFEMINATE. Cattell could use this term, as he was, in the first place, rating only a male population. The question was considered whether to use the two terms masculine and feminine in its place. It was decided not to do so in view of the finding of Terman and Miles, (1936), p 53:— "There remains the outside criterion of M-F ratings of subjects by presumably competent judges, the difficulty here being that we have not been able to find two observers whose ratings of the same subjects agree to more than a trifling extent". It was felt that effeminacy, "mannishness", masculinity and femininity were traits only to be measured by testing. This term was therefore omitted.
EGOTISTICAL. Rate one who has established a reputation for talking about himself a great deal; or one observed to turn conversations to discussion of topics to do with himself (medical or psychiatric interviews are excluded); also a person in whose case evidence can be cited to show that he has an exalted opinion of himself.

ALTOCENTRIC. Eliminated as redundant, the meaning being fully covered by the two terms denoting "Kindness".

ELOQUENT. Eliminated as redundant, the meaning being covered by "Verbal Ability" and "Talkative".

INARTICULATE. Eliminated as redundant, the meaning being covered by "Taciturn", "Quiet" and "Reserved".

EMOTIONAL I AND II, and UNEMOOTIONAL I AND II. These terms were considered together in some detail in the light of Burt's researches (1938).

The list of 11 primary emotions (derived from McDougall) with which Burt worked, is well represented in this list:

Burt's List:  Cattell's List as amended.
Anger,           Hostile, Irritable, Pugnacious.
Assertiveness,  Assertive, Arrogant, Independent,
Sociability,     Rebellious.
Curiosity,       Sociable, Gregarious.
Joy,             Curious.
Sex,             Cheerful.
Disgust,         Amorous, Erotic.
Tenderness,      Fastidious.
                Affectionate, Kind.

Sorrow,  Gloomy, Brooding.

Fear,  Cowardly, Worrying, Agoraphobic, Clustrophobic.

Submissiveness, Submissive, Humble, Dependent.

It was felt that any fundamental traits of the kind derived by Burt by statistical research from the above surface traits, should appear in this enquiry only at the stage of statistical elaboration. It was therefore considered to be unwise to attempt to rate them directly, quite apart from the difficulty of so doing. It was also felt that Burt's concept of general emotionality was, at this stage, better left to be described by the terms "Inhibited" and "Emotionally Expressive", while that of athenic versus asthenic emotion would be covered by the ratings on sociability, assertiveness, anger, sex, tenderness, submissiveness, disgust and fear, or their equivalents in Cattell's list. It was therefore decided to omit all four of these terms.

ENERGETIC-SPIRITED. Amalgamate with ENERGETIC-INDUSTRIOUS to form one term, ENERGETIC. The concept of Energetic-Spirited is covered by the association of "Energetic" with such terms as "Enthusiastic", "Vivacious", "Courageous"; The concept of Energetic-Industrious is covered by the association of "Energetic" with such terms as "pains-taking", "Persevering", "Patient".

Rate one who in the course of his work freely uses physical energy; or who through his own activity inspires others to effort; or who is agreed by competent judges
to be an energetic worker; or who is actively engaged in energetic sports; or who pursues hobbies industriously; or who never likes to be idle; or who is active in organising social, political or club activities; or who is active in entertaining or social affairs. Recognised psychiatric states of overactivity must be included. Exemplify.

LANGUID. Amend to LISTLESS. Rate one who shows no pleasure in his work, and takes no interest in it beyond the barest minimum to get it done; or who has no definite avocational activities, and gives as his reason that he is not sufficiently interested in anything; or who has little interest in social activities and derives no apparent pleasure from them. Psychiatrically recognised states of schizoid apathy, emotional flattening and the emotional blunting and interest loss of depression must be included. Exemplify.

INACTIVE-INDOLENT. Amend to INACTIVE. Rate a person who is agreed by competent judges to be idle or lazy; or who has frequent absences from work for trivial reasons and works strictly to the clock; or who is preoccupied with the problem of avoiding effort and getting through the day with minimum exertion; or who takes little or no exercise, whose hobbies are passive, eg televiewing, reading, watching sports; or who undertakes few social activities, and those unwillingly; or who is a passive or non-member of clubs or similar organisations. Curtailment of work or spare time activities by physical illness or disability must be included. Exemplify.
ENTERPRISING. Rate one who, in any sphere, is eager to undertake activities which involve coping to some extent with the new and unknown, which involve an element of risk and which cannot fully be foreseen. Exemplify.

SHIFTLESS. Rate one who lacks the resource to deal with unfamiliar situations, who can only cope with a situation about which he has been taught, or of which he has previous experience; also one who drifts from job to job, making little attempt to find a niche for himself in the economic order, a career or source of income, however modest, with reasonably stable prospects; also one whose social contacts are marked by lack of "savoir vivre". Exemplify.

ENTHUSIASTIC. Rate one who shows intense interest and passionate zeal in most activities which he undertakes; also one who shows more canalised enthusiasm in the pursuit of at least two subjects or activities. Exemplify.

APATHETIC. Eliminated as the meaning is fully covered by "Listless" and "Inactive".

EVASIVE. Rate one who cannot tolerate unpalatable truths about himself or his capacities, who habitually equivocates or takes refuge in fantasy when situations arise which threaten to show him up accurately. Those instances recognised in psychiatry must be included, where patients always evade the point under discussion, usually as a result of pathological suspicion. Exemplify.
FACING LIFE. This term was eliminated as it proved impossible to reach sufficient agreement as to what it could legitimately be taken to mean. It was felt that in all probability the meaning, if any, was adequately expressed by such terms as "Alert", "Clear-thinking", "Courageous", "Self-Confident" etc.

EXCITABLE. Rate one who shows an easy "Startle reaction"; also one who shows autonomic activity, such as flushing, sweating or alteration of the pupils as a result of stimuli which ordinarily do not produce such reactions, eg meeting strangers, shopping, travelling, etc; also one who, in the opinion of two competent judges, is easily aroused to emotional display. Exemplify.

PHLEGMATIC. Rate one who, in the opinion of two competent judges, is difficult to arouse to emotional display. If evidence is available of behaviour in circumstances of abnormal intensity of stimulation, eg war conditions, then absence of startle reaction or autonomic response in conditions which usually produce these can be accepted as evidence for ampositive rating. Exemplify.

EXTRA-PUNITIVE. Rate positively a person who does not admit to being in the wrong in the absence of conclusive proof, and even then struggles to the last against the admission; or one who lays the blame on others for his own actions or their results; or one who is demonstrably more critical and fault-finding towards others than towards himself. Exemplify.
PRAISEFUL. Rate one who ordinarily speaks well of the efforts and achievements of others, and has achieved a reputation among his acquaintances for being ready with praise. Exemplify.

EXHIBITIONIST. Amend to EAGER FOR ATTENTION. Rate one who habitually attempts to draw attention to himself by speech, gesture, dress or actions. Pathological exhibitionism, such as self-exposure must also be included. Exemplify.

SELF-EFFACING. Rate one who seeks a position of inconspicuousness and anonymity; also one who dislikes public appearances or acclamation. Exemplify.

FAIR-MINDED. Rate one who does not attribute praise or blame, or arrive at a judgment on any issue, without hearing all the evidence.

PARTIAL. Rate one who shows demonstrable prejudices; two at least should be mentioned, either religious, racial, social or political; also one who attributes praise or blame, or gives judgment without hearing all the evidence. Exemplify.

FASTIDIOUS. Rate those who profess disgust at things which are normally accepted by their social equals; or who affect superior taste to their social equals; or who are extremely particular about their personal appearance and adornment; or who are extremely difficult to please, particularly as regards their aesthetic tastes. Exemplify.
COARSE. Rate those whose personal cleanliness, manners or way of speech are defective enough to cause offence even amongst people of similar social status; or those whose standards of behaviour in society are clearly below the average for their class. Exemplify.

FLATTERING. Rate one in whose case proof is forthcoming by observation, or from reliable witnesses, that he does in fact often flatter others. Exemplify if possible.

FORMAL. Rate one who observes formal practices in social intercourse, and likes others to do the same; or who likes pageantry, ritual and ceremonial in public life or religion. Exemplify.

CASUAL. Rate one who ignores formalities and established punctilios in social intercourse, whose social arrangements are free and easy, impromptu and left to chance; or one who is off-hand in manner and lax in fulfilling his obligations. Exemplify.

FRANK. Rate one who says forthrightly what he means without reserve or concealment. Exemplify.

SECRETIVE. Rate one whose statements are usually characterised by reserve or concealment. Exemplify.

FRIENDLY. Rate one who enjoys the company of others and is well disposed towards them; or who has many friends. Exemplify.

HOSTILE. Rate one who frequently picks quarrels, who has few friends but many enemies, whose spontaneous attitude to others is one of dislike which has to be
GENEROUS. Rate one who gives gifts, money, services or time freely for any purpose without thought of reward. Exemplify.

TIGHT-FISTED. Rate one who does not give his time, money, services or gifts without doing all he can to ensure a return for himself; or one who refuses to spend money on items generally considered essential for one in his position. Exemplify.

GENIAL. Rate one whose manner and attitude is habitually cheering and kindly. Exemplify.

COLD-HEARTED. Rate one who shows few signs of either pleasure or displeasure in human intercourse; or whose predominant attitude to others is indifference. Exemplify.

GLUTTONOUS. Rate one who overeats to an extent likely to impair his health, yet does not try to control his appetite even after being warned. Exemplify.

GRATEFUL. Rate one who unfailingly renders thanks for any benefit received, and feels an obligation to repay appropriately if possible; failure to do this, except very occasionally, should rule out the use of the term.

THANKLESS. Amend to UNGRATEFUL. Rate one who seldom renders thanks for benefits received, and feels no obligation to attempt to repay appropriately.

HABIT-BOUND. Before arriving at criteria for rating this term, it was considered, together with "Labile", "Inflexible" and "Adaptable" in the light of the
literature on Perseveration and on Conservatism versus Radicalism.

Allport (1936) p 417, stated "Perseveration thus seems not to be a common enough trait to be profitably scaled". Eysenck (1947) stated, p 158, "Thus our results lend further support to those who argue against the existence of a general factor of perseveration". Cattell (1946), p 436, stated that "The only assured manifestation of perseveration is as disposition rigidity, i.e. as difficulty in new relative to old tasks, when the new tasks are not difficult by reason of complexity (g saturation)".

It was felt that if any term were to be related in any way to the concept of high perseveration, it should be "Habit-bound", with "Adaptable" as its probable opposite rather than "Labile". After discussion it was decided that "Habit-bound" should be used in a sense which included the concept of disposition rigidity together with criteria derived from the ordinary usage of the words.

It was therefore decided to rate those who show great difficulty in changing old-established habits by an effort of will; or who like to order their lives in a fixed routine and are upset if this is disturbed, or if disturbance is anticipated; or who warm up slowly to tasks, but when warmed up tend to continue at them and become annoyed at interruptions, having a strong inclination to get back to the job until it is finished.
LABILE. It was decided to exchange this term for ADAPTABLE, and to rate those who either do not form old established habits, or who can change them easily by an effort of will; or who can adapt to new circumstances, new activities and new ideas without difficulty; or who are not upset by actual or prospective alterations in routine; or who do not take long to warm up to a job, who do not resent interruptions, and can pick up and lay down jobs without difficulty.

HARD. Rate one who frequently or habitually shows unkind indifference to the feelings of others. Exemplify.

SOFT-HEARTED. Rate one who frequently or habitually shows kindly awareness and appreciation of the feelings of others, and treats them with respect. Exemplify.

HEADSTRONG. Rate one who actively pursues his own course, in spite of opposition or contrary advice; his attitude to opposition or advice, even if good, is to ignore or overbear it. Exemplify.

GENTLE-TEMPERED. Rate one who does not easily lose his temper, even when provoked, and who is easily pacified when angry. Exemplify.

HEARTY. Rate one who shows his enjoyment of life, or his determination to enjoy life, by noisy behaviour and florid gestures. Exemplify.
QUIET. Rate one who is seldom or never noisy. In the absence of norms the rating must be left very much to the judgment of the investigator, as every method of describing "Quiet" is really circumlocution. Exemplify.

HIGH-STRUNG. Eliminated as redundant. A high-strung person was considered to be one liable to become excited on slight provocation; the term "Excitable" was therefore considered adequate.

RELAXED. Eliminated as redundant. This term seemed to describe a state of not being tense or excited at the moment, i.e., a temporary state rather than a trait. In so far as it could be regarded as a trait, the meaning appeared adequately covered by the term "Placid".

HONEST. Rate one who is truthful and fulfills all his contracts and obligations. Exemplify.

DISHONEST. Rate one in whose case good evidence can be produced that he lies or cheats.

HURRIED. Rate one whose actions can be observed to be hasty; or one who feels that he must get everything done quickly; or one who shows abnormal states of press of activity or manic acceleration. Exemplify.

LETHARGIC. Amend to LEISURELY. Rate one who cannot complete tasks in a time accepted as adequate for the job; or who is frequently late for engagements or trains. The retardation and lowered productivity of depression as diagnosed psychiatrically must be included. Exemplify.
HYPOCHONDRIACAL. Rate one who shows excessive preoccupation with his health by taking unusual precautions to preserve health or avoid illness; or one who habitually regards trivial aches and pains as signs of severe illness.

IMAGINATIVE. So far as possible, it was felt to be desirable to keep this term to describe healthy manifestations of imaginative activity, while reserving "Phantasying" for morbid manifestations.

Rate one with a rich or powerful imaginative life as shown by creative work involving the imagination, eg the arts; or one who shows cultured or intelligent interest in the arts or any imaginative activity; or a visionary in the sense of one whose actions (eg religious or political) are dominated by ends conceived by the imagination. Exemplify.

UNIMAGINATIVE. Rate one who shows no evidence of a strong, or even of a morbid, capacity for imaginative activity, and who also shows no interest in matters which are not susceptible of literal explanation and description. Exemplify.

IMITATIVE. Rate positively a person in whose case good evidence may be cited of behaviour in imitation of another occurring frequently or habitually.

NON-IMITATIVE. Eliminated as redundant.

IMPULSIVE (TAMPERAMENTALLY). Rate one habitually liable to act rapidly without reflection or forethought. Exemplify.
DELIBERATE. Rate one who habitually considers pros and cons before acting; or who is ready to take his time over any project. Exemplify.

INDEPENDENT. Rate one who shows evidence of relying on his own abilities to achieve his ends, who takes his own line wherever possible; or who dislikes being subordinate to others and dislikes having to rely on others; or one who is capable of holding opinions or taking action which is contrary to the majority. Exemplify.

DEPENDENT. Rate one who prefers to rely on others or to be subordinate to others, rather than to take his own line; or one who habitually relies on others to provide services, emotional stimulation or gratification, guidance, opinions or directions; or one who readily fits in with the plans of others and does not demand that they fit in with his. Exemplify.

INFLEXIBLE (EMOTIONALLY). See discussion under "Habit-Bound". The relationship of this term to the trait Conservatism - Radicalism, as described in the literature was considered. Allport and Hartmann ( ), and Vetter (1930) found that atypical opinion, both radical and reactionary, was accompanied by relatively greater strength of conviction than in the case of more typical and less extreme opinion. This suggested that the emotionally inflexible person tends to be atypical in opinion rather than conservative. The criteria of conservatism were therefore felt to be irrelevant, and those for rating were based on ordinary
English usage helped by hints from the literature. It was decided to rate those who do not readily change emotional attitudes, opinions felt strongly about or prejudices with a strong emotional colouring. Evidence of the persistence of more than one tendency of these kinds should be given.

LABILE. Eliminated as redundant, the meaning being adequately covered by "Fickle" and "Changeable". At a later stage it was decided to use this term in place of "Changeable", qv.

INHIBITED. Rate one in whose case good evidence is available to the effect that he restrains emotional expression both in public and in private; or one who dislikes emotional manifestations in others, particularly in public; or one who shows demonstrable signs, eg muscular tensions, of restraining his actions during moments of emotional arousal. Exemplify.

INCONTINENT. Amend to EMOTIONALLY EXPRESSIVE. Rate one in whose case there is good evidence to show that he expresses emotion freely or excessively in public or in private; or one who enjoys occasions for the display of emotion in public or in private. Exemplify.

INTERESTS WIDE. Rate one who is easily interested in new subjects or activities; or a person who, in conversation, is able to talk reasonably intelligently on a wide range of topics, and show that he is informed about them; or one who, in addition to work, is interested enough in at least three subjects or pursuits.
to give a fair amount of time to them. Exemplify.

INTERESTS NARROW. Rate one whose interest can only with difficulty be aroused in new subjects or activities; or a person who, in conversation, can only deal with a restricted range of topics; or one who, in addition to work, has less than three subjects or pursuits in which he is sufficiently interested to spend time. Exemplify.

INTERESTS SPECIAL. Rate each one if evidence shows that the individual concerned spends an appreciable amount of time in the pursuit of the subject named, as follows: - AESTHETIC, ARTISTIC, ECONOMIC, HOME AND FAMILY, MUSIC, PHYSICAL ACTIVITY, POLITICAL, RELIGIOUS, SOCIAL, THEORETICAL, TECHNICAL.

INTUITIVE. Due attention was paid to the discussion on Inference in Allport (1936), p 523 ff, and to Cattell (1936) who said "Intuitive judgment is judgment without awareness of our premises". It was decided to rate a person who, when making judgments, especially about other people, habitually preferred to rely on "Immediate knowledge" or "Direct perception" rather than on a process of reasoning in logical sequence.

LOGICAL. It was decided to rate one who, in making judgments, especially about other people, habitually preferred to rely on a process of reasoning in steps, rather than on "Immediate Knowledge" or "Direct perception".
INNOSPECTIVE. Rate a person who spends much time in self-examination; the process should be observed independently, and admitted by the individual; also a person who remains preoccupied with his own mental processes to a degree which interferes with his efficiency at work or his spare-time activities. Exemplify.

INDIGNABLE. Rate one who frequently loses his temper over trifles. Exemplify.

GOOD-TEMPERED. Rate one whose relations with others are habitually harmonious and cordial; or one who has the gift of making others feel good-natured or well-disposed, (eg the soft answer which turneth away wrath); one whose anger ordinarily has an adequate cause.

JALOUS. Rate one who entertains ill-will towards another on account of the other's greater prosperity, endowment or achievement in any respect, arising from a sense of having been outdone by him; or one who looks with a grudging eye on the success or good-fortune of others; or one who desires to supplant another because he feels he has a right to the advantages enjoyed by the other. Exemplify.

KIND. Rate one who has a strong feeling for the sufferings of others, and feels urged to relieve, help or do good in any way open to him. Exemplify.

RUTHLESS. Rate one who is insensitive to the sufferings of others, and therefore is not deterred from a course of action by the consideration that it may cause pain or misery. Exemplify.
KIND (ON PRINCIPLE). Amend to HUMANITARIAN. Rate one who shows goodwill by efforts to help people in a professional or impersonal way, eg in relief work. Exemplify.

LAUGHTERFUL. Amend to MIRTHFUL. Rate one who is observed to laugh frequently and readily. In the absence of norms agreement between two judges is essential.

MIRTHLESS. Rate one who is observed to laugh seldom and is only with difficulty aroused to laughter. Agreement between two judges is essential.

LEADING (NOT DOMINEERING). Rate one who has achieved by democratic means, a position of eminence or increased responsibility relative to his fellows and contemporaries, either at work, or in clubs or societies. Exemplify.

LOYAL. Rate one who faithfully discharges his obligations in any relationship or undertaking; eg to parents, in marriage, to clubs, societies, political parties, churches or other groups. Exemplify.

FICKLE. Rate one who is constantly changing his allegiance; or one whose sentiments do not remain attached far long to one object. Exemplify.

DISLOYAL. Add this term. Rate one in whose case there is evidence of failure to discharge his obligations in a relationship which demands constancy; or one in whose case there is evidence of double dealing towards, or disregard of the interests of another to whom service is owed, eg employer, partner, or party to a contract.
MATURE (IN EMOTIONAL DEVELOPMENT). It was felt that most of the criteria of maturity were already included in this list, with the exception of readiness to accept responsibility. This term was therefore amended to RESPONSIBLE. Rate one who accepts and discharges the responsibilities attached to his position, eg at work, in marriage, parenthood, financial affairs, social obligations, politics and religion. Exemplify.

INFANTILE. Amend to IRRESPONSIBLE. Rate one in whose case evidence is available of evasion of proper responsibilities.

MEMORY GOOD. Rate one who can give an accurate account of the main events of his life, and who can remember correctly an address or other item given to him to remember 5 minutes earlier in the interview.

FORGETFUL. Rate one who cannot give an accurate account of the main events of his life, and who cannot remember an address or other item given to him 5 minutes earlier in an interview.

MISCHIEVOUS. Rate one who thinks it funny to cause other people minor hurts or annoyances. Exemplify.

MULISH. Rate one who is blindly or excessively firm; or who is obstinate in the pursuit of wrong or unwise courses; or who is inclined to oppose the wishes of others for the sake of opposition; Psychiatrically recognised states of negativism must be included. Exemplify.
REASONABLE. Rate one who is open to persuasion by examination of relevant evidence, or pros and cons. Exemplify.

MYSTICAL. Rate one with definite mystical or metaphysical interests, which should be described.

APOLLONIAN. Rate one who accepts the world of sense as the real world; or who is not interested in mystical or metaphysical activities and regards them as idle speculation; or one who accepts and stresses the importance of dealing practically with "Things as they are". Exemplify.

NEURASTHENIC. Rate those so diagnosed by a psychiatrist.

PSYCHOTIC. Add this term for those so diagnosed by a psychiatrist.

OPINIONATED. Rate one who adheres firmly to his opinions and will not submit them to critical investigation; or one who remains devoted to a sect or party which refuses critical examination of its tenets or doctrines. Exemplify.

TOLERANT. Rate one who does not try to stop others from thinking or acting in ways with which he disagrees, or which he thinks wrong or unwise. Exemplify.

OPTIMISTIC. Rate one who habitually takes a bright and hopeful view. Exemplify.

PESSIMISTIC. Rate one who feels everything is likely to turn out badly, and pays attention to those things in his surroundings which might bear out such a view. Exemplify.
ORIGINAL. Rate one who has at some time achieved or invented something original, e.g. at work or in relation to a hobby; or inventiveness in overcoming difficulties, or in creative work of any kind. Exemplify.

BANAL. Rate one whose thought and conversation seldom transcend the commonplace, e.g. one who habitually thinks and talks in cliches, or one who echoes ideas or expressions derived from the media of mass communication.

PATIENT. Rate one who suffers prolonged pain, adversity or aggravation without complaint; or who is prepared to wait calmly for expected benefits. Exemplify.

IMPATIENT. Rate one who shows poor capacity for enduring prolonged pain, adversity or aggravation, by displaying bad temper or by complaint; or one who shows distress or anger if he has to wait for expected benefits. Exemplify.

PAINSTAKING. Rate one who is observed to be neat, thorough and accurate, either at work, or in his spare time activities; also one who, in the opinion of competent judges, shows those qualities. Exemplify.

SLIPSHOD. Rate one who is observed to be untidy at work or spare time activities, or who is inaccurate in observation and execution of tasks, or who turns out poorly finished work; also one who, in the opinion of competent judges, shows these qualities. Exemplify.
PEDANTIC. Rate one who is learned, but is not "educated" in the sense described by Aristotle; "It is the mark of an educated man to look for precision in each class of things just so far as the nature of the subject permits". I.e., rate positively a person who strives inappropriately for precision, particularly in the correction of trivial errors.

DISORDERLY. Omit as being too vague in meaning.

PERSEVERING. Rate one who habitually persists with any course undertaken until successfully concluded, even if there is difficulty or opposition. Exemplify.

QUITTING. Rate one in whose case there is good evidence to show that he has abandoned more than two projects which were within his power to complete. Exemplify.

PHANTASYING. Rate one who admits to preoccupation with phantasy; or who lives in a world of make-believe, and shows his lack of respect for reality by florid lying or unreliability of conduct; or who, by allowing his conduct to be ruled by unreasonable or capricious opinions or whims, shows that phantasy plays a large part in his life; or who is hallucinated. Exemplify.

PHYSICALLY ACTIVE. Omit as being covered by PHYSICAL STRENGTH AND ENDURANCE, and by ENERGETIC.

PIOUS. Rate one given to religious thoughts and exercises. Exemplify.
WORLDLY. Rate one who devotes himself to the pleasures and advantages to be obtained in this life, without consideration of enduring values.

PLAINTIVE. Rate one whose speech and bearing indicate an attitude of complaint, eg the chronic grouser, a person who tells hard luck stories, a "Just his luck" man, or a person labouring under a sense of injury or grievance, which he takes no steps to deal with in a practical way. Exemplify.

PLANFUL. Rate one who spends much time in the preparation of plans relating to his own future, without necessarily carrying them out successfully; also one who, having made plans, carries them out as fully as circumstances will allow. Exemplify.

PLANLESS. Rate one who makes inadequate plans for carrying out even his obvious obligations and responsibilities, or who, having made them, makes inadequate efforts to realise them. Exemplify.

POISED. Rate one in whose case evidence is available to show that he is capable of behaving in an efficient and unruffled manner in critical situations, as well as doing so habitually in the ordinary course of life. Exemplify.

AWKWARD. Rate one who is clumsy or ungraceful in movement; or in speech or manners; or who is stiff and stilted in manner towards others; or who is self-conscious in company and easily embarrassed; or who is difficult to have dealings with. Exemplify.
POLISHED. Rate one who takes more care of his appearance than is usual for one of his social class; who also has easy good manners and ready gaiety. Exemplify.

ROUGH. Rate one who is uncared for in appearance. Exemplify.

PRACTICAL. Omit as redundant, the meaning being covered by "Clear-thinking", "Decisive", etc.

UNREALISTIC. Omit as redundant, the meaning being covered by "Phantasying", "Planless", etc.

PUGNACIOUS. Rate one who is easily provoked to anger, who is disposed to quarrel and is fond of fighting either physically or verbally. Exemplify.

PEACEABLE. Rate one who is only with great difficulty provoked to quarrel, who dislikes fighting and always prefers a peaceful settlement of a difference if possible. Exemplify.

RELIABLE. Rate positively a person who is observed to be habitually dependable and trustworthy, or who is so in the opinion of competent judges who know him well.

UNDEPENDABLE. Rate one in whose case evidence is available that he has on several occasions failed to carry out a task which he was entrusted to complete. Exemplify.

RESERVED. Rate one who is reticent about his own feelings or opinions.

INTRUSIVE. Rate one who fails to respect the desires of others for privacy, or who tries to force intimacy. Exemplify.
RESILIENT. Omit as redundant. The meaning is covered by "Cheerful", "Unrepining", "Optimistic", etc.

DEPRESSIBLE. Omit as redundant, the meaning being covered by "Brooding", "Gloomy", "Sensitive", etc.

RESPONSIVE. Most of the meaning which it would be legitimate to attribute to this term is already covered by "Excitable", "Emotionally Expressive", "Sociable", etc. What is left could be best dealt with by amending the term to ACCESSIBLE and rating those with whom it is possible to establish rapport readily.

ALOOF. Omit as redundant. The meaning is covered by "Self-sufficient", "Shy" etc.

REVERENT. Rate one who shows in some context an attitude of veneration or respectful awe, eg towards God, the Church, a philosophy, aesthetic values, famous or eminent men. Exemplify.

REBELLIOUS. Rate one who habitually opposes lawful or commonly accepted authority. Exemplify.

SADISTIC. Amend to CRUEL. Rate one in whose case evidence is available of cruel behaviour, or of pleasure in cruel behaviour to other people, children or animals on more than one occasion. Exemplify.

MASOCHISTIC. Rate one in whose case there is evidence that he derives satisfaction from suffering pain; scrutinise carefully those who dedicate themselves to the service of a cause or creed which involves the
risk of privation or suffering; also those who devote themselves to arduous activities which involve hardship, such as exploration. Include those who suffer from a morbid sense of guilt which they feel the need to expiate through suffering.

SARCASTIC. Rate one who frequently or habitually uses sarcasm. Exemplify.

SELF-CONFIDENT. Rate one who has been observed to be in the habit of relying on his own powers, or who, in the opinion of competent judges, does so; or one who at work does not call on the support of authority unless absolutely necessary; or one who socially has a confident manner. Exemplify.

SELF-DISTRAUSTING. Rate one who whenever possible seeks the support of authority, a group, or other people, for a line of action or opinions held; or who is diffident socially; or who expresses distrust of his own capacity to undertake activities which have been demonstrated to be within his powers. Exemplify.

SELF-CONTROLLED. A positive rating cannot be given except in the absence of evidence of poor control, such as inappropriate emotional displays, addictions, indulgence of appetites. In all these respects behaviour must be within accepted bounds. That being so, rate one in whose case evidence is available to show that habitually or frequently, the individual concerned restrained behaviour to which he was strongly impelled, eg that he restrained himself from violence or retaliation when provoked. Exemplify.
SELF-DECEIVING. Rate one who refuses to believe a true proposition which has some personal significance for him even after demonstration, eg that his wife is unfaithful; also one who believes a similar type of proposition in spite of strong evidence to suggest its falsity. Exemplify.

SELF-PITYING. Rate one who draws attention to real or supposed sufferings in order to enlist sympathy. The giving of information in a professional setting must be excluded. Exemplify. The essential point is the enlisting of sympathy, not the arranging of adequate help.

SELF-RESPECTING. Rate one who has a high standard of personal honour, and a high regard for his own good name and reputation, shown by a scrupulous carrying out of all obligations and responsibilities, and by rapid, powerful reaction against any threat to his good name.

SELFISH. Rate one who habitually concentrates on those things which he considers will further his interests or redound to his benefit, without considering whether he is thereby injuring the interests of others. Exemplify.

SELF-DENYING. Rate one in whose case evidence is available to show that he has surrendered his interests to those of some other person or group. The common usage in regard to appetites is covered by "Austere" and "Ascetic". Exemplify.
SENSITIVE. Rate one with feelings easily hurt, giving two examples of his being affected or offended by trivial stimuli.

TOUGH. Rate one in whose case there is available evidence of his ability to endure hardship, or of his indifference to insults and provocation. Exemplify.

SENTIMENTAL. Rate one easily swayed by feeling, or given to excessive, inappropriate displays of feeling; or one who displays intense feeling of doubtful sincerity in response to trivial excitation. Exemplify.

HARD-HEADED. Rate one difficult to sway by feeling, or to distract from any objective by an appeal to feeling; also one who, in the conduct of his affairs, gives maximum emphasis to material and practical considerations, ignoring imponderables and finer feelings. Exemplify.

SERIOUS. Amend to SERIOUS-MINDED. Rate one who habitually takes seriously any activity in which he is engaged - his job, career, hobbies or social activities - and shows it by taking time, trouble and thought to try and make certain of achieving his aims; also one whose serious cast of mind is shown by the nature of his interests, eg heavyweight metaphysics, art with a capital A, work of relief etc. Exemplify.

FLIVOLOUS. Rate positively a person who frequently or habitually attempts to make light of matters which ought to be taken seriously. Exemplify.
SHREWED. Rate one capable of acute, accurate judgment of people and situations and of turning this capacity to good account. Exemplify.

NAIVE. Rate one who shows, relative to his contemporaries and social equals, an unaffected simplicity of thought, speech or manners; Exemplify.

SLANDEROUS. Rate one in whose case evidence is available to show that he has made slanderous statements on more than two occasions.

SLEEPS WELL. Rate one who feels that he gets adequate sleep irrespective of the time spent sleeping, provided his judgment is not disturbed by mental illness. In the latter case the adequacy or otherwise of his sleep must be determined by the doctors and nurses concerned.

SLEEPS POORLY. Rate one who feels his sleep is inadequate, or is observed to sleep for less than five hours nightly on average.

SLOW (TEMPERAMENTALLY). The psychological concept of "personal Tempo" was not felt to be a proper matter for rating. Other meanings for this term were felt to be covered by "Deliberate", "Leisurely" etc. This term was therefore eliminated, and with it QUICK.

SOCIABLE I. Retain the term SOCIABLE. Rate one who is fond of meeting people, is a good mixer and is good company, but is not necessarily unhappy when alone.

SHY. Rate one who dislikes meeting others and feels awkward or inadequate in company.
SOCIABLE II. Amend to GREGARIOUS. Rate one who feels the need of company and dislikes being alone, but does not necessarily show any social expertise.

SELF-SUFFICIENT. Rate one who prefers his own company to that of others, but does not necessarily feel or appear awkward or inadequate in company.

SOPHISTICATED. Eliminate as too vague in meaning.

SIMPLE-HEARTED. Eliminate for the same reason.

SOUR. Eliminate as redundant and obscure, the meaning being covered by "Cynical", "Secretive", "Dissatisfied", "Ungrateful", etc.

STABLE EMOTIONALLY. This was considered to be a term loosely used in clinical psychiatry to denote consistency and moderation in emotional reactions. The meaning was felt to be largely covered by "Placid", "Phlegmatic", "Poised", "Contented", "Cheerful", etc. It was felt to be almost impossible to produce criteria for rating, so it was decided to omit the term.

CHANGEABLE. It was decided to alter this to LABILE (see under LABILE above) and to rate those observed to show frequent changes of mood for little apparent reason, or those who are said to do so by two reliable witnesses. Exemplify.

STRONG IN PERSONALITY. This term was felt to be difficult to define. The more obvious meanings appeared to be covered by "Autocratic", "Leading", etc. A more
sophisticated psychological concept of strength of personality was considered to be as yet unformulated, and certainly impossible to rate. The term was therefore omitted.

SUBJECTIVE. After careful consideration of the suggested definition of subjective-mindedness in Terman and Miles (1936), p 561, it was felt that the rating of this term would be almost impossible; it was therefore eliminated.

GUIDED BY REALITY. The definition in Terman and Miles (1936) of objective-mindedness was also considered. It was felt to be much easier to define than "Subjective", but the meaning was felt to be largely covered by "Clear-Thinking", "Hard-headed", etc. This term was therefore omitted.

SUGGESTIBLE. Rate one in whose case there is evidence of a tendency to accept ideas or propositions without critical enquiry, eg the acceptance of a religious or political outlook mainly as a result of parental influence; or one who has established a reputation as being easy to influence or persuade, eg one who can easily be induced to change his mind, to alter or even abandon a course of action, in conformity with the desire or suggestion of someone else; or one who has been shown to be susceptible to hypnosis. Exemplify.

TACTFUL. Rate one who shows adroit consideration for the feelings of others, and nice perception in the handling of relationships. Exemplify.
TACTLESS. Rate one who shows obtuse lack of perception of the feelings of others and sufficient awkwardness in the handling of relationships to give rise to frequent offence or annoyance. Exemplify.

TALKATIVE. In the absence of norms, a positive rating should only be given when there is no reasonable doubt. At least two competent judges should be in agreement.

TACITURN. The same considerations apply as for "Talkative"; rate where two competent judges are in agreement.

TEMPERATE. By implication this term is used by Cattell to indicate moderation in emotional expression, not abstemiousness or control of appetite, as it is given as the opposite of "Extreme, in Schizothyme sense". This, like "stable emotionally" was felt to be impossible to rate, so was eliminated.

EXTREME. This term was felt to be closely related to "Affected", and also to be vague in meaning and difficult to rate. It was therefore eliminated.

THOUGHTFUL. Rate one who spends much time in study, whether professionally or in spare time; or one whose hobbies or profession are of a learned nature; or one who thinks matters out carefully before taking action; or one who undertakes any kind of mental exercise designed to improve his mental efficiency. Exemplify.
UNREFLECTIVE. In terms of behaviour this would show in hasty or impulsive conduct, covered by "Impulsive" or "Hurried". The term was therefore omitted.

THRIFTY. Rate one who thrives by frugality, who is sparing in the spending of money or economical in the use of means. Exemplify.

CARELESS WITH GOODS. Rate one who frequently or habitually spends money wastefully or unnecessarily, having regard to his resources; or one who is uneconomical in the use of means. Exemplify.

TIMID. The meaning is covered by "Cowardly" and "Worrying". Eliminated as redundant.

ADVENTUROUS. The meaning was felt to be covered by "Courageous". Eliminated as redundant.

TREACHEROUS. Amended to DECEITFUL; rate one in whose case evidence is available that he frequently deceives others.

TRUSTFUL. Rate one who is apt to believe what is said to him without sufficient evidence, or without taking precautions to check information, whether in regard to finance, property or the undertaking by others of obligations. Exemplify.

SUSPICIOUS. Rate one who suspects others in circumstances which do not justify it. Exemplify.
VERSATILE. The customary use of this word implies some degree of efficiency in a variety of directions. Rate one who shows an informed interest and moderate skill in at least three subjects or activities apart from his work. Exemplify.

VINDICTIVE. Rate one who bears lasting ill-will or hatred for one or more other people, and shows it by irritating, annoying or injuring them as opportunity offers; or one who feels a sense of injury which leads him to retaliation. Exemplify.

UNRESENTFUL. Rate one who readily overlooks, pardons or forgets real offences, who bears no grudges and does not desire to retaliate after genuine injury. Exemplify if possible.

VIVACIOUS. Rate one who is habitually lively or animated in expression, or who makes free use of vigorous gestures.

WANDERING. Rate one who dislikes staying in one place or job for more than a short time, and who moves even if it means sacrificing personal advantages or the interests of his dependents.

SETTLING DOWN. Rate positively a person who refuses to change job or residence to his advantage, because he dislikes moving.

WITTY. Rate one who, in the opinion of two competent judges, is capable of making or appreciating witty or humorous remarks.
HUMOURLESS. Rate one who, in the opinion of two competent judges, is unable to make or appreciate humorous or witty remarks.

WISE. Eliminated as being quite impossible to rate.

FOOLISH. Eliminated for the same reason as "Wise".

WORRYING. Rate one who frequently or habitually worries excessively over legitimate causes of worry, or worries about trivial matters which do not ordinarily cause worry. Exemplify.

PLACID. Rate one who does not become troubled over trivialities, and worries little or not at all about matters which could be considered legitimate occasions for worry.
AMENDED TRAIT LIST.
The list is here set out in alphabetical order, with the exception of the abilities and the interests, which are grouped separately at the end.

ABSENT-MINDED.
ACCESSIBLE.
ACQUISITIVE.
ADAPTABLE.
AFFECTED.
AFFECTIONATE.
AGORAPHOBIC.
ALCOHOLIC.
ALERT.
AMBITIOUS.
AMOROUS.
APOLLONIAN.
ARGUMENTATIVE.
ARROGANT.
ASCETIC.
ASSERTIVE.
AUSTERE.
AUTOCRATIC.
AWKWARD.
BANAL.
BOASTFUL.
BROODING.
CARELESS with goods.
CASUAL.
CAUTIOUS.
CHARMING.
CHEERFUL.
CLAUSTROPHOBIC.
CLEAR-THINKING.
COARSE.
COLD.
COLD-HEARTED.
CONCEITED.
CONFUSED.
CONSCIENCELESS.
CONSCIENTIOUS.
CONTENTED.
CONVENTIONAL.
CO-OPERATIVE.
COURAGEOUS.
COWARDLY.
CRUEL.
CURIOUS.
CYNICAL.
DECEITFUL.
DECISIVE.
DEFENSIVE.
DELIBERATE.

DEPENDENT.
DISHONEST.
DISLOYAL.
DISORDERED in thought.
DISSATISFIED.
EAGER for attention.
EASY-GOING.
ECCENTRIC.
EGOTISTICAL.
EMOTIONALLY expressive.
ENERGETIC.
ENTERPRISING.
ENTHUSIASTIC.
EROTIC.
EVASIVE.
EXCITABLE.
EXTRAPUNITIVE.
FADDY.
FAIR-MINDED.
FASTIDIOUS.
FICKLE.
FLATTERING.
FORGETFUL.
FORMAL.
FORWARD-LOOKING.
FRANK.
FRIENDLY.
FRIGID.
FRIVOLOUS.
GENEROUS.
GENIAL.
GENTLE-TEMPERED.
GLOOMY.
GLUTTONOUS.
GOOD-TEMPERED.
GRATEFUL.
GREGARIOUS.
HABIT-BOUND.
HARD.
HARD-HEADED.
HEADSTRONG.
HEARTY.
HONEST.
HOSTILE.
HUMANITARIAN.
HUMBLE.
HUMOURLESS.

HUMAN-REARED.
HUMOUR.
HUMOURLESS.
HUMOUROUS.
HUMOURLESS.
UNENQUIRING.
UNGRATEFUL.
UNIMAGINATIVE.
UNREPINING.
UNRESENTFUL.
VACILLATING.
VERSATILE.
VINDICTIVE.
VIVACIOUS.
WANDERING.
WITTY.
WORLDLY.
WORRYING.

Special Abilities.
DRAWING.
MATHEMATICAL.
MANUAL (Digital) DEXTERITY.
MECHANICAL APTITUDE.
MUSICAL
PHYSICAL STRENGTH.
SPATIAL ABILITY.
VERBAL APTITUDE.

INTELLIGENT.
UNINTELLIGENT.

Special Interests.
AESTHETIC.
ARTISTIC.
ECONOMIC.
HOME and FAMILY.
MUSIC.
PHYSICAL ACTIVITY.
POLITICAL.
RELIGIOUS.
SOCIAL.
THEORETICAL.
TECHNICAL.
CHOOSING THE SAMPLE POPULATION.

In choosing the sample, two guiding principles were followed as far as circumstances permitted, namely:
1. All well-known personality types and all recognised clinical syndromes must be included.
2. The sample should be as nearly as possible representative of the mentally disordered population of the country.

Consideration of the problem suggested that there were only two methods of achieving these aims, which required serious attention, namely;
1. The use of a random sample;
2. Reliance on clinical classification (diagnosis) as a guide to sampling.

The first of these alternatives had to face the difficulty that certain well-recognised personality types and syndromes are rare. It was felt that in a sample of a size capable of being rated within a period of 18 months to 2 years, say 200 subjects, there was a serious risk that certain categories might, by chance, be quite unrepresented. This was felt to be most probable in the case of paranoid states, obsessional conditions and schizophrenia of the catatonic type. The second alternative was therefore adopted.

A sample of 200 was finally adopted after consultation with Professor Drever. This size was felt to be large enough to yield worthwhile information, while also small enough to allow for careful and accurate investigation.
within the time limit imposed by regulation on enquiries of this sort.

The cases rated were all patients cared for by the psychiatric service provided by Carlton Hayes Hospital, Narborough, Near Leicester. The area served by this hospital comprises the Counties of Leicester and Rutland, and the Soke of Peterborough, with a total population of approximately 413,000. The City of Leicester is not included, as it has its own psychiatric service.

The area served is a remarkable cross-section of the country as a whole. Many suburban areas of Leicester itself are included, while in East Leicestershire and Rutland there is a large rural population. There are industrial towns such as Peterborough, Loughborough and Hinckley, and market towns such as Melton Mowbray and Market Harborough. In addition there is a mining and heavy industrial area in North-West Leicestershire, around Coalville.

Two other circumstances make it possible to claim that the population from which the sample is drawn is more representative than would be the case in many other areas;

1. The hospital has accommodation for private patients of both sexes; the higher income groups are therefore not entirely excluded.

2. The hospital provides all psychiatric services within its area; there is therefore no tendency for particular classes of patients (with the exception of the wealthy, i.e. those able to pay £15-15-0d per week or more) to
The number of patients treated at this clinic and included in the sample was 17, 5 being men and 12 women.

2. Certain out-patients, who should really have come to hospital but for various reasons elected to remain as out-patients, were included. These were patients about whose cases exceptionally full information was available, eg from relatives, family doctors, vicars, school-teachers, etc. They were included as otherwise it would have been difficult to fill adequately certain categories, notably those of obsessional neurotics and those suffering from anxiety states. Of these out-patients, there were 12 men and 12 women.

All cases shown by physical methods of examination to have a discoverable organic component were excluded from the sample; so were all cases giving a typical "organic" response to psychological testing, even though the organic element could not be tracked down by clinical medical methods. This involved the exclusion of a large number of patients of the older age groups, but no direct attempt was made to select patients according to age. The actual age distribution was as follows.

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Under 20</th>
<th>20 - 24</th>
<th>25 - 29</th>
<th>30 - 34</th>
<th>35 - 39</th>
<th>40 - 44</th>
<th>45 - 49</th>
<th>50 - 59</th>
<th>60 or over</th>
</tr>
</thead>
<tbody>
<tr>
<td>Count</td>
<td>12</td>
<td>22</td>
<td>39</td>
<td>39</td>
<td>23</td>
<td>24</td>
<td>20</td>
<td>17</td>
<td>4</td>
</tr>
</tbody>
</table>
It was decided to include men and women in the ratio of 3 to 4, making a total of 66 men and 114 women. The reasons for this proportion were as follows:

1. The Report of the Board of Control for 1949 to the Lord Chancellor (1950), gave the following figures for the numbers of men and women in mental hospitals on the 1st January 1950:

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Classes</td>
<td>63129</td>
<td>84159</td>
<td>147288</td>
</tr>
<tr>
<td>Former County and Borough M Hosps.</td>
<td>57264</td>
<td>75977</td>
<td>133241</td>
</tr>
</tbody>
</table>

The second line of figures is more pertinent to this enquiry than the first; the proportion is almost exactly 3 men to 4 women.

2. The admission rate at Carlton Hayes Hospital for many years past has maintained this ratio of men to women.

3. It is accepted as axiomatic when designing mental hospital accommodation, that the accommodation for the sexes should be allotted according to this ratio.

A possible objection to this ratio was considered. It can be argued that more women than men suffer from mental disturbances of organic origin, because most puerperal cases are of the organic reaction type. A case could be stated that in a sample which excludes organic cases, the sexes should be represented at a figure nearer parity.

Unfortunately, while there may be some substance in this argument, no figures are available to give it solid support. Against giving any weight to it, the
following points may be cited.

1. The admission rate and the numbers remaining in hospital retain the same ratio between the sexes.
2. The majority of puerperal breakdowns are of short duration and good prognosis.
3. If, therefore, they were a factor to be taken into account, one would expect to find the female admission rate raised, relative to the numbers of women remaining in hospital. The ratio between men and women admitted would then be different to the ratio between men and women remaining in hospital.

This, however, is not the case. The ratio of 3 men to 4 women was therefore retained, on the assumption, supported by statistics, that the incidence of illness of organic origin was the same in the two sexes.

The further process of determining the number of patients from each clinical category to be admitted to the sample, was one of extreme difficulty. It was found that no reliable figures exist to show how many patients suffering from each recognised form of mental disorder are admitted to mental hospitals in this country. Enquiry from the Board of Control elicited the following response by letter:

"I can only help if we stretch considerably the meaning of 'fairly recent figures'.

Although we shall, in due course, be able to get up to date information from the Hospital Index Cards which are now in use for the collection of statistics we have not so far received any statistics"
1. 2. 3. 4.

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schizophrenia</td>
<td>13.22%</td>
<td>20.1%</td>
<td>21.1%</td>
<td>20.5%</td>
</tr>
<tr>
<td>Manic-Dep.</td>
<td>39.15%</td>
<td>11.7%</td>
<td>8.7%</td>
<td>8.3%</td>
</tr>
<tr>
<td>Paranoic</td>
<td>10.04%</td>
<td>1.5%</td>
<td>1.6%</td>
<td>1.2%</td>
</tr>
<tr>
<td>Involutional</td>
<td>-</td>
<td>2.8%</td>
<td>4.1%</td>
<td>4.7%</td>
</tr>
<tr>
<td>Neuroses.</td>
<td>0.93%</td>
<td>-</td>
<td>5.1%</td>
<td>8.0%</td>
</tr>
<tr>
<td>Other.</td>
<td>6.12%</td>
<td>-</td>
<td>3.7%</td>
<td>4.2%</td>
</tr>
<tr>
<td><strong>Total</strong> organics</td>
<td>26.71%</td>
<td>36.0%</td>
<td>33.3%</td>
<td>33.1%</td>
</tr>
</tbody>
</table>

The differences between the English and American figures are serious. The information available on which to choose a sample is so scanty that for a time I seriously considered postponing this enquiry until the new returns, mentioned in the letter from the Board of control, are available. On thinking matters over I decided that this was rather drastic, for three reasons.

1. The new figures, which will probably not be available for a year or two, will be classified according to the International system adopted in 1948; this will be quite different from the previous system used by the Board of Control, and also from the American Schedule in use before 1948. It will take some time for clinicians to discover how the new system is being used. It is much more complex than either of the other systems mentioned above, and may not clarify issues with all the speed that some may hope for.

2. The criteria of diagnosis vary from hospital to
hospital, or even from psychiatrist to psychiatrist.

3. Many psychiatrists regard the filling in of these returns from the bureaucratic rather than the scientific standpoint.

It therefore seemed clear that the new figures, although an improvement on the old lack of information, would require a process of correction lasting for some years before being capable of acceptance as reliable. As the use of clinical diagnoses was merely an expedient in the process of choosing a sample for this enquiry, it seemed better to utilise present information to the full.

Consideration of the table set out above led to the following speculations.

1. The diagnostic criteria in use in England and the U.S.A. are different.

2. The Americans have given greater weight to organic factors.

3. Many cases classified as paranoid in England have presumably been classified as schizophrenic in the U.S.A.

4. Some of those classified as Manic-Depressives in England, have been classified as Involutional or as Neurotic Depressions in the U.S.A.

It was felt that a compromise between the English and American figures could be reached by introducing modifications along these lines. Further modifications were considered essential in view of the increase in the admission rate in England since 1937, and in view
of the increase in the number of diagnostic categories in common use since 1937.

Regarding the Admission rate, at Carlton Hayes Hospital this was 200 per annum in 1937, while in 1949 it was 450. The total population of the hospital has not increased during that time (except for chronic patients accepted as evacuees during the war from the London and Lincoln areas). The increase in numbers of senile (organic) cases was from 50 to 110 per annum, which means that the proportion of senile patients to total admissions was unchanged. It is permissible to assume that the total proportion of organic cases admitted has also remained unchanged, when one considers that psychosomatic cases are nowadays freely admitted, but were not in 1937.

It is reasonable to suppose that, organic cases apart, the increase of 250 admissions per year was due to the admission of patients of a relatively undisturbed type who would not have been admitted at all in 1937. These people would be almost all neurotics.

It is further reasonable to suppose that the increase in diagnostic categories would find its main application to the type of patient described in the last paragraph. This is to say that there is no evidence that the number of manic-depressives or schizophrenics in the hospital population has increased, whereas the number of neurotics has; moreover it has been recognised that there are many varieties of neurosis other than the three classical forms recognised by the old Board of Control schedule. Discussion with colleagues
suggested that the only modification which modern classification would introduce into the 1937 figures concerned the category of "schizo-affective psychosis.

It was felt that a substantial proportion of the cases diagnosed as manic-depressive in England in 1937, would now be classed as schizo-affective. This would account, to some extent, for one of the greatest differences between the English and American figures.

In relation to the admission rate for 1937, and therefore in relation to the fraction of the 1949 admission rate of similar composition, the figures for each type of disorder should lie between the following limits.

<table>
<thead>
<tr>
<th></th>
<th>U.K.</th>
<th>U.S.A.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schizophrenia</td>
<td>13%</td>
<td>20%</td>
</tr>
<tr>
<td>Manic-Depressive</td>
<td>39%</td>
<td>11%</td>
</tr>
<tr>
<td>Paranoid</td>
<td>10%</td>
<td>1.5%</td>
</tr>
<tr>
<td>Involutional</td>
<td>0</td>
<td>3%</td>
</tr>
<tr>
<td>Other</td>
<td>7%</td>
<td>0%</td>
</tr>
</tbody>
</table>

It was felt that as good a choice as possible would be made by amending the U.K. figures as follows, in accordance with the impressions derived by a number of experienced clinicians, from their recent work in several hospitals.

1. Take 3% of involutional psychoses from the Manic-Depressive group.
2. Take the paranoid group at 5%, thus splitting the difference between the U.K. and U.S.A. figures.
3. Form a group of 10% of schizo-affective psychoses, 6% being drawn from the Manic-depressive group, the remainder from the Paranoid group.

4. Increase the schizophrenic group to 15%.

5. Take the number of organic cases at 30%.

The table below shows the distribution of the various forms of disorder; column 1 gives the amended U.K. figures; column 2 shows these expressed as a percentage of the non-organic admissions for 1937; column 3 shows them expressed as a percentage of the non-organic admissions for 1949.

<table>
<thead>
<tr>
<th></th>
<th>Column 1</th>
<th>Column 2</th>
<th>Column 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schizophrenia</td>
<td>15.</td>
<td>21.4</td>
<td>9.5</td>
</tr>
<tr>
<td>Manic-Depressive</td>
<td>30.</td>
<td>42.9</td>
<td>19.0</td>
</tr>
<tr>
<td>Paranoid</td>
<td>5.</td>
<td>7.2</td>
<td>3.1</td>
</tr>
<tr>
<td>Involutional</td>
<td>3.</td>
<td>4.3</td>
<td>1.9</td>
</tr>
<tr>
<td>Schizo-affective</td>
<td>10.</td>
<td>14.2</td>
<td>6.3</td>
</tr>
<tr>
<td>Other</td>
<td>7.</td>
<td>10.0</td>
<td>4.4</td>
</tr>
</tbody>
</table>

Thus in the sample of 200, these categories should be represented by the following figures, derived from column 3 above, adjusted to the nearest integer. In columns 2 and 3 below are the numbers of women and men respectively, derived from the table of the sex frequency of the various disorders given by Cattell (1946).
<table>
<thead>
<tr>
<th>Disorder</th>
<th>Total.</th>
<th>Women</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schizophrenia</td>
<td>19</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Manic-Depressive</td>
<td>38</td>
<td>21</td>
<td>17</td>
</tr>
<tr>
<td>Paranoid</td>
<td>6</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Involutional</td>
<td>4</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Schizo-affective</td>
<td>12</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>Other</td>
<td>9</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>88</strong></td>
<td><strong>48</strong></td>
<td><strong>40</strong></td>
</tr>
</tbody>
</table>

In accordance with the ratio of 4 women to 3 men already adopted, of the remaining 112 patients, 46 should be men and 66 women.

No figures of any kind are available to show the distribution by diagnosis of these patients, who are, as already stated, virtually all neurotics, as they correspond to the additional 250 patients admitted in 1949, as compared with 1937. It is only possible to suggest a distribution which will include all categories in proportions which are not far off the mark, in the estimate of myself and several experienced colleagues.

The neurotics were divided into 5 groups as follows:-

1. Anxiety States; No 310 in 1948 International Classification.
2. Hysteria; No 311, 1948 Classification.
3. Obsessional States; No 313, 1948 Classification.
4. Neurotic Depressions; No 314, 1948 Classification.
5. Miscellaneous; To include any cases in categories 312, or 315 - 323 inclusive.

The distribution decided on for these groups was:-
In round figures this would give a distribution as follows in a sample of 200.

<table>
<thead>
<tr>
<th></th>
<th>Women</th>
<th>Men</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety States.</td>
<td>17</td>
<td>12</td>
<td>29</td>
</tr>
<tr>
<td>Hysteria.</td>
<td>17</td>
<td>12</td>
<td>29</td>
</tr>
<tr>
<td>Obsessionals.</td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Neurotic Depressions.</td>
<td>13</td>
<td>9</td>
<td>22</td>
</tr>
<tr>
<td>Miscellaneous.</td>
<td>16</td>
<td>11</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td><strong>66</strong></td>
<td><strong>46</strong></td>
<td><strong>112</strong></td>
</tr>
</tbody>
</table>

It was felt that the cases described as "Other" in relation to the 1937 admission rate, should be distributed among the neurotics, giving the sample of 200 the following composition:

<table>
<thead>
<tr>
<th></th>
<th>Women</th>
<th>Men</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schizophrenia.</td>
<td>9</td>
<td>10</td>
<td>19</td>
</tr>
<tr>
<td>Manic-Depressive.</td>
<td>21</td>
<td>17</td>
<td>38</td>
</tr>
<tr>
<td>Paranoid.</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Involutional.</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Schizo-affective.</td>
<td>7</td>
<td>5</td>
<td>12</td>
</tr>
<tr>
<td>Anxiety States.</td>
<td>18</td>
<td>13</td>
<td>31</td>
</tr>
<tr>
<td>Hysteria.</td>
<td>18</td>
<td>13</td>
<td>31</td>
</tr>
<tr>
<td>Neurotic Depression.</td>
<td>15</td>
<td>10</td>
<td>25</td>
</tr>
<tr>
<td>Obsessionals.</td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Miscellaneous.</td>
<td>17</td>
<td>12</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td><strong>114</strong></td>
<td><strong>86</strong></td>
<td><strong>200</strong></td>
</tr>
</tbody>
</table>
It is obviously impossible to claim that this sample is free from defects. Any sample would be open to criticism in view of the paucity of relevant information. All that is claimed is as follows:

1. The guiding principles stated at the beginning of this section have been followed as closely as possible.
2. Such information as is available has been utilised.
3. Those experienced clinicians with whom I have discussed the sample are agreed that it would be difficult, if not impossible, to do better at the present time.
4. This sample is, therefore, considered to be as nearly as possible representative of the 63% of the mentally disordered population not suffering from organic disease, to be found in former county and borough mental hospitals with private accommodation.
RATING OF CASES IN CONJUNCTION WITH COLLEAGUES.

A check on the accuracy of rating was carried out with the help of two colleagues, a psychiatrist (D.A.S.), and a clinical psychologist (G.C.P.).

The rating of patients by three people at approximately the same time presented difficulties. The patients themselves were not always amenable to prolonged and repetitive questioning, and it was out of the question to submit their relatives, or other informants, to such a process. It was therefore decided to prepare case-histories of fifteen patients, at a length of approximately 5000 words each. I prepared these personally and alone saw the relatives. My colleagues were free to examine the patients in any way as they thought fit, and also to question me on points of fact in the account given by the relatives. They were also free to ask me to question the relatives on any particular point, or to clarify any obscure points in their stories. They were then free to rate the patients on the basis of the case-histories or their own observations, as they thought fit.

In addition, it was decided to rate four colleagues well known to us all. Certain ratings could clearly not be made owing to lack of information, which could not decently be sought, but it was felt that the "Area of ignorance" would be the same for us all. It was hoped that this method of rating patients and colleagues would demonstrate whether the use of case-histories introduced a bias in favour of agreement. It was agreed that such a bias would be revealed by a higher correlation between ratings on patients, than between ratings on
The tetrachoric correlation coefficients between the results obtained by myself and my two colleagues are shown in the following table.

<table>
<thead>
<tr>
<th></th>
<th>Patients</th>
<th>Colleagues</th>
<th>Combined</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.B.M. &amp; D.A.S.</td>
<td>$r = .82$</td>
<td>$0.92$</td>
<td>$0.83$</td>
</tr>
<tr>
<td>A.B.M. &amp; G.C.P.</td>
<td>$r = .86$</td>
<td>$0.93$</td>
<td>$0.87$</td>
</tr>
<tr>
<td>G.C.P. &amp; D.A.S.</td>
<td>$r = .84$</td>
<td>$0.91$</td>
<td>$0.84$</td>
</tr>
</tbody>
</table>

The average correlation was therefore rather less than 0.85, but it is interesting to note that the correlation in rating colleagues was higher than in rating patients. It seems unlikely, therefore, that the case-history method led to spurious agreement.

No attempt was made to discuss our results, or to amend them in the light of each others' ratings, except in two cases, in which the correlation then rose to approximately 0.95. These amended results were not included in the figures from which the above table was prepared. They are mentioned here to show that with training and mutual discussion, a very high level of agreement could be reached between workers using this list of trait definitions.

The above table can fairly claim to represent the degree of agreement reached between trained observers in cognate fields, with minimal co-operation. As a personal note, I should like to add that neither of my colleagues is a "Yes-man". Both are capable of robustly adhering to their decisions.
RATING THE SAMPLE.

This part of the enquiry, although the most important and laborious, requires little description. Rating was carried out at the height of the patient's disturbance, and therefore relates to his or her most serious devia-
tion from ordinary behaviour. All possible information was collected before rating was done; in every case the patient was given several long clinical interviews, and the relatives were seen. In a number of cases further information was available from friends of the family, from the family doctor, from the vicar or from the police, probation officers etc. In addition to the clinical interviews given by myself, information was recorded by the other doctors concerned with the cases and by members of the nursing staff, the occupational therapists etc. Rating was carried out according to the definitions of the various trait terms already described. Only one point requires emphasis. Where the history indicated strongly the presence of a trait, as shown by habitual behaviour over a long period, this trait was rated positive unless there was contrary evidence at the time of rating. If such contrary evidence was present, even such a habitual trait was rated negative. As an example, one patient who stole as a feature of his illness was rated as "Dishonest" although he had previously been scrupulously honest. Many others were rated as honest on the strength of their previous history, there being no evidence of dishonesty at the time of their breakdown.

It only remains to give an example of the rating
of one patient. To save space, a list of the traits rated negative is given without describing the behavioural lack in detail. Negative ratings were placed in three groups. The first is self-explanatory and was labelled "No Evidence". The second was labelled "Not as defined"; this group was composed of those terms which, if used in their colloquial sense, might have earned a positive rating, but quite clearly did not do so in terms of the agreed definitions. The third group, a small one, consisted of those terms in which it seemed necessary to give the reason for the negative rating.

The example which follows is the case of a married woman of 40. There was no family history of mental disorder, and her previous personality was regarded as good. She was reported as being inclined to worry about trifles, and, indeed, to have been a rather prim and precise "schoolmarm" before marriage. In addition, she showed a tendency to over-react emotionally to ordinary situations, but had a good work record and was well adjusted socially. After her marriage she became a socially active member of her home locality (a large village or small town), and was a pillar of the local church. She had no family.

She had had no mental illnesses before the one now described. The onset was sudden, about a fortnight before her admission to hospital, and no exogenous precipitating factors were discovered. She became suspicious in attitude and rambling in speech. She thought other people were saying all kinds of nasty
things about her, and were trying to thwart her activities and plans in many ways. She was also depressed, retarded and showed diminished productivity. She was considered to be suffering from a schizo-affective psychosis.

Her intelligence was assessed at a later date than the rating, to avoid error owing to disturbance of mind. This delay in carrying out testing was, of course, allowed in every case in which it was necessary.

She was rated positive on 79 traits as follows:-

**ABSENT-MINDED.** She was observed over a period of time to be pre-occupied with her own thoughts to a degree which prevented her from attending sufficiently to her environment to carry out ordinary jobs.

**ADAPTABLE.** She was observed to change readily from one kind of work to another in the ward and in the occupational therapy department; indeed she liked doing things which she had not tried before. Also she made all the necessary arrangements to abscond successfully from hospital, and find her way home.

**AFFECTED.** Her manner was very over-intense. She talked about everyday affairs in a voice trembling with emotion, or in a solemn "churchy" type of voice. At times, in conversation, she declaimed like a public speaker.

**AMBITIOUS.** She aspired to become one of the leading lights of her home town; she spent much time entertaining, doing political and church work and singing in public. She worked hard at all these activities and liked appearing in public.
ASCETIC. She denied herself alcohol and tobacco for religious reasons.

ASSERTIVE. In the ward it was clear that she expected her every wish to be treated as a command, and that she was upset if others did not accept her own valuation of herself. She also became annoyed if not allowed to express her views on any subject.

AUSTERE. Her code of conduct, which included going to church twice on Sundays, as well as refraining from alcohol and tobacco was noticeably more strict than was usual in her home district.

AUTOCRATIC. In her own household, her will was observed to prevail; she had a reputation for being determined to have her own way, and frequently getting it, in social, political and church affairs; as a school-mistress she was somewhat of a martinet.

BROODING. She was preoccupied with ideas about others watching her and spying on her, to a point observed to interfere with her efficiency at work and socially.

CAUTIOUS. She was ordinarily careful in her preparations for any social function, and used a good deal of forethought to prevent difficult situations arising.

CONFUSED. She was incorrectly oriented in time, showed fluctuation in the level of attention and impairment of comprehension.

CONSCIENTIOUS. She was so regarded by the vicar. She fulfilled her domestic, social and religious obligations
without fail. Once she had undertaken to do some work in hospital, she carried out her jobs well with minimal supervision.

CONVENTIONAL. She was socially punctilious and careful to be "correct" in all her dealings. She conformed to the standards of behaviour laid down by the church, and accepted orthodox religious opinions.

CO-OPERATIVE. She worked well with others in the ward, and was observed to be helpful towards other patients less well able to care for themselves than she. She was said to be able to work with others in groups or on committees at home.

DECISIVE. At home, decisions about social, political and church affairs were often left to her. Shortly after admission to hospital she decided to run away. she planned and executed the enterprise efficiently and successfully reached home.

DELIBERATE. She was observed to take her time about her various jobs in hospital; she thought out all the details of her escape well in advance. At home she took time to think out all details of her various concerns, and never rushed ahead with ill-considered schemes.

DISORDERED IN THOUGHT. She was deluded, hallucinated and showed ideas of reference.

EGOTISTICAL. Her exalted opinion of herself was shown by her haughty manner to others and her inveterate tendency to give them orders.
ENERGETIC. She was observed in hospital to use energy at work, and to go at it with a will. She disliked being idle, and worked well unless she was fairly acutely depressed, or convinced she was the object of unfavourable comment; that is, she worked well apart from her phases of ruminative self-absorption. Her energy was, to all appearances, obsessional in character, but was nevertheless energy.

ENTERPRISING. At home she was ready and eager to organise social activities, concerts etc; in hospital, she organised her escape.

EVASIVE. She was evasive on the question of her delusions; she complained broadly of "mental torture" and of people saying things against her, but could not be brought to the point of any definite statement.

EXCITABLE. She was observed to have several violent emotional outbursts without apparent reason; the provocation was on one occasion hallucinatory. Agreement on this point was reached between myself, the registrar and the ward sister.

EXTRAPUNITIVE. She was observed to be more critical and fault-finding towards others than towards herself; also her delusions involved blaming others for harming her.

FADDY. She urged the importance of refraining from alcohol and tobacco, quite intemperately, on religious grounds.
FASTIDIOUS. She was very particular about her appearance, and difficult to please regarding arrangements, decorations etc at church or political functions. She affected superior taste to her husband and his people, and to most of the neighbours.

FORGETFUL. She forgot an address given to her to remember five minutes earlier; she recalled the events of the fortnight prior to admission with difficulty, and there were many gaps in her account.

FORMAL. She liked ceremonial and pageantry in religion and public affairs; she also liked all social activities to be done formally and "properly".

FRIENDLY. At home she had many friends and acquaintances; in hospitals she put others off by her attitude of superiority and bossiness, but did not quarrel. Her helpfulness to others less well off than she, suggested that she was well disposed in intention. She was therefore rated positive.

GENEROUS. At home she gave a lot of time and a fair amount of money to church affairs, social activities, etc, which offered no overt return. In hospital she helped others less able to look after themselves, and gave away many of her own "extra comforts".

GENTLE-temPERED. She was not observed to lose her temper easily, and was easy to pacify on those occasions on which she lost it.
GLOOMY. She was observed to be sad in appearance, and her condition was psychiatrically recognised as a state of depression.

GRATEFUL. In spite of her bossy attitude she always said "Thank you" for any service performed for her by others in the ward. At home she repaid all social obligations scrupulously.

HONEST. She discharged all her obligations, and showed no evidence of dishonesty.

HUMANITARIAN. She was interested in missions and the humanitarian activities of the church; she sang at concerts to raise funds for such activities.

HUMOURLESS. A positive rating was agreed on by myself and the registrar.

IDEALISTIC. She believed it to be both possible and desirable to improve character by religious discipline and practice.

INDEPENDENT. She disliked being in a subordinate position, and indicated clearly that she disliked having to rely on others. She certainly relied on her own efforts and abilities to maintain her social position at home.

INTERESTS WIDE. She could talk on a wide range of topics and in addition to her work was interested in politics, religion, music and social activities.

INTROSPECTIVE. She spent much time absorbed in her own
thoughts to the detriment of her work. She admitted this was so, and the effects were observed.

KIND. She was observed to be kind to other patients who were helpless or nearly so; she made them comfortable and brought them cups of tea etc; she was stated by her relatives to be kindly in her behaviour at home.

LEADING. In her church and social circle at home she had achieved a position of definite eminence; she was consulted about projected social activities and was regularly offered a prominent place on local committees.

LEISURELY. She showed lowered productivity associated with depression.

LOGICAL. She liked to get all possible information before making a decision or taking action; she did not jump to conclusions about people.

LOYAL. She showed loyalty in the sense defined to her husband, the church, and other organisations to which she belonged.

MIRTHLESS. A positive rating was agreed on by myself, the registrar and the ward sister.

MYSTICAL. She regularly practised religious disciplines, and believed that these could bring mystical experiences or answers to prayer to herself personally.

PAINSTAKING. She was observed to take trouble over the work she did in hospital; she disliked turning out anything second-rate.
PERNICKETY. She was observed to like her possessions "just so", each in its place. She disliked the inevitable disturbance of her things in the rough and tumble of ward life. She was reported to be excessively house proud at home, and was excessively serious in her concentration on little jobs in the occupation department.

PERSEVERING. She was observed to keep going at jobs once she had started.

PESSIMISTIC. She took a gloomy view of the future and thought her plans would come to nothing, owing to the malicious activities of others.

PHANTASYING. She was hallucinated.

PIOUS. She regularly attended church and carried out her private devotions.

PLAINTIVE. She laboured under a sense of grievance about her supposed persecutors, and complained frequently about their activities.

PSYCHOTIC. Her condition was so diagnosed.

RELIABLE. She could be depended on to carry out a task adequately when she had undertaken to do so. She was said to be reliable by her husband and the vicar.

RESERVED. RESERVED. Most of the information about her feelings and opinions had first to be obtained from her husband, and later confirmed in conversation with herself, often against some resistance.
RESPONSIBLE. She discharged her obligations to her family, also her social, religious and political undertakings.

REVERENT. She had a reverent attitude to God and to the teachings of the church.

SECRETIVE. It was very difficult to get her to talk freely about her delusions or hallucinations, or other preoccupations.

SELF-DECEIVING. She believed that other people were "against" her, and preventing her schemes from coming to fruition.

SELF-DENYING. She gave money and services free for charity and the church, and had placed her own interests second to those of the church on numerous occasions.

SELF-RESPECTING. She was reported by her husband and the vicar to be very particular about her reputation and to be ready to take steps to quell any gossip, if such should arise. She certainly professed high standards of conduct and carried out obligations scrupulously.

SENSITIVE. Her feelings were observed to be hurt by the failure of others in the ward to take her at her own self-valuation.

SLEEPS POORLY. Observed to sleep poorly, as defined.

SOCIABLE. She was fond of meeting people, and was said
by her family and the vicar to be a good mixer and
good company.

SOFT-HEARTED. She showed kindly awareness of the needs
of elderly and disabled patients.

SUSPICIOUS. She believed other people were trying to
harm her, when they were not, and believed that some
of her neighbours, and some of the hospital staff were
implicated.

THRIFTY. She was said by her family to be a good
housekeeper, and a good bargainer.

VERSATILE. Her music, her skill in organising, and her
professional accomplishments as a teacher indicated
versatility.

WORRYING. She was worried about the effect on her
affairs of the supposed malice of her neighbours.

MANUAL DEXTERITY. Before taking a teaching post she
was a fully trained dress designer; she was observed
in the occupational therapy department to be a good
embroidress.

MUSICAL APTITUDE. She used to sing frequently in public.

SPATIAL ABILITY. Shows in dress designing.

INTELLIGENT. She was above the 75th percentile on the
progressive Matrices test.

SPECIAL INTERESTS. On the basis of evidence already set
out, the following were rated positive, HOME and FAMILY,
MUSIC, POLITICAL, RELIGIOUS, and SOCIAL.
In the following instances, there was some uncertainty about the rating. In each case the final decision was to rate negatively for the reasons given.

CONTENTED. She did not overtly complain about her lot, but considered herself socially a cut above her husband, and took a lot of trouble to maintain her local position. This seemed sufficient evidence of lack of content to require a negative rating.

DISSATISFIED. This was felt to be too strong a term to describe her reaction to her environment.

EAGER FOR ATTENTION. Although she was haughty and self-important in manner, she did not take active steps to draw attention to herself; she rather took it for granted that attention would come.

EMOTIONALLY EXPRESSIVE. See also INHIBITED, below. Both these terms were felt to be too strong; she was observed on various occasions to express emotion freely, almost to the point of creating a scene; yet on other occasions she made efforts to restrain emotion as shown by muscular tension. Equally, according to her husband, she expressed emotion sexually. It was therefore decided to rate both negative.

FRIGID. Rated negative as the criteria were not met, nor were those for EROTIC.

INHIBITED. The reason for a negative rating has been given.
MASCHISTIC. Although depressed she showed no evidence of morbid guilt, but was extrapunitive.

SUGGESTIBLE. The evidence all suggested that it was difficult to get her to change her mind once she had made a decision.

The following three traits were rated negative, although a case could have been made out in each case in favour of a positive rating if the term had been used in the everyday sense:—

COLD-HEARTED, SERIOUS-MINDED, SETTLING DOWN.

The remaining traits in the list were rated negative owing to lack of any evidence for a positive rating.
COMPUTATION OF RESULTS.

Technique of counting and calculating.

In order to deal with the enormous number of correlations between 246 traits in a reasonable time, an expeditious yet accurate technique had to be evolved. The three key features of this were as follows:

2. The use of "Thurstone's Diagrams" for computing tetrachoric correlation coefficients, produced by Chesire, Saffir and Thurstone (1933).
3. The elimination without detailed calculation of all correlations below the chosen level of significance.

Other important labour saving devices were used, resulting in a rapid technique of adequate accuracy for the purpose. The details are set out below.

A list of the 246 trait names in alphabetical order, with a space opposite each for entering the rating (plus or minus) was prepared, and an adequate number of copies made on a duplicator. A list of the definitions of the traits as set out earlier in this thesis was also prepared, in alphabetical sequence. The ratings were made with the list of definitions actually at hand, and those for each patient entered on a separate sheet. The results of rating were then transferred to a Powers-Samas punched card — one for each patient.

These cards have 65 columns and 10 rows, numbered from 0 to 9, and can therefore theoretically handle 650 variables. As only 246 were required for the present purpose, columns 1 to 65 were used in rows 1, 2 and 3, and columns 1 to 51 were used in row 4. The traits were accordingly
numbered, in alphabetical order, 1.1, 1.2, 1.3, and so on in sequence to 1.65; then from 2.1 to 2.65, 3.1 to 3.65, and 4.1 to 4.51. Each trait was therefore given a code number corresponding to its position on the Powers-Samas card. These were used throughout the computation, so saving time and preventing distraction arising from premature interest in the relations between named traits. For a positive rating, the card was punched at the appropriate spot; for a negative rating it was left unpunched.

When all the patients had been rated, counting was carried out at the Leicester Royal Infirmary, on their Powers-Samas sorting machine. In one operation this machine picks out and counts the cards punched at any value selected by the operator. The first series of operations was devoted to counting the number of positive ratings for each trait. A list of the results was made. Then the cards with a positive rating for trait 1.1 were extracted and put through the machine to find out how many were positive for trait 1.2, 1.2, 1.4 and so on, down to trait 4.21. This process was then repeated for every other trait in the list.

Stencils were prepared with the trait numbers arranged in 4 columns, with sufficient space opposite each trait number to enter the four values of the fourfold table. At the top of each sheet was entered the number of the trait being counted and the total number of positive ratings for that trait. The number of positive ratings common to that trait and any other (as counted by the Powers-Samas machine) was entered in the space opposite the code number of that other trait, in the left hand column of the fourfold table. A small specimen of a fourfold table stencil is shown to indicate the method of entry.
From the values noted, namely the number positive for both traits, and the total number of positive ratings for each trait, the whole fourfold table can easily be completed by subtraction. For this process a calculating machine was used in those cases where it could save time.

It will be seen that the columns are arranged as follows.

Column 1 contains the number positive for both traits.

Column 2 contains the number positive for the first trait but negative for the second, derived by subtracting the figure in column 1 from the total number of positive ratings for the first trait.

Column 3 contains the number negative for the first trait but positive for the second, derived by subtracting the figure in column 1 from the total number of positive ratings for the second trait.

Column 4 contains the number of ratings negative for both
traits, derived by subtracting the figure in column 3 from the total number of negative ratings for the first trait (i.e. from \(-00\) minus the total number of positive ratings for the first trait).

The totals were checked by adding the four columns, which of course should total 200.

As an example, take Traits 1.1 and 1.2.

Total positive for 1.1 = 94
Total positive for 1.2 = 104
Total positive for both = 26.

Thus

Column 1 = 26
Column 2 = 94 - 26 = 68
Column 3 = 104 - 26 = 78
Column 4 = 106 - 78 = 28

If the fourfold table is written in its usual form

\[
\begin{array}{c|c|c|c}
1 & + & - \\
- & & 1 \\
\end{array}
\]

then the four columns are arranged in the following order, Col 1 is A, Col 2 is C, Col 3 is B, Col 4 is D.

In practice, as shown below, it was found that working with columns one and three only was more advantageous, and much labour in the way of subtraction was saved.

The tetrachoric correlation coefficients were, as already stated, computed from "Thurstone's Diagrams." The instructions for their use were carefully followed. Their main disadvantage was some lack of precision in
recording high correlations, many of which had to be described in terms such as "Greater than 0.8". This was felt to be of relatively little importance when offset against the advantage of rapid computation of large numbers of coefficients. As soon as it became apparent that much time could be saved by computing only those coefficients regarded as significant, a preliminary choice of the level of significance had to be made. From the Abac published by Pearson (14.15), it was clear that with 200 subjects, any correlation of 0.2 or higher was significant at the "3 Sigma" level, the coefficient being then at least three times the probable error. This was felt to include too much, so it was decided somewhat arbitrarily to record coefficients of 0.5 or higher. Preliminary computations suggested that some 3000 significant positive correlations would be obtained, and this seemed adequate for the purpose in hand.

In using Thurstone's Diagrams, 3 values, a, b and c have to be determined. The four frequencies in the fourfold table are expressed as proportions of the whole population, their sum being equal to unity.

If the table is written

\[
\begin{array}{c|c}
+ & - \\
\hline 
+ & A & B \\
- & C & D \\
\end{array}
\]

then \(a = B + D\),
\(b = C + D\),
\(c = D\).

The variable a is represented by the choice of one of 46 diagrams for values from .05 to .50. The variables
b and c are represented by the x and y co-ordinates on each diagram.

As a = B plus D, the fourfold table must be reversed and the sign changed if the first trait under consideration has less than half the population rated positive for that trait. In this enquiry this applies if the number of positive ratings on the trait is less than 100. This proved to be the case for the majority of traits, so the usual form of the fourfold table was

\[
\begin{array}{cc}
\text{a} & \text{b} \\
\text{c} & \text{d}
\end{array}
\]

The sign of the correlation coefficient given by the diagram was then reversed.

It will therefore be seen that for traits with less than 100 positive ratings, the value of a is given by the number of positive ratings in the first trait under consideration, divided by 200. The value of b is given by adding columns 2 and 4 on the stencil, and the value of c is given by the entry in column 2, divided by 2 in each case.

In the case of traits with more than 100 positive ratings, the value of a is given by subtracting the number of positive ratings from 200, and dividing the result by 200. The value of b is given by adding columns 2 and 4, while the value of c is given by the entry in Column 4.

It is therefore possible to work backwards from the graph, and show that for a correlation coefficient of .50, there must be an entry in column 4 of definite magnitude to correspond to any particular value in column 1. This work was done in relation to the reversed fourfold table as the majority of traits had less than 100 positive ratings.
As an example, take a trait with 60 positive ratings.

\( a = .30 \), and the diagram for that value is therefore used.

Taking negative correlations first, if the entry in column 1 is 5, it follows that the entry in column 2 must be 55. Therefore \( c = .275 \). The curve for a negative correlation of .50 cuts the co-ordinate of \( c = .275 \) at a point which gives a value for \( b \) of .75. Therefore Column 2 plus Column 4 must total 150. Therefore \( a = 150 - 55 = 95 \). As Column 1 plus Column 2 = 60, Column 3 plus Column 4 = 140, therefore Column 3 = 45. It follows that if column 1 has an entry of 5, then an entry in column 3 of 45 or more indicates at a glance that a correlation of .50 or more is present.

The procedure for positive correlations is similar. If the entry in column 1 is 55, that in column 2 must be 5. Therefore \( c = .025 \). The curve for a positive correlation of .50 cuts this co-ordinate at a point which gives a value for \( b \) of 25.5. Therefore Column 2 plus Column 4 = 46, and Column 3 = 94. It follows that if Column 1 has an entry of 55 and column 3 has an entry of 94 or less, a positive correlation of at least .50 exists.

Tables were made out for each value of \( a \) on these lines, to show what value in column 3 indicated a positive or negative correlation of .50. The table for \( a = .30 \) is set out as an example.
TABLE FOR a = .30.

Negative correlations.  
Positive Correlations.

<table>
<thead>
<tr>
<th>Columns</th>
<th>Columns</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 3.</td>
<td>1 3.</td>
</tr>
<tr>
<td>0 28 or more.</td>
<td>60 120 or less</td>
</tr>
<tr>
<td>1 25</td>
<td>59 120</td>
</tr>
<tr>
<td>2 30</td>
<td>56 114</td>
</tr>
<tr>
<td>3 35</td>
<td>56 100</td>
</tr>
<tr>
<td>4 40</td>
<td>54 90</td>
</tr>
<tr>
<td>5 45</td>
<td>52 81</td>
</tr>
<tr>
<td>6 50</td>
<td>50 74</td>
</tr>
<tr>
<td>7 55</td>
<td>46 67</td>
</tr>
<tr>
<td>8 59</td>
<td>46 60</td>
</tr>
<tr>
<td>9 63</td>
<td>44 55</td>
</tr>
<tr>
<td>10 66</td>
<td>42 50</td>
</tr>
<tr>
<td>11 70</td>
<td>40 45</td>
</tr>
<tr>
<td>12 73</td>
<td>35 35</td>
</tr>
<tr>
<td>15 82</td>
<td>30 27</td>
</tr>
<tr>
<td>20 92</td>
<td>25 19</td>
</tr>
<tr>
<td>25 105</td>
<td>20 14</td>
</tr>
<tr>
<td>30 113</td>
<td>15 9</td>
</tr>
<tr>
<td>35 120</td>
<td>10 5</td>
</tr>
<tr>
<td>40. 126.</td>
<td>8 4.</td>
</tr>
</tbody>
</table>

Values intermediate to those shown in column 1, eg 13 in the negative table or 51 in the positive table were dealt with by interpolation. It should be emphasised that these tables were not used for the final accurate calculation of coefficients, only for the rejection of those clearly below .50. All correlations falling near the critical figure, whether above or below, were computed accurately, and only rejected if this subsequent calculation showed the correlation to be below .50.
As the curve for a coefficient of +.50 does not extend to the point where \( c = 0 \), the value for \( c = 0 \) (corresponding to a column 1 entry of 60), was arrived at by dropping a perpendicular line from the end of the curve to the co-ordinate \( c = 0 \). At this point it is safe to say that the correlation coefficient is greater than +.50. At any lesser value of \( b \) the result is open to doubt.

A similar convention was adopted in relation to high values of \( c \) when correlations were negative.

By using these tables, it was possible to pick out the correlations of .50 or more from the stencil sheet for any particular trait in a very short time. Having once been picked out, these correlations were then computed as accurately as possible by means of the diagrams. As an example of the saving of effort, Trait 1.1 had, of course, 245 correlations. Of these eight were found to be positive at the level of .50 or more, and sixteen were found to be negative at the same level. Thus only one in ten of the fourfold tables had to be worked out beyond the point of entering values in columns 1 and 3.

In the case of traits with an odd number of positive ratings, the results were worked out by interpolating between the relevant values of \( a \); eg, a trait with 61 positive ratings required to be computed by interpolation between \( a = .30 \) and \( a = .31 \). For negative correlations, the table for \( a = .30 \) contains lower entries in column 3 for a given value in column 1, than the table for \( a = .31 \). For positive correlations, the table for \( a = .30 \) contains higher entries than the table for \( a = .31 \). This principle
applies throughout the series. For a trait with an odd number of positive ratings, the table for the lower applicable number was therefore used. Some correlations of less than .50 were therefore picked out, but were eliminated at the subsequent accurate determination of the coefficient.

For traits with more than 100 positive ratings, the value of a was, of course, determined as already described. The tables had to be used in the reverse manner, substituting Column 3 for Column 1, and using the positive table for negative correlations, and vice versa.

It will be appreciated that this technique saved an enormous amount of computation. The amount of work required was rather more than one tenth of that which would have been necessary to compute all the coefficients. There was no loss of accuracy, and the data yielded were more than adequate in amount.
The Derivation of Groups of Traits from the Data.

The correlation coefficients yielded by the method described were codified by means of a card-index. 246 cards were used, one for each trait, numbered from 1.1 to 4.51. On one side of each card were entered all the traits correlating positively with the trait denoted by the card, and on the other side were entered all those correlating negatively. For purposes of completeness, all the correlations of a given trait were entered on its card, not merely those with traits lower down the list. The magnitude of each correlation coefficient was also entered.

Those cards with the largest number of positive correlations were then extracted, and from them the highest positive correlation coefficient was selected. This was between traits 1.36 and 3.36, with a magnitude of .95. By inspection of the cards for these traits, trait 3.9 was picked out as the trait with the highest positive correlations with the first two. Continuing to use the card index, trait 3.34 was next selected, as having the highest correlations with the previous three. This process was repeated, until this series of inter-correlating traits " petered out" after 23 traits had been selected.

From the remaining cards, the positive correlation of .95 between traits 2.63 and 2.31 was selected as the next starting point, which resulted in a group of 14 inter-correlating traits.

As this process continued, the remaining cards had fewer correlations, and lower magnitudes had to be accepted as starting points for new groups.
The results obtained in this manner were entered on a graph in the usual way. This graph is attached at the end of the thesis, as an appendix.

Inspection of the graph shows that the traits fall into 30 rough groups, some of the later ones being ill-defined, and Group 30 itself consisting largely of a residuum of traits which either do not fit into any group, or have no positive correlations with any other trait.

Inspection of the graph also shows that some traits are clearly misplaced. Trait 1.16 obviously does not belong in Group 3. Traits 2.25, 3.7, and 3.43 in Group 2 clearly correlate more highly with a group of traits in Group 4 than with the remaining traits in Group 2. Trait 2.57, in Group 27 has strong positive correlations in Group 1.

The next step was to "tidy up" the rough arrangement of traits in groups by the above technique. The basic principle adopted was to place a trait in that group in which it was most strongly represented by:-
1. The number (expressed as a percentage) of positive correlations with other traits in the group.
2. The magnitude of those correlations.
As a rule the second principle was used to arbitrate between traits with an equal numerical representation, but the right was reserved to give greater weight to a solid block of high correlations than to a more scattered block of higher numerical representation.
The method followed was to start from groups about which little doubt could exist (e.g., the first eight traits in Group 1) and then allocate traits to these groups in accordance with the principles enunciated above. In arriving at these "Nuclear" groups which served as starting points for the building up process, certain traits were included only with reserve:

1. Those having a moderately high numerical representation in a number of groups, but no outstanding representation in any. These were tentatively regarded as "Compound" traits, and therefore as poor indicators of any one group.

2. Those having only 15 positive ratings or less in the sample, owing to possible inaccuracy in computing the tetrachoric correlation coefficient in these conditions.

Having got as far as possible with the above procedures, the next step was to consider together groups showing obvious overlap or inter-relationship, e.g., Groups 1, 27, 9 and to a lesser extent 7, Traits were exchanged, or small groups incorporated in larger in accordance with the basic principle enumerated above.

Finally, large groups were examined to see whether they showed any "Lines of Cleavage" into sub-groups arranged around nuclei of high correlation. Where this occurred the sub-groups showed a rather high degree of overlap, but the percentage numerical representation of each trait in the sub-group became more satisfactory. The sub-groups were then treated as independent groups and any further exchange of traits demanded by the basic principle of allocation was then carried out.
To make the process clear, the handling of Group 1 is described in more detail. It was considered in relation to Groups 27, 7, 9, 22 and to a lesser extent, 5.

Traits in Group 1, but poorly represented, were:-
1.48, 2.51, 3.26, 1.6, 3.46, 1.25, 3.57, 2.2, 4.2.
These were considered to be the most likely ones to be incorporated in other groups.

Traits with claims to inclusion in Group 1 were:-
3.44 from 7, 1.29 from 9, 3.24 from 9, 2.42 and 2.57 from 27.

Nuclei of high correlation within the group are as follows:-
1.36, 3.36, 3.9, 3.34, 3.15, 3.51.  (Nucleus a)
3.11, 2.58, 2.26.  (Nucleus b)
1.39, 3.31, 2.19, 3.3, 4.7.  (Nucleus c).

Of the traits listed above as poorly represented in Group 1, 1.25 and 3.57 have strong affinities to nucleus a, 3.46, 2.51, and 4.2 to nucleus b, and 3.26, 1.6 and 2.2 to nucleus c, though 2.2 also has claims to inclusion in nucleus a. Trait 1.48 at this stage did not appear to fit into any sub-group of Group 1, and was considered in relation to other groups before being finally allotted.

Of the traits listed above as having claims to inclusion in Group 1, 3.44 and 2.57 were tentatively allotted to subgroup a; 1.29 and 3.24 were left for further consideration in relation to Group 9, and 2.42 was left for further consideration later in the series.
At this stage Group 1 formed the following three groups:

1a. 1.36, 3.36, 3.9, 3.34, 3.15, 3.51, 1.25, 3.57, 3.44, 2.57,
1b. 3.11, 2.58, 2.26, 3.46, 2.51, 4.2.
1c. 1.39, 3.31, 2.19, 3.3, 4.7, 3.26, 1.6, 2.2.

Later consideration of 1a indicated that 3.44 and 2.57 should be transferred to Group 9, while 2.7 should be added from Group 9, and 4.11 from Group 30. 2.2 was also considered to have stronger claims to belong to 1a than to 1c. 1.48 was also found to have no strong claim for inclusion in any other group, and was accordingly allotted here.

4.22 from Group 30 was allotted to group 1b; 2.10 from Group 17 and 2.9 from group 22 were allotted to group 1c.

The other groups were worked over in the same way, and in the end 35 groups emerged, as described below. It is worth emphasising that it was not until this final arrangement had been achieved that the trait names were added to the code numbers. The arrangement of traits in groups was carried out without regard to the psychological suitability of including a trait in a given group.

It is also right to note that the total number of positive correlations of .50 or above, yielded by this technique was 2588; of these 2039 were of .55 or more. In placing traits in groups, only correlations of .55 or more were considered. Those between .50 and .55 were only taken into account in cases of doubt and difficulty.
The total of negative correlations of .50 or more was 2650, of which 2088 were of .55 or more.
List of the 35 groups obtained from the data.

In this list, the number on the left of the trait-name is the code number of the trait. The number on the right indicates from which of the 30 original rough groups the trait came.

<table>
<thead>
<tr>
<th>Group 1</th>
<th>Trait Name</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.36</td>
<td>Conscientious</td>
<td>1.</td>
</tr>
<tr>
<td>3.36</td>
<td>Responsible</td>
<td>1.</td>
</tr>
<tr>
<td>3.9</td>
<td>Painstaking</td>
<td>1.</td>
</tr>
<tr>
<td>3.34</td>
<td>Reliable</td>
<td>1.</td>
</tr>
<tr>
<td>3.15</td>
<td>Persevering</td>
<td>1.</td>
</tr>
<tr>
<td>3.51</td>
<td>Self-respecting</td>
<td>1.</td>
</tr>
<tr>
<td>1.25</td>
<td>Cautious</td>
<td>1.</td>
</tr>
<tr>
<td>3.57</td>
<td>Serious-Minded</td>
<td>1.</td>
</tr>
<tr>
<td>1.48</td>
<td>Deliberate</td>
<td>1.</td>
</tr>
<tr>
<td>2.7</td>
<td>Formal</td>
<td>9.</td>
</tr>
<tr>
<td>2.2</td>
<td>Fair-Minded</td>
<td>1.</td>
</tr>
<tr>
<td>4.11</td>
<td>Thrifty</td>
<td>30.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group 2</th>
<th>Trait Name</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.11</td>
<td>Patient</td>
<td>1.</td>
</tr>
<tr>
<td>2.58</td>
<td>Loyal</td>
<td>1.</td>
</tr>
<tr>
<td>2.26</td>
<td>Honest</td>
<td>1.</td>
</tr>
<tr>
<td>3.46</td>
<td>Self-denying</td>
<td>1.</td>
</tr>
<tr>
<td>2.51</td>
<td>Kind</td>
<td>1.</td>
</tr>
<tr>
<td>4.2</td>
<td>Soft-hearted</td>
<td>1.</td>
</tr>
<tr>
<td>4.22</td>
<td>Unresentful</td>
<td>30.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group 3</th>
<th>Trait Name</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.39</td>
<td>Co-operative</td>
<td>1.</td>
</tr>
<tr>
<td>3.31</td>
<td>Reasonable</td>
<td>1.</td>
</tr>
<tr>
<td>2.19</td>
<td>Grateful</td>
<td>1.</td>
</tr>
<tr>
<td>3.3</td>
<td>Natural</td>
<td>1.</td>
</tr>
<tr>
<td>4.7</td>
<td>Taetful</td>
<td>1.</td>
</tr>
<tr>
<td>3.26</td>
<td>Praiseful</td>
<td>1.</td>
</tr>
<tr>
<td>1.6</td>
<td>Affectionate</td>
<td>1.</td>
</tr>
<tr>
<td>2.10</td>
<td>Friendly</td>
<td>17.</td>
</tr>
<tr>
<td>2.9</td>
<td>Frank</td>
<td>22.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group 4</th>
<th>Trait Name</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.25</td>
<td>Hearty</td>
<td>2.</td>
</tr>
<tr>
<td>3.7</td>
<td>Optimistic</td>
<td>2.</td>
</tr>
<tr>
<td>1.27</td>
<td>Cheerful</td>
<td>2.</td>
</tr>
<tr>
<td>2.14</td>
<td>Genial</td>
<td>2.</td>
</tr>
<tr>
<td>3.43</td>
<td>Self-confident</td>
<td>2.</td>
</tr>
<tr>
<td>4.26</td>
<td>Vivacious</td>
<td>2.</td>
</tr>
<tr>
<td>2.61</td>
<td>Mirthful</td>
<td>2.</td>
</tr>
<tr>
<td>4.21</td>
<td>Unreparing</td>
<td>2.</td>
</tr>
<tr>
<td>1.61</td>
<td>Enthusiastic</td>
<td>2.</td>
</tr>
<tr>
<td>1.26</td>
<td>Charming</td>
<td>2.</td>
</tr>
<tr>
<td>1.59</td>
<td>Energetic</td>
<td>23.</td>
</tr>
</tbody>
</table>

Group 4 (cont)

<table>
<thead>
<tr>
<th>Trait Name</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.37</td>
<td>Contented, 30.</td>
</tr>
<tr>
<td>2.13</td>
<td>Generous, 30.</td>
</tr>
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Group 32.
1.53. Dissatisfied.  23.
1.31. Cold.  23.
1.41. Cowardly.  30.

Group 33.
2.50. Jealous.  28.

Group 34.
1.63. Evasive.  24.
1.65. Extrapunitive.  10.
1.57. Egotistical.  24.

Group 35.
2.43. Inhibited.  27.
2.21. Habit-bound.  25.
2.41. Inflexible.  25.
METHOD OF SCORING.

One of the principal objects of this study was to devise a method of converting the rating on the comprehensive list of 246 variables, into a score on a smaller list of compound variables. By the computations already described, this smaller list of 35 compound variables, or groups, has been derived.

The scoring on the extended list was by rating for presence or absence of the trait, the method of rating having been operationally defined. This allowed for the use of tetrachoric correlations, owing to the vastness of the data, which precluded the use of product-moment correlation at that stage.

In relation to the 35 groups, however, it was felt that scoring should be on a five point scale, to allow of product-moment correlations being used in further studies, which might proceed to a full factorial analysis of the data yielded.

The simplest method considered was to score each group proportionally to the number of constituent traits rated positive. In the case of a group consisting of ten traits, each trait would score ten points, if rated positively. This hundred-point scale could then be divided into any convenient number of divisions, five being probably the most suitable number.

This was rejected, as being likely to give too much weight to those traits having relatively low intercorrelations with other members of the group, and too little weight to those intercorrelating highly with other members. The principle was therefore adopted, with the concurrence of professor Drever and Dr Semeonoff, of weighting the
constituent traits of a group proportionally to the first factor loading of the trait in the group matrix.

For the purpose of working out these loadings, the self-correlations of traits were taken to be 1.00, and all intercorrelations below plus .50 were worked out and entered in the matrix. The first factor loading for each trait was then expressed as a percentage of the sum of the first factor loadings for the group, to the nearest round figure. This figure became the score for that trait on a 100 point scale. This scale can be converted to one of any convenient size; for a five point scale, 0 - 20 scores 0, 21 - 40 scores 1, 41 - 60 scores 2, 61 - 80 scores 3, and 81 - 100 scores 4.

The only disadvantage of this method is that a group consisting of 3 traits of equal loading cannot score 2, though it can score every other value. This disadvantage was felt to be less than the troubles which would arise from adopting an essentially arbitrary method of scoring. Professor Drever and Dr Semeonoff concurred with this view.

A table of the weighted scores for each trait in each group is set out below. To save space, only the code number for each trait is given.
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DISCUSSION.

1). FURTHER CONSIDERATION OF THE STEPS TAKEN, IN THE
LIGHT OF THE RESULTS ACHIEVED.

The work thus far set out may be briefly summarised
by saying that it starts from the observed behaviour of
a mentally disordered population; it proceeds by a series
of clearly defined steps to a conclusion in which the
observed data are codified in a more on a list of 35
variables, which are compound traits or correlation
clusters. It includes some consideration of the general
problems involved in the taking of each step. These
questions have so far been dealt with from the viewpoint
of one about to take the step, and require further retro-
pective consideration in the light of the results
achieved. Special attention must be given to points of
difficulty.

The first of these related to the inference of the
presence of traits from observed behaviour. Unless this
is possible, trait theory as expounded by, for example,
Allport (1937), Cattell (1946) and Eysenck (1947), falls
to the ground. Without pursuing the point to the extreme
of a full discussion of the fundamentals of trait theory,
the difficulty of achieving accuracy in the process must
be faced. This was met, in this enquiry, by describing
the kind of behaviour which must be present to allow
the existence of a given trait to be inferred; in other
words, by denoting the conditions in which a positive
rating might be made.
This process itself involved certain difficulties. My collaborators agreed with Cattell's (1946, p 66) contention that behaviour of a certain kind might indicate the presence not of one, but of a number of traits. They also felt that inference of the presence of traits could not occur without the intervention of subjective processes such as "insight", "empathy" or "ehrlebnis". Discussion led to the conclusion that these difficulties were more serious "on paper" than in practice.

Confirmation of this view came after the enquiry was under way when Eysenck (1952) published a work in which he relied on the device of "Operational definition" to overcome a similar difficulty. At the beginning of this enquiry, however, the linguistic experts themselves conceded the point that there was a rich vocabulary of trait terms in the English language. This indicated, in their view, that there was a tradition ante-dating modern trait theory, based on common experience down the centuries, that the character or personality of an individual could, in practice, be inferred with tolerable accuracy from his behaviour.

Modern psychological research throws more light on the situation. If these difficulties were of major practical significance, then rating as a technique would be seriously inaccurate. Subject to due safeguards, this has been shown not to be the case.

Allport (1937, p 301) quotes the work of Conrad (1932) in which teachers' judgments correlated to the extent of plus .93 to plus .96 in rating traits which they considered to be of "central or dominating importance" in the
children in their classes. Cattell (1946, p 213) states, "As the present writer has shown, the consistency coefficients obtained when the estimates of one half of a group are correlated with the other half (pooled ratings) are extremely good, rivalling those found with objective tests (plus 0.9)". Wittman (1953) claims correlations "in the eighties" between herself and colleagues in rating patients for single traits on a seven point scale.

Against these results may be quoted evidence to show that psychiatric diagnosis gives rise to serious inaccuracy. Eysenck (1952, p 91) quotes the work of Stouffer who showed that psychiatrists disagreed in 31% of cases. Ash (1949) reported even greater discrepancy. Using a conference interview method, 52 white males were examined by at least two psychiatrists, and in 35 of the cases by three psychiatrists. Agreements with respect to specific diagnostic category obtained in 20% of the cases for the three psychiatrists, and in from 31.4% to 43.5% when the psychiatrists were considered in pairs. Eysenck (1952, p 23) supplies the probable answer. "The human brain is not a very good instrument for assessing, weighting and combining many items of information in such a way as to make valid predictions". He goes on to suggest that it is difficult to draw a line between psychiatric diagnosis and rating, implying that the proven inaccuracy of diagnosis is likely to apply to rating. The fact that rating is so much more accurate than psychiatric diagnosis contradicts this conclusion. The difference between diagnosis and rating for single traits is analogous to that between a complex act of skilled craftsmanship, and a mass-production
job "broken down" into a series of simple steps, each within the range of an unskilled worker. The human brain may be unskilled at the more complex of these activities, but the evidence shows that it can deal with the simpler job accurately, or, more precisely, with a high degree of agreement with other brains.

I therefore submit that evidence from other sources shows that the degree of agreement between myself and my colleagues in rating a proportion of the sample population is in no way exceptional (see ante, "Rating in conjunction with Colleagues"). This finding, together with the other evidence shows that the presence of traits can be inferred from behaviour by the technique described with a high degree of accuracy.

No further discussion of the selection of rating as the method of choice is required in the light of the results of this enquiry. The use of a comprehensive trait list, however, raises certain issues. So far as I can discover the particular use made in this study of a comprehensive list is an innovation in the psychiatric field. The Degan study mentioned by Thurstone (1951) is a possible exception, but it has not yet been published according to the bookseller who handles American publications for me.

Comprehensive trait lists and guides to the comprehensive study of personality have been published in relation to psychiatry. The Illinois Check List by Wittmann (1953) is a good example of the former, and the directions for personality studies issued by the Meyerian school of psychobiology exemplify the latter. The Illinois Check
List contains groups of traits derived not by correlation but from "psychiatric experience". The completeness of the list has no basis in theory, but merely the sanction of adequacy in relation to psychiatric work. The list is open to the further objection that the traits are associated in groups derived from experience in psychiatric diagnosis, which has itself been shown to be a process involving a high degree of inaccuracy. A list of this kind, which is the result of a process of clinical correlation, is open to objection as the starting point of a process of statistical correlation.

Personality studies of the type advocated by the Meyersians involve self-rating to a considerable extent. They are no doubt excellent for the purpose for which they were designed, the training of psychiatrists, but are clearly not applicable to the task of rating the mentally disordered. Their results, moreover, cannot be easily rendered susceptible to statistical handling.

Comprehensive schemes have been introduced in the field of personality study. In addition to the work of Cattell (1946) which forms the basis for this enquiry, there is the Grant study at Harvard summarised by Duffy (1949) and the suggestion by Allport (1937) for generalisations from case studies. The claim for completeness is less well founded in the case of the Grant Study than in Cattell's work, and it shares with Allport's suggestion the difficulty of expressing results in quantifiable terms.

In psychiatry there have been numerous examples of studies with restricted trait lists. Among these may be mentioned those of Linford Rees (1949), Heyburn and Raath (1950), Mayer-Gross, Moore and Slater (1949) and
Wittman (1949) These restricted trait lists were for the most part designed to throw light on specific restricted problems. The authors claimed that they achieved their object. Wittman in particular claimed that by her technique the prognosis in schizophrenia could be assessed more accurately than by psychiatrists using ordinary clinical methods. These studies allow one to hope that a comprehensive list can make a useful contribution to general taxonomic problems in psychiatry, one of the aims of this enquiry.

Having considered the relevant evidence, I submit that the comprehensive list chosen for this enquiry avoids some of the defects inherent in other comprehensive lists through its derivation from the whole range of the English language and published research. I further consider that a comprehensive list has obvious advantages over a restricted one for a study dealing with the broad perspectives of classification, and that it was essential for the present purpose to use a list which expresses results in a form capable of statistical analysis.

Another point arises in connection with the use of this comprehensive list in conjunction with a sample population chosen from the whole field of mental disorder. This study, as will be shown later in the discussion, deals primarily with the problem of psychiatric classification. The choice of the sample population is therefore important, as any error in sampling must distort the system of classification which emerges from the enquiry. I have submitted that the sample chosen is as characteristic of the disordered population of this country
as is possible today. The comprehensive statistical study promised in connection with the National Health Service has not been published at the time of writing (Autumn 1953).

The kind of situation which may arise through using a partial sample or an incomplete trait list, or a combination of both, can be shown by consideration of the work of Moore (1929) and Eysenck (1944 and 1952). Moore's sample was not accurately defined, but did not cover the whole field of psychosis without discoverable organic component. His list of variables was limited to those considered significant in relation to the types of mental disorder he was studying. His work yielded certain "syndromes" which failed to win the regard of psychiatrists. No doubt his mathematics were correct, but his results were felt to rest on no firmer foundation than those of clinical enquiry, and to make no new contribution to the practical problems of diagnosis, prognosis and treatment. This is an example of a laborious and painstaking study failing to gain acceptance largely due to critical dissatisfaction on the score of sampling and the nature of the trait list used.

Eysenck's work can be considered in relation to the specific problem of the distinction between neurosis and psychosis. In 1952 he published his conclusion that neuroses and psychoses are to be regarded as separate, unrelated forms of disorder. He claims to have established two orthogonal factors of "neuroticism" and "psychoticism", both having their opposite poles within the "normal".

This problem is, of course, a psychiatric "chestnut" with many facets, on which eminent clinicians have disagreed.
its correlations with many traits and devised tests to
discover its presence, but the fundamental doubt remained
unresolved. Later work with psychotics was related to this
original factor of neuroticism, from which an orthogonal
factor of "psychoticism" was derived. The doubt felt by
clinicians about Eysenck's conclusion is reinforced by a
consideration of the correlations of the trait-terms
"Neurotic" and "Psychoptic" in this study. I have worked
all these correlations out, not merely those greater than
.55. With some half-dozen exceptions, the correlations
of "Neurotic" are matched by correlations of similar mag-
nitude but opposite sign to "Psychoptic". The most probable
explanation is that the conditions for rating these var-
iables introduced an unvalidated assumption, that a
patient must be either psychotic or neurotic. This dichot-
omy has been faithfully revealed in the process of statis-
tical elaboration.

Eysenck's conclusions may, of course, prove to be cor-
rect, but doubts can legitimately be felt about the method
by which they have been achieved. The imposition of a
false dichotomy derived from clinical tradition would
obviously cloud such issues as:-
1). The existence of a continuum "Neurosis - Psychosis".
2). Neurosis as a transition stage between Normal and
Psychoptic.
3). The co-existence of Neurosis and Psychothesis.
4). The possibility of neurosis occurring as a reaction
to a psychotic process of insufficient severity to
be disabling of itself.

I submit that the use of a comprehensive trait-list
combined with a sample characteristic of the mentally
disordered population as a whole, is a valid method of obviating this difficulty, and similar ones.

I consider that this contention is in no way affected by the correlations of "Neurotic" and "Psychotic" in this study. This is so because the process of rating these two variables was, in fact, quite different from that of rating the others in my list. The presence or absence of Neurosis or Psychosis was not inferred from behaviour according to an operational definition of a segment of behaviour, but by the very process of "Assessing, weighting and combining many items of information" already referred to as highly liable to error. Confusion was worse confounded, because the "Items of information" leading to the diagnosis of "Neurotic" or "Psychotic" were the same as those leading to the rating of the other variables, combined in a manner over which no control could be exercised. The rejection of the items "Neurotic" and "Psychotic" from the process of grouping traits was therefore justified.

The only other point requiring retrospective discussion in relation to the steps taken is the method of arriving at the groups of traits, or correlation clusters. The principal alternatives to the method chosen are:

1). Cattell's technique of deriving "Nuclear" clusters from "Phenomenal" ones.

2). Tryon's method described by Cattell (1946, p 81).

In relation to the former, the technique I have adopted conforms closely to Cattell's method of deriving a "Phenomenal" cluster, which he describes as "Just a bunch of trait elements which correlate highly for all possible pairings of items in the cluster" (1946, p 76). The
resemblance between my method and Cattell's was revealed when the correlation matrix for each cluster was worked out in full, prior to working out the weighting of the constituent traits of each cluster. These traits which did not correlate at the chosen level of .55 were found in practice, with very few exceptions, to correlate at a level just below this figure.

Cattell's technique (1946, p 235 et seq) of obtaining nuclear clusters is considerably more complex. If applied to my data, the result would be to give "nuclear" significance to groups of traits at the point of overlap of "phenomenal" clusters, whereas I gave "nuclear" significance to the groups of traits which intercorrelated most highly. The word "nuclear" is here used to denote those traits around which a cluster is formed.

Cattell (1946, p 86) suggests that clusters of the nuclear type probably occur at the points of overlap of factors. This is introducing an element of the interpretative at a point where, in my opinion, it is wiser to remain as near to pure description as possible. This point is particularly important in relation to my very complex data, as their very complexity allows some freedom of choice in selecting nuclei by overlap, whereas there is little or none in selecting them by the magnitude of the correlations. I submit, therefore, that the method I have adopted is to be preferred in the circumstances of this enquiry, as giving less scope to possible arbitrariness in the formation of groups of traits.

By using Tryon's method, the members of a cluster have similar profiles as regards their correlations with all the other variables, but the members do not necessarily
correlate highly with one another. This method was therefore not applicable to my data, owing to the elimination of all correlations below the selected value of .55.

The steps from the observation of the behaviour of mentally disordered individuals to the recording of this behaviour as a score on a set of 35 variables have therefore been considered:—

1). As the work proceeded.
2). In the light of results and in relation to the work of others in the field.

I submit that the substantial accuracy of the process has been established. I further submit that certain aspects of the whole are an innovation in the psychiatric field, and that, in sum, the process described represents an advance in recording psychiatric phenomena with economy and accuracy.
2). THE RESULTS OBTAINED.

As has been set out, the 246 variables of the original trait list fall into 35 clusters varying in size from 3 to 13 traits. Some consideration is required of the meaning of these clusters.

Each of the 246 traits (with the exception of "Neurotic" and "Psychotic" described above) in the extended list can be considered as fulfilling Cattell's definition of a trait (1946, p 61): "A trait, whether unique or common, is a collection of reactions or responses bound by some kind of unity which permits the responses to be gathered under one term and treated in the same fashion for most purposes". The clusters, as compound traits, are also bound by "some kind of unity", which in their case is provided by the fact of intercorrelation at the chosen level of .55 or more. In Cattell's words (1946, p 77) clusters are "simply statements of literal going-togetherness". If a single trait is a "collection of reactions or responses", a cluster is simply a wider collection relating to a greater area of behaviour, which nevertheless has sufficient unitary character to be dealt with as a unity. In other words, clusters may be regarded as "patterns among habits of responding" (Cattell, 1946, p 88). It is perhaps too much to say that they represent the fundamental response patterns of human nature, but it is fair to say that the clusters I have described have as good a claim as any to be regarded as fundamental in the field of mental disorder. This is so because they are derived from observation of an adequate sample, handled by a method of greater precision than clinical observation.
This conclusion requires further discussion and qualification, particularly in two directions:

1). In relation to a "descriptive" as opposed to an "interpretative" statement of results.
2). In relation to current methods of clinical evaluation.

1). Description and interpretation are not entirely antithetical processes, although Cattell (1946, p79) contrasts them. Broadly, description may be taken as the recording of events, while interpretation is the gaining of sufficient insight and understanding of their patterns as to confer either control over them, or the power of prediction or both.

In this work I have agreed with Eysenck (1952) that the problem of taxonomy is of great importance in psychiatry. This, of course, is a special case of the wider problem facing all enquiry about personality, of how to handle data of enormous complexity in a fashion that allows of classification. It is, of course, an axiom of the scientific method that description precedes classification and hypothesis formation. Cattell (1946, p79) says with justice that the cluster method of simplifying the correlation picture is less interpretative than factor analysis, and is more nearly "a literal statement of empirically observed connections". It is therefore an appropriate technique for the object to be achieved, which is the economical description of complex data. The process cannot avoid being interpretative (in the sense used above) to some extent, but in claiming that the 35 clusters obtained in this study are "fundamental"
I am using that word predominantly in relation to
descriptive categories, rather than principles of
interpretation.

2). Psychiatric diagnosis, or in current phraseology,
"Clinical evaluation", is rooted in type psychology.
The Meyerian School, which dominates British psychiatry
refers to mental disorders as "Reaction-types", while
the search for types dominates the work of Kraepelin,
Kretschmer and other outstanding figures of traditional
German psychiatry. Even the "Depth psychologies" have
not escaped this trend; Jung's work on types is too
well known to require detailed treatment, while the
Freudians have been driven to such concepts as the
"Anal-Erotic Character". It is an open question whether
"Type diagnosis" is, in the long run, the best approach
to the problems of psychiatry, but it must be accepted
as the current discipline. I agree with Cattell (1946,
p 140) that every effort should be made to keep statisti-
cal and clinical lines of enquiry in close touch with
each other. This requires acceptance of the fact that clin-
icians are using type psychologies, even though there
are signs of dissatisfaction with them.

Lack of confidence in type psychologies arises because
of their limitations in providing good grounds for progno-
is and the selection of treatments. There is an increasing
tendency, in estimating prognosis, to give less and less
weight to the clinical type, and correspondingly more
weight to such factors as age, duration of illness
before treatment, suddenness or otherwise of onset, the
presence or absence of external stress and the quality
of the previous personality. In selecting treatments, there is an increasing tendency to rely on the presence or absence of certain trait groups. Electroshock tends to be prescribed in any depressive illness, whether in a neurotic or a psychotic setting, while the strongest indication for leucotomy is "a fixed state of tortured self-concern". This tendency to rely on trait groups is of particular interest in relation to this study. Psychiatrists influenced by depth psychology have virtually jettisoned the practice of making a formal diagnosis, in favour of an estimate of the "psychodynamics" operating in a given case. This is interesting as a movement in yet another direction away from type psychology, but it bears little relation to statistical work, as the dynamic factors concerned have not been subjected to statistical scrutiny.

Formal psychiatry has been driven in the direction of the multiplication of types and sub-types, a process which has flourished in a rampant manner with little scientific foundation. The Schedule of Symbols, whose use was obligatory in Mental Hospitals in England and Wales before 1948 required cases to be classified under one of 15 heads. The International Statistical Classification of Diseases, Injuries and Causes of Death (1948), has ten main classes of psychosis, with 14 sub-classes; it has 9 classes of neurosis with 19 sub-classes; it has 8 sub-classes of Pathological Personality, 6 of Immature Personality, 3 of Alcoholism and a category of Drug Addiction. This development is largely ignored by practic- ing psychiatrists except for the making of official returns. Finally, there are efforts to avoid the limitations of type psychology along the lines of this study, or Wittman's (1951)
study of prognosis, by applying statistical methods to the problem. There seems no doubt that, in practice, reliance on trait groups is the departure from type psychologies which is paying dividends in the shape of improved prognosis and more accurate selection of treatment methods. This study is therefore in line with a major trend of present-day clinical psychiatry, but goes beyond ordinary clinical practice by applying statistical methods to the problem, with greater accuracy and precision than can be achieved by purely clinical methods. The statistical approach, by considering the implications of Q and R techniques, can also throw light on the relationship of type psychology to trait groups, and thereby forge a link between clinical psychiatry and academic psychology, to the advantage of both.

Further discussion of this relationship requires consideration of certain terms used by Cattell (1946) and certain issues left by him in a somewhat obscure state. I refer particularly to his use of the word "syndrome", which he appears at times to equate to type, and at others to cluster. On page 13 (1946) he with justice differentiates between the "type" and "trait" methods of describing personality. The "type" method picks out an individual and uses him as a reference picture, while the trait method observes certain modes of behaviour and defines these as the expression of a trait. Some confusion arises over his use of the term "syndrome". On page 13 (1946) he includes syndromes with types, and on p 26 says "A syndrome is nothing more nor less than a type pattern". Yet on page 136 he says "A syndrome is clearly
in the first place a correlation cluster". Admittedly he says (p 139) that "Most verbal clinical entities prove to be compounds of mathematical statistical entities", and on page 13, "As we pursue our examination we shall see that the distinction between these two systems (type and trait description) ultimately dissolves in more comprehensive mathematical formulations". Allowing for the fact that the distinction between type and trait-group is not absolute, I submit that at this stage it is wise to maintain the distinction, and in particular, to avoid using the word syndrome to mean either. I propose, therefore, to use the term "Type-diagnosis" on the one hand, and "Correlation cluster" on the other, omitting the word "Syndrome".

The need for clarity is shown when one considers Cattell's statement (1946, p268) that his nuclear clusters are "old friends of the clinic". He equates certain of his clusters to the following psychiatric entities:- General Neuroticism, Conversion Hysteria, psychopathic Personality, Constitutional Agitated Melancholia, two varieties of hypomania, two developments of paranoia, Pre-psychotic schizophrenia, the Hermit-Eccentric-Schizothyme and the Ambulatory Schizothyme. He also equates one cluster to Spearman's General Ability and another to Spranger's Aesthetic Type.

I cannot equate any of the clusters yielded by this study with "Type-diagnoses" or psychiatric entities, although they are trait-groups with which any experienced psychiatrist is familiar. The position, however, is very clear, as all the principal psychiatric "Type-diagnoses" can be built up from the 35 clusters in different
combinations. The following examples are given of the clusters likely to score highly in the principal psychotic reactions; the neurotic "type-diagnoses" are omitted, as being less well established in the clinical sense.

**TYPE DIAGNOSIS.**

- *Schizophrenia*  
  - Simple: 9, 11, 13, 24, 25, 26, 27, 28.
  - Catatonic: 6, 7, 21, 22, 31, or 22, 26, 28, 31, 35, according to phase.
  - Paranoic: 21, 22, 23, 28, 32, 33.

- *Mania*.

- *Depression*  
  - Simple: 4, 5, 6, 7, 8, 9, 21, 23, 31.
  - Agitated: 6, 29, 30, 31.
  - Paranoic: 14, 21, 22, 23, 28, 32, 33, 34.

This use of correlation clusters as the bricks from which a type diagnosis can be built is a method which enables the advantages of both methods of classification to be used. It also enables statistical and clinical methods to remain in close touch with each other, without doing violence to either. The claim that the clusters in this study are as fundamental as any in the psychiatric field is borne out, in the sense that they are units from which type diagnoses may be built up.
Comparison of results with Cattell's investigation of a normal population.

Cattell (1946) describes the results of a study in which a population of 208 normal men were rated on his comprehensive list of 171 variables. He collated the results of his own research with those of twelve other workers to produce a list of fifty nuclear clusters (p. 246 et seq). Fuller details of Cattell's own work are given in a paper published by him in 1943.

At the outset it must be said that accurate comparison is not possible for a number of reasons. His trait list and that in this thesis should be sufficiently alike to give similar results, but the fact must not be assumed, especially as most of Cattell's traits were bipolar. His population, moreover, was exclusively male. Cattell did not give his trait terms an operational definition, and some difference may arise on this score alone, especially as in Cattell's study, the subjects rated each other and were not rated by a single observer, subject to check for personal bias.

The clusters described in this thesis are, in Cattell's terminology, phenomenal clusters, whereas his list on page 246 is of "Nuclear" clusters, formed by the overlap of phenomenal clusters. It can be argued that such "Nuclear" clusters really represent a further stage toward factorial analysis, than do phenomenal clusters.

In comparing results, there is some doubt whether like is really being compared with like.

There is the further difficulty of comparing 35 unipolar groups with 50 bipolar clusters, not to mention the cultural difference between American and English subjects.
Nevertheless a comparison was attempted, to try and shed some light on the problem of describing mental disorder in terms of defect of behaviour. It appeared that the attempt might emphasise the magnitude of this task, and also perhaps suggest fruitful hypotheses for further investigation. Nothing more than this was expected.

A list was made of the 35 groups described in this thesis, and opposite each trait was entered the number of the nuclear clusters in which that trait appeared in Cattell's table. It was expected that in certain cases one group of mine would relate to several of Cattell's closely linked groups, and in fact this was found to occur quite frequently. For instance, Group 10 was found to correspond fairly closely to Cattell's Sector F, right hand column. In one case, (Group 15 and nuclear cluster J1) virtual identity occurred.

However, to avoid straining comparisons too far, it seemed best simply to make a list of those clusters in this study which did not appear in Cattell's, and vice versa.

Those groups found in the disordered population which did not appear in Cattell's normal one were as follows:-

Groups 9, 24, 25, 31, 32 and 35.

A possible explanation for these findings can be put forward, remembering that Cattell's group consisted of members of the U.S. armed forces, and so presumably screened as regards the more disabling forms of maladjustment.
Group 9 corresponds clinically to the passive-inadequate psychopath. Such people might well have been excluded from the armed forces as chronically inept individuals, or on grounds of petty criminal records. Nevertheless it is significant that this group does not appear in the "Normal" group, as such people have been brought more readily under the eye of psychiatrists by the operation in this country of the Criminal Justice Act, 1946.

Groups 24 and 25 correspond clinically mainly to mental deficiency and deteriorated schizophrenia, also greatly defective social behaviour.

Group 31 appears to relate to the grosser forms of disorder of thought and behaviour found in the psychoses. Group 32 probably relates clinically to considerable degrees of schizoid withdrawal, and Group 35 to severe obsessional neurosis.

It is therefore possible to understand why these groups should not appear in a normal population, especially one drawn from the armed forces. These groups correspond to the individuals who cannot adjust to life without psychiatric help, and certainly cannot tackle a military environment.

The groups found by Cattell, but not found in the disordered population make an interesting list, which suggests a number of hypotheses for future investigation. In the list below, the number at the left is the index number for the cluster as given by Cattell. The letter L or R following, indicates the left or right hand column, or pole of the cluster.
while the titles are as Cattell described them.

AB1L. Realism, Reliability.
AC1R. Plaidity, Social Interest.
AC2L. Balance, Frankness, Sportmanship.
CB5R. Unsophistication, Submissiveness, Reverence.
D3R. Self-Sufficiency.
F4R. Idealism, Truthfulness, Respecting Self and Others.
F5R. Idealism, affection, sensitive consideration.
F6R. Benign emotional maturity.
F7R. Good-tempered, unresentful, complaisant.
H2L. Creativity, curiosity, intuition.
H2R. Stability, insensitiveness.
I1L. Bohemian, Disorderly.
K1L. Physical Strength, endurance, courage.
P1R. Comfort-loving conventionality.
Q1R. Adaptable, Settling down.

Consideration of these groups in greater detail leads to certain conclusions which can be drawn with considerable confidence, provided that they are not expressed with undue precision. The method of working set out below is to enumerate the traits in each of Cattell's groups, then to evaluate the group in psychological terms. At the end of this process the findings are summarised.

Group AB1L. Practical, Reliable, Loyal, Self-Controlled, persevering, Guided by Reality.
This group describes "Reality Testing" and practical efficiency in dealing with environmental problems.

Group AC1R. Cheerful, Labile, Tough, Sociable, Optimistic, placid.
This group describes a form of social capacity not shown by the disordered. In my study, the "Cheerful, labile optimistic" aspect appears in a cluster related to the manic reaction. Cattell's group describes the "drive" of
mania acting under control in a socially acceptable way.

Group AC2L. Frank, Generous, Temperate, Easy-going, Emotionally Balanced, Optimistic, Good-Natured, Good Sport, Natural, Unaffected.

This group describes what may be an environmental mould trait-pattern. It suggests the kind of young man the British Public Schools endeavour to turn out, if one may accept the speeches of Headmasters on Prize Days. It represents a cultural ideal of the English speaking world.

Group CB5R. Simple-hearted, dependent, submissive, reverent.

This group again possibly represents an environmental mould pattern, a way of behaving at which various religious disciplines aim. It can best be regarded as another cultural ideal.

Group D3R. Self-sufficient, seclusive, obstructive, aloof, independent.

This group is distinguished from the schizoid clusters of my study (eg 26 and 28) by the presence of independence and self-sufficiency. It appears to refer to the successful solitary, rather than the withdrawn schizophrenic whose dependence brings him under psychiatric care.

Group F4R. Idealistic, Honest, Trustful, Praiseful, Self-Respecting.

This group is closely related to Clusters 1, 2 and 3 in my study, but is distinguished by the presence of idealism and trustfulness. Idealism occurs in my study in a
religioous context, and trustulness as an almost pathological acceptance of the pretensions of others. This group suggests a form of secular or "humanist" idealism, possibly assimilated into Western culture from the classics.

Group F5R. Co-operative, Idealistic, Kind, Gentle, Self-Confident, Friendly, Gentle-Tempered, Labile; Home and Family interests; Affectionate, Polite, Sympathetic, Sensitive and Socially Controlled.

This group also relates closely to Clusters 1, 2 and 3 in my study, but suggests a firmer and more positive approach to the human environment; it describes a richer and more mature social and emotional development than appears in the clusters of my study.

Group F6R. Grateful, Praiseful, Mature, Kind on Principle. This group suggests a greater degree of social maturity and skill than appears in any of my clusters.

Group F7R. Unresentful, Trustful, Naive, Good-Tempered, Hurried. Perhaps this group represents a capacity to accept experience without "flying off the handle", a quality which would militate against coming under psychiatric care.

Group H2L. Constructive, Curious, Introspective, Intuitive, Changeable, Creative; (summarised as Sensitive, Imaginative Creation). This group appears to be the "Artistic Temperament" of popular fancy, and may represent a source of artistic talent and inventive ability.
Group H2R. Unenquiring, Logical, Emotionally Stable. This group relates to a readily recognisable type, who, within his limited circle of experience, is solid and immovable. He does not venture outside the area in which he knows all the answers. This mode of adaptation does not lead to the psychiatrist.

Group I1L. Profligate, Disorderly, Planless, Friendly, Quitting. This group appears to relate to the kind of person who is saved from psychopathy by friendliness. It therefore suggests a degree of social skill not found in the disordered.

Group K1L. Physical Strength and Endurance; Courageous, Interested in Physical Activity, Physically Energetic and Active. This group describes a quality which is regarded as an asset in most cultures, and certainly in the English speaking world.

Group P1R. Sensuous, Comfort-Seeking, Conventional, plaintive. This group suggests the artistic dilettante, a kind of adaptation mainly possible to wealthy people. This may account for its absence from my clusters.

Group Q1R. Adaptable, Settling Down. This group again suggests the capacity to accept experience.

To summarise, one may conclude with some confidence that the following qualities of personality are shown by normal people to a degree not achieved by the disordered:-
1). Realism and efficiency in dealing with environmental problems.
2). Social Capacity and Maturity.
3). Attainment of cultural ideals.
4). Rich emotional relationships with others.
5). Capacity to accept experience without serious upset.
6). Capacity for enquiry and creation.
7). Capacity to adapt to circumstances in ways which are not necessarily socially or emotionally mature, or culturally valued, which nevertheless do not lead to psychiatric supervision.

Finally, it is possible to say that those groups which appear in my study, but not in Cattell's, represent the "hard core" of psychiatric problems which have so far largely defied all efforts to deal with them. These are:-

1). The psychopath.
2). The mental defect.
3). The deteriorated schizophrenic.
4). The Psychotic, grossly disordered in thought and behaviour.
5). The withdrawn schizophrenic.
6). The severe obsessional neurotic.

Those groups which Cattell found, but are absent from my list, focus attention on the following problems:-

1). Reality testing.
2). Social Maturation.
3). Adaptation to cultural demands and patterns.
4). Emotional Maturation.
5). The capacity to accept experience, eg "Frustration Tolerance.
6). Capacity for original or creative work.
With the exception of the last item, these are all live psychiatric issues, which are being investigated and merit further enquiry. The fact that this study is in agreement with current psychiatric conclusions is encouraging. Originality was sought in this paper in relation to the patterning of psychiatric data, rather than in any new delimitation of the field of psychiatric investigation. The agreement here revealed between psychiatric enquiry and the results of the method I have adopted, is further substantial evidence in favour of the soundness of the latter.
4). RELATIONSHIP OF THIS STUDY TO FACTOR ANALYTIC WORK.

Kelley (1947, p 12) suggests that there are two proper occasions for resort to statistics:-

1). When it is desired to prove a hypothesis.
2). When it is desired to invent a hypothesis.

He goes on to suggest that statisticians in general do not accept this second function, but later in his book (p 22 and 23) concedes, for his own part, that this second function is legitimate, at any rate within limits. He gives the following as proper uses for statistics:-

1). Pure description.
2). To enable analysis in harmony with hypothesis.
3). To suggest by the force of its virgin data analyses not earlier thought of.

Holzinger (1941) regards the function of factor analysis as essentially descriptive, and therefore applicable to the earlier phases of the scientific method, as well as to the last phase, the "proof of a hypothesis". He says:-

"Factor analysis is a branch of statistical theory concerned with the resolution of a set of descriptive variables in terms of a small number of categories or factors... The chief aim is... to attain scientific parsimony or economy of description".

Stott (1950) regards statistical methods as the scouts giving a preliminary survey of new territories, which must later be captured and consolidated by heavier armour. This, for him, is provided by detailed clinical enquiries and case studies. He agrees, however, with Kelley on the legitimate use of statistics as an exploratory technique,
which is a significant admission from a worker who prefers not to rely on them for the proving of hypotheses.

Eysenck (1950) mentions Thurstone, Burt, Cattell, Guilford and Vernon as experts in the factor analytic field, who believe the method can solve some of the most prominent taxonomic problems in psychology. A brief review of the views of the first three authorities follows.

Burt (1940) considers that factorial analysis can be used for three principal purposes:–
1). It can provide a more satisfactory basis than a semantic one for a systematic description and classification of traits, and at least an adumbration of their relationships. He concedes, however, that the process may be in part arbitrary or relative to a particular matrix.
2). In applied psychology, it makes statistical prediction possible, even though this may be confined to the field of one research, in which the factors discovered may be artificial mathematical entities.
3). It may, if improved, open the way to causal interpretation in a manner satisfying to the demands of "pure" scientists, and so provide a firm basis for the work of applied psychologists.

Thurstone clearly believes that, subject to proper safeguards factor analytic methods can be used to solve many kinds of psychological problem, and can be applied at various stages of the scientific process. Perhaps the keynotes of his writing can be summarised as follows:–
1#. In his paper (1949) he says, "In developing multiple factor analysis in present and future forms, we should try
to make them as flexible as possible so that our methodology will not impose unnecessary restrictions in the development of scientific constructs. His work shows many examples of this flexibility in operation, and the explicit or implicit demand for it permeates many of his writings. Another example occurs in another paper (1947): "It should be emphasised that factor analysis is a scientific method that must be adjusted to each problem. It is not merely a statistical method, and it is not a routine that can be applied fruitfully to every correlation table in sight."

He concludes his paper (1947) by saying, "My final remark is that the factorial methods will be fruitful in the advancement of psychology only in so far as we use these methods in close relation to psychological ideas. This demand appears again and again in different forms. Earlier in the same paper he says, "In the Psychometric Laboratory at Chicago, we spend more time in designing the experimental tests for a factor study than on all of the computational work, including the correlations, the factoring and the analysis of the structure. If we have several hypotheses about postulated factors, we design and invent new tests which may be crucially differentiating between the several hypotheses. This is entirely a psychological job, with no computing. It calls for as much psychological insight as we can gather among students and instructors. Frequently we find that we have guessed wrong, but occasionally the results are strikingly encouraging. I mention this aspect of factorial work in the hope of counteracting the rather general impression that factor analysis is all concerned with algebra and statistics. These should be our servants in
the investigation of psychological ideas".

His statements about the applications of factor analysis are couched in the language of scientific caution. In his paper (1950) he says, "The isolation and identification of the functional unities of mental endowment have been facilitated considerably by the methods of multiple factor analysis". This, incidentally, is also indicative of his approval of factor analysis in an exploratory way. His caution does not prevent the making of claims, but appears to arise from the desire to discriminate between what has been clarified, and what has not. E.g., in his paper (1947) he says, "It should be pointed out that a factorial study can make a major scientific contribution to our understanding of mind, even if it does not attempt to identify all the common factors clearly. An important contribution can be made even if only one new factor is isolated and psychologically described even if all the rest of the variance remains an unknown muddle".

It is therefore somewhat difficult to summarise Thurstone's views succinctly. It is clear, however, that he supports the use of factor analysis for the purposes of exploration and classification. In additional to the example given above, he advocates extending the use of factor analysis to include exploration of the fields of temperament and personality as a whole (1947a and 1950). In passing, it may be noted that his claim to have demonstrated the interdependence of cognitive and temperamental factors, strongly supports the soundness of adopting a comprehensive trait list as the basis of this study.

Thurstone's work on abilities (1947 and 1950a)
with his claims to have established numerous factors within the field of general intelligence, shows that he uses factor analytic methods to prove his hypotheses.

There is, perhaps some doubt as to whether he uses factor analytic methods to invent hypotheses. His description of his methods (1947) suggests that here he relies on "psychological insight". Later in the paper, however, he describes the formulation of hypotheses as a result of the consideration of the results of previous factor analytic work. It is fair to say, therefore, that even if he does not use factor analytic methods to invent hypotheses, he does use their results as "pabulum" for such invention.

Thurstone, therefore, with the reservations and qualifications set out above, conceives of factorial analysis as a tool capable of fruitful use at each stage of the scientific process in psychological enquiry.

Cattell is much more forthright in his claims that factor analysis and allied statistical techniques are useful at every stage of the scientific process. His book (1946) is largely an expansion of the thesis that correlation studies and factor analysis can improve on clinical methods in contributing to classification, hypothesis formation and hypothesis confirmation. In the summary of his paper (1952) he makes the unequivocal statement, "The primary purpose of factor analysis is to discover or confirm hypotheses as to the nature of underlying influences or dimensions..... It is more productive of relatively precise hypotheses than most other statistical methods and in general provides a more searching test of (deductions from) a hypothesis within a single experiment"
Eysenck (1952) and Stephenson (1952) are more guarded, particularly in relation to the use of factorial analysis for proving hypotheses. Both agree in stressing the need for a strictly hypothetico-deductive method in this connection, but Eysenck, at any rate, accepts the position that factorial analysis can make valuable contributions to taxonomic problems. The work of these two authors has perhaps more bearing on the question of the particular type of factor analytic method to be used in given conditions, and is discussed in more detail below in that connection.

From the evidence detailed above, there is clearly strong authoritative support for the contention that factor analytic and allied statistical procedures can make a useful and original contribution to the processes of classification, hypothesis formation and proof in psychological investigation. This enquiry relates principally to classification and secondarily to hypothesis formation, and the methods used clearly have the sanction of powerful authority. For this statement to carry weight, however, the principal objections to factor analytic methods must be stated and met.

1). The first, described by Eysenck (1952), relates to "Allport, Murray and other adherents of the psychiatric, individualistic, idiopathic point of view (who) believe its atomistic assumptions violate the holistic nature of human personality".

2). The second, also mentioned by Eysenck (1952) relates to "Professional statisticians who point out its formal deficiencies, and prefer the more rigorous methods of
discriminant function analysis, analysis of variance and regression equations.

3). The third is that expressed by Duffy (1949) who points out the difficulty that factor analysis must proceed within a certain theoretical framework, so that the results of factorisation may be implicitly influenced by the preconceptions of the psychologist who performs it.

Criticism 1. To those mentioned by Eysenck should be added the Vorstehen school of psychologists, Jung and probably Freud.

This difficulty is a special case of a problem with metaphysical and philosophical connections which go far back in the history of human thought. At the one extreme are those who hold that another human being can only be understood by a process of sympathetic insight, "empathy" or the like, and that attempts at inference from their behaviour are either inferior or irrelevant. At the other extreme stands the thorough-going behaviourist, who regards consciousness as irrelevant, or at best as an epiphenomenon.

This difficulty runs through all the work mentioned in this discussion so far.

1). Rating, as pointed out by my linguistic collaborators, is not a process of pure description. It is partly interpretative and requires some degree of insight. To a purist, therefore, Kelley's contention that statistics can be used for pure description is not pertinent to this enquiry. This argument could be pushed to the point of invalidating statistical methods in psychology. This difficulty has been met by accepting a high degree of agreement between several observers as amounting in practice to a process
sufficiently near to pure description as to be treated as such within known limits of error. The same considerations apply to the citation from Holzinger, above.

2). Stott clearly feels the difficulty sufficiently keenly to abandon statistics as his major method, but he is not prepared to jettison them completely.

3). It is presumably this difficulty that leads Burt to concede that the systematic description and classification of traits may be in part arbitrary, and to qualify carefully his claims for developing accurate methods of prediction.

4). Thurstone’s insistence on flexibility and close relationship between factorial methods and psychological ideas arises in large part from the same source.

5). Cattell pays less obvious attention to this problem than any of the other authorities, probably because, as hinted in his paper (1952), he adopts more fully the behaviourist position. In his book (1946) he clearly appreciates the problem and offers as one practical solution the maintenance of a close relationship between statistical and clinical methods.

Other points to bear in mind in relation to this criticism are:

1). Allport himself does not attack the value of statistical or nomothetic studies. On the contrary, he insists on them as a necessary part of psychological enquiry. He merely considers them incomplete without a concomitant idiographic approach.

2). Schools which neglect nomothetic elements (the Verstehen school and the depth psychologies) tend in practice to become cults which seal themselves off from scientific scrutiny. Perhaps it was the need for reaction against
this self-sterilisation that led the Freudians to produce their "characters" and Jung to evolve his typology.

To summarise, this criticism has some force, but subject to the following considerations, does not invalidate the use of statistical methods and factor analysis in psychology.

1). Data agreed on by independent observers form the foundation of description.

2). The statistical approach is largely tied, therefore, to behaviourism, if it is to avoid false quantification.

3). Behaviourism cannot be divorced entirely from an idiographic approach, either in the form of applying "psychological insight" at all stages (Thurstone) or by a close relationship with case-studies or clinical work (Cattell).

I submit that these points have all been stressed in this thesis, so that this criticism has little or no force in relation to it.

Criticism 2.

This relates to the objections of rigorous statisticians. In the first place, they are not unanimous. In the second, the techniques mentioned by Eysenck (1952), especially the analysis of variance, can only be applied at a very late stage of hypothesis testing. Having regard to the views of the authorities quoted above, such a rigorous application of statistics can fairly be regarded as a counsel of perfection which may be possible in future. If insisted on in the stage of exploration, rigour of this
kind would stultify the advances which, with justice, the authorities claim that factor analysis can achieve. This criticism is therefore largely irrelevant to the subject matter of this thesis.

Criticism 3.

This criticism undoubtedly has some force, especially in view of the general recognition (e.g., Burt 1940 and Cattell 1946) that factors are artificial mathematical constructs which only become meaningful when interpreted. Cattell (1946) advanced the method of "parallel proportional profiles" to overcome it; Thurstone evolved the method of simple structure, and Eysenck (1950 and 1952) that of "Criterion Analysis".

Taking a broader view of Duffy's criticism, this is merely a statement of the truism that an individual's work, however singular and original, cannot be assessed apart from its historical context. An artist's work cannot be evaluated apart from the tradition in which he works. So far as this thesis is concerned, the difficulty can be met by stating explicitly that it is conceived in the tradition of modern behaviourism.

To summarise, I submit that the work set out in this thesis is sound, according to the canons of modern behaviourism. This discussion has given it orientation in the field of factor analytic and statistical enquiry, and has answered possible criticisms which, if valid in relation to factor analytic methods as a whole, would adversely affect the method described and the conclusions reached.
To complete this section of the discussion on the relationship of this thesis to factor analytic work, consideration must be given to the various types of factor analytic and related techniques which may be employed.

To deal first with the relationship between correlation cluster studies and factorial analysis, I suggest that Cattell's exposition (1946, p79) has not been bettered. His main points are:

1). Cluster studies are normally a stage on the way to factor analysis.
2). Cluster studies are more of a literal description of empirically observed facts than are factor analyses.
3). Clusters are less interpretative than factors.
4). Clusters are not lost to later re-interpretation in the same way as factors.

Accepting these contentions, I submit that a cluster study of the kind described in this thesis, is an imperative pre-requisite to a determined factor analytic onslaught on the psychiatric domain. I claim that the method set out enables some of the difficulties met by Moore, Eysenck and Wittman described above, to be avoided.

Two other factorial techniques require consideration, namely Eysenck's (1952) Criterion Analysis, and Stephenson's (1936 and 1952) Q Technique. One aspect of these can be considered together. Both authors claim that their work is strictly "hypothetico-deductive". On this point I would submit:
1). The hypothetico-deductive method is one to apply strictly during the last step in the scientific process, namely the confirmation of hypotheses.

2). It requires to be supplemented by inductive processes, as history has shown conclusively that deductive processes, on their own, are sterile.

3). The various factor analytic processes are laborious, and it is a waste of time to employ them on hypotheses derived from just any source.

I firmly submit that the work I have set out to do in this thesis demanded a predominantly inductive approach, which was in fact employed.

Considering criterion analysis further, it may well be a valuable technique for determining rotation, as an alternative to simple structure. It can, however, almost certainly be applied most fruitfully to the final step of the scientific process. In this connection it is worth noting that Eysenck's work is most open to criticism at the phase of transition from observed data to his correlation matrices. This is the step with which my thesis deals. I therefore submit that Eysenck's method could contribute little to the subject matter of this thesis, but might well yield significant results if applied to the results given by a method such as mine.

To deal with the controversies surrounding Stephenson's Q Technique in detail would be a lengthy process. The main points which appear relevant to this thesis are, however, set out below.
Stephenson (1952) described in considerable detail his views on Q Technique. The following claims appear to require consideration here:

1). Q Technique is a totally different methodology to R, and avoids many of the fallacies of R Technique.

2). Factor analytic methods other than Q must stultify all attempts to explore psychological theories in their own right.

3). Q Technique is not concerned with the study of individual differences.

4). Introspective data may be quantified.

5). Stress is laid on the study of small groups, or even the single individual.

Cattell (1952) criticised Stephenson in a cogent and well-argued paper, but in certain respects was probably too sweeping. He says that, broadly speaking, he takes the view that introspective data cannot be truly integrated into scientific psychology. He considers that the chief use of Q Technique is as a classificatory device to find the sub-populations in a non-homogeneous population, but fails to mention a possible legitimate use following the study of a population by R technique.

In relation to this thesis, the following considerations are pertinent.

1). Here again we are faced by the idiographic-nomothetic antithesis. Stephenson, in quantifying introspective data, is open to the charge that he wants the relative precision of statistical methods, without restricting them to their proper field of "observed behaviour", ie, data which can properly be quantified. Cattell, by rejecting introspection,
comes at once into conflict with Thurstone (1947), who describes his own use of introspection in interpreting factor analytic work. The wise solution here is surely surely Allport's (1937) who considers that idiographic and nomothetic methods are both necessary. Cattell himself probably subscribes in practice to this view, or he would not stress the importance of co-operation between psychometrists and clinicians. Stephenson may well be trying to relate idiographic and nomothetic methods at the wrong stage of an enquiry. In this thesis Thurstone's viewpoint has been adopted. Statistical methods have been applied only to the data derived from observation, while introspection or "clinical insight" have been employed simply to interpret some of the results in a tentative fashion.

2). Stephenson's technique is not applicable to the task I have undertaken in this thesis for the following reasons:-

a). On his own showing, Q Technique is not concerned with the study of individual differences, which method must be the keystone of a task like mine, dealing with classificatory problems.

b). The quantification of introspective data requires, to say the least, to be handled with caution, and was, in my opinion rightly excluded from this study.

c). The intensive study of the individual or small groups raises immense difficulties in the process of generalising from the data obtained. As generalisation is at the very core of this thesis, this objection carries great weight.
3). Cattell's (1952) contentions cannot be fully accepted either. The use of introspection or insight must be admitted as aids in the interpretation of factors or other products of statistical method, and as an integral part of idiographic or clinical studies. So far as this thesis is concerned, exception is only taken to using insight in the realm proper to observation and accurate statistical manipulation.

4). Q Technique, in the form accepted by Cattell, can clearly make a contribution to clinical diagnosis by clarifying the types actually met with in a population of mentally disordered persons. This thesis has provided the "bricks" from which the various type diagnoses can be built up, but has not dealt with the validity of accepted clinical types. This use of Q Technique is outside the scope of this study.

5). Q Technique, as described by Stephenson, may prove to have a use not mentioned by Cattell. Once broad perspectives have been established in the psychiatric field by R technique, or even Q Technique in Cattell's sense, intensive investigations of individuals or small groups might prove very profitable. If these were carried out in a frame of reference already established, the problems of generalisation and of quantifying introspective data might become more tractable, and valuable results might accrue. This thesis, however, is concerned with establishing the frame of reference which is here regarded as a pre-requisite of Q studies as conceived by Stephenson.
5). USES OF THE RATING TECHNIQUE EVOLVED IN THIS THESIS.

These may be stated as follows:-

1. As it is a relatively easy and rapid method of recording observed behaviour on a rating scale of 35 variables, it can profitably be used to amass accurate data about the manifestations of mental disorder. In this connection the following points may be emphasised.

a). The process of converting the rating on 246 variables into the score on the 35 groups can be carried out very rapidly, either by Thurstone's (1948) card edge method, or with Powers Samas punched cards. With the latter, the rating on the 246 variables is transferred as already described by punching the appropriate places for positive ratings on cards of one colour, say buff. Master cards of another colour, say green, are prepared for each group, by punching the appropriate spaces for the constituent traits of the group. Beside each punch hole, the weighted score for that trait is written. The master card is placed over the patient's card, and both are then placed on a background of a contrasting colour, say red. Those traits in the group for which the patient is rated positive show red, while those for which he is rated negative show buff. The weighted scores for those showing red can then be added together.

b). The process of rating for the 246 variables represents relatively little effort for the clinician, who has to acquire most of the relevant information in getting to know his patient.

c). The data amassed by the method should be used mainly
to establish broad perspectives within which detailed studies could be dovetailed at a later stage. In other words this method is most appropriate in a relatively early phase in the technique of arriving at the truth by successive approximations.

d). The technique described avoids some of the methodological errors which have crept into other work (eg Eysenck, 1944; 1950 and 1952: Wittman 1953), dealing with this early phase of establishing perspectives.

e). By its relative ease and rapidity, it provides a very practical solution to the problem posed by the fact that psychiatry is subject to serious pressure to base its practice on an inadequate theoretical groundwork. The pressure on an individual psychiatrist to "do something" about the human problems brought to him is strong, so that he cannot altogether be blamed for pinning his faith to a plausible theory which sanctions the kind of action demanded of him. So long as the formulation of a sound theoretical framework is fraught with heavy labour, this state of affairs must continue. The method described in this thesis, however, enables the necessary data for providing such a framework to be amassed relatively easily. Use of the method therefore holds out a promise of the easing of this particular pressure.

2). By providing bricks for the building of type diagnoses, this method provides a means for clarifying psychiatric concepts in the sphere of typology and diagnosis.

3). The technique evolved in this thesis has obvious and immediate application to the clinical problem of preparing
matched series of cases, to provide controls in studies relating to prognosis, or the effectiveness of treatment methods. For these purposes additional variables might have to be added, relating to such elements as rapidity of onset or the severity of external stresses.

4). Perhaps the most important feature of the method described lies in the fact that it yields data which can be analysed factorially by any of the techniques described by Cattell (1946 and 1952), or, for that matter, by the techniques advocated by other authorities.

Taking the methods described by Cattell in relation to his covariation chart (1946 and 1952):-

a). A Technique studies would be fruitful in establishing perspectives. They would provide matter of great interest for comparison with other clinical factor-analytic studies (e.g. Eysenck 1944 and 1952) and with factor-analytic studies of normal populations (e.g. Cattell 1946 and Baehr 1951).

b). O Technique should enable important contributions to be made to the problems of type diagnosis already discussed.

c). P Technique studies, by focussing attention on intra-individual factors, should enable progress to be made in the study of psycho-dynamics, in a manner subject to statistical scrutiny.

d). O Technique studies should be fruitful in relation to the assessment of progress under treatment, and enquiries into the process of the restoration of "mental health". Here, in fact, is the possibility of making a start on the process of producing "longitudinal"
studies which have statistical validity.

e). S Technique has clear applications in social psychiatry, dealing with such problems as the role of social and intra-familial attitudes in precipitating mental disorder.

f). T Technique is the least likely to have practical application, but a use could conceivably be found for it in mapping large scale changes in the mentally disordered population. That such large scale changes occur is known to all experienced clinicians. These may result in part from the application of therapeutic methods, or from social change. For example, syphilitic and alcoholic forms of disorder are now relatively rare, but schizophrenia appears more prevalent. The "epidemiology" of mental disorder is at present largely guesswork, but, in principle, T Technique could be used to make knowledge more precise.

5). The technique used in this thesis can be used to strengthen the relationship between psychology and clinical psychiatry, to the benefit of both.

6). Being simple and inexpensive, it can be applied where the patients are, in large mental hospitals, without incurring the difficulties inherent in setting up and staffing a complex research department.
6). CLINICAL APPLICATIONS OF THE METHOD EVOLVED.

I do not claim that this work has any immediate contribution to make to the day to day work of a practicing psychiatrist. It deals rather with the clarification of the theoretical basis of psychiatry, than with matters having a direct bearing on clinical practice. Its first application should be to further research, which, if pursued with sufficient vigour, should in time yield data of clinical importance, which may affect clinical practice in ways which can hardly be foreseen. The work, in my opinion, is a sound step in the right direction, towards greater precision of psychiatric observation and thinking, but it cannot achieve a great deal unless followed up. I do submit, however, that it avoids some of the methodological errors which have caused this approach to be neglected by clinicians, and in part it has done so by limiting its objectives, and not attempting too much.

I have also found that the results achieved stimulate thought on topics of immediate clinical interest. This is mainly far too speculative for inclusion here. For example, the fact that differences clearly appeared between the normal and the disordered populations caused me to question the propriety of current psychiatric practice (in some quarters) of describing normal people in terms of trait-groups characteristic of the disordered. It would be unfitting to discuss such speculations. I will only say that this work seems to display one proper feature of a scientific study - it poses more questions than it answers.
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SUMMARY.

1. A brief historical survey is given of the application of factor analysis and allied statistical methods to the problems of psychiatry.

2. The sense in which the word "Trait" is used is set out and the reasons given for adopting the method of rating as the most appropriate for this study. Reasons are also given for using Cattell's "Comprehensive Trait List" as the starting point for the work.

3. The operational definition of each trait in terms of behaviour is described, with the collaboration of linguistic experts. The difficulties experienced are discussed, and a list of the operational definitions set out in detail. An alphabetical list of the traits used is given.

4. The method of choosing the sample population of 200 mentally disordered persons to be rated, is described. The precautions taken to ensure that the sample was, as far as possible, a proper one, are set out. The method of overcoming the difficulty in deciding how many patients to include from each clinical category, is described.

5. The rating of 15 patients and 4 colleagues, in collaboration with a psychiatrist and a psychologist is described. The correlation between the results is shown to vary from plus .83 to plus .87.

6. The rating of the sample of 200 patients is described. A detailed example of the method of rating as applied to one patient is given.

7. The method of computing the results is set out in detail. The technique of counting and calculating with the help of stencil sheets, a Powers-Samas accounting
machine, and the use of "Thurstone's Diagrams" is set out in detail. A method of eliminating the detailed computation of all correlation coefficients below the chosen level of significance is described. The method of deriving Groups of traits from the data yielded, is described, and a list of the 35 groups obtained is set out.

8. The method adopted for scoring the 35 groups on a 5 point scale, from the data yielded by rating on the full list of 246 traits, is described. Each trait within a group is given a weighting proportional to its first factor loading within the group.

9. A qualitative comparison of the results obtained from a disordered population of 200 is made with the results obtained by Cattell from a population of 208 normal men.

10. The results obtained are discussed in relation to the aims of the study; to make progress in describing mental disorder in terms of behaviour defect; to develop the technique of rating in relation to psychiatry; to develop the possibilities of a comprehensive trait list; to make use of traits operationally defined in terms of behaviour, and to compress legitimately the data obtained by rating on a comprehensive trait list, to a degree which allows factor analytic methods to be used.

Discussion follows of the place of this study in relation to scientific method, and in relation to the views held by different authorities on the subject of factorial analysis.


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APPENDIX TO THESIS FOR THE DEGREE OF Ph.D.
by A. B. MONRO, M.D., D.P.M.

COMPRIING TABLE OF INTERCORRELATIONS BETWEEN THE 246 VARIABLES USED IN THE THESIS.

TITLE OF THESIS.
A STUDY OF THE CORRELATION CLUSTERS OF THE PERSONALITY TRAIT RATINGS OBTAINED WITH A SAMPLE POPULATION OF 200 MENTALLY DISORDERED PATIENTS.