"The Clinical Significance of an excess
of Indican in the urine"

being a Thesis for the degree of M.D
at Edinburgh University
by

W. Pearl-Thomas M.B. em.

1898.
"The Clinical Significance of an Excess of Indiacin in the Urine"

During the past six years in general practice I have had occasion to examine carefully urine of both right and left kidneys, and in nearly all cases I have discovered a marked excess of the substance called Indiacin, and as most of the specimens in which such an excess was found were from patients suffering from diseases of the alimentary canal, I concluded that there must be some connection between the two, and on searching various authorities I found that their views generally agree with my researches. The authorities I have examined are, Sander, Bumtor, Villiers, Fawcett, Cheyne, Cleckers, Morton, Wilkins, Hoppe-Soering, Dace, Latack, Saffro, Britton, and Shelford, Pennick and Pearce Gould. H. H. F. Jones passes the subject of Indiacin in the urine, in his paper on "The Detection of Indiacin," not because of medical clinical importance, but with this statement leaves us quite agree, as seeing that it has been already drawn to it in several cases, as we shall show in the cases below.
striatia fasciculi, became able, excepting in some cases of Typhoid fever to prove or disprove the presence of an ileocelecal obstruction or ileal retention, and in all probability where a larger number of facts have been obtained with reference to the causes of diarrhea in the case, its value as a symptom will be more generally utilised.

The presence of succinic acid was first pointed out by Schröder of Kiel, who discovered it as a normal constituent, and supposed that this product was characteristic with the succinic succinic the vegetable kingdom, but this has since been disproved, although they differ in only a slight degree, Baermann being the first to prove that urinary succinic is not a glucoside as is the succinic of plants, but an ethereal compound of succinic acid with succinyl.

The substance and its production in the urine.

Succinic acid is formed in the intestines by the decomposition of albumin under the influence of bacteria. It is absorbed. It is excreted in the tissues to decay, which combines with potassium succinate, forming potassium succinate, or potassium succinate.
D. C. A. Hooper of New York in a valuable paper in
the British Medical Journal, Dec. 26, 1897, seems to
separate India from the ethereal atmosphere,
for in the deduction from facts drawn by ignorance
he states 1. "The introduction of large numbers of
the common colon bacillus into the intestine
markedly increases the incidence of the disease,
with the ethereal sulphate. 3. The introduction
of large numbers of the lactic acid bacillus
into the intestine may markedly reduce the
incidence of the disease together with the ethereal
sulphate," but in the terminology of Sheridan
Lee & Johnson Physiology's and other English authors
incidence is ace ethereal sulphate produced, not
possibly by a microbe of distinct origin
from those which produce other ethereal sulphates.
"They Lee states; "a part of this second form
in the alimentary canal leaves the body,
"as a parasitic spore of lactic acid bacillus." The presence of such a drug appears
to be due to the typical ferment of the disease as
so-called flatulence, but rather to a
parasite, an agent which causes to take place
under the influence of bacteria, for if laboratory
digestion be conducted with strict asepsis
precautions, with the presence of salicylic acid, no pre
treatment occurs as described above. Similarly, clay and the products of digestion have no
characteristic accretion of feces. This, of course might
be seen, though very unlikely, to the destruction
action on the foreign which produces the body
in its subject clay. It is well known that bacteria,
are present in the alimentary canal from
ead to end, in great quantities in the expanse
intestinal but increasing in the eaters towards
the rectum. There would easily account for the
presence of the end, and the saliva in the
greater accretion of a cause where the paracetic
digitation is proceeding rapidly; and where
from each cause there is some secretion in
the accretion of absorption from, or the
outward movement of the intestinal contents
or changes in the increase of secretion of the cause.
The effect of the interference becoome, which
in certain cases in excess in the receive has
a ready explanation. Jaffé has proved [Hipp.
Darwin's Handbook] that by feeding eggs on mud, obtained
by the paracetic digitation of protozoa, or by injecting the
digitation water into the blood, the skin a large excess
of this cause can be made to appear in the urine.
Again it has been proved that by feeding dogs on an excess of protein food, in which it is supposed that much Judd is found during the processes of digestion in the alimentary canal, a large quantity of Judd is sometimes excreted in their urine. Judd being the final & peculiar product of indigo in can be easily inactivated, that after its absorption from the intestine, and during its transportation in the blood, and its passing out by the urine, it can become oxidized into the product Indican. Judd, as far as I can learn, has ever been found in the blood, but it has been easily detected in the fecal epithelium, from which it has been concluded that the final oxidation process takes place, during the very act of excretion, as is well known occurs with other excretion products which are easily rid of by the kidneys. Judd also occurs and may be separated from some collections of pus.

Jaffe has found Indican in excess in the urine clinically, in cases of intestinal obstruction. I have also done this, see Case No. 6. He has done the same experimentally, by obstructing the intestine of dogs especially the cecum intestine,
he obtained diarrhea in excess in heifers, thus proving that any obstruction to the normal flow of the contents of the bowel, leads to an increase of the acidity forming sulphuric acid in the blood; but it appears from both clinical facts and experimental observations that obstruction in the large bowel does not produce the same excess of acidity in the urine. This might be either due to further changes having take place in the contents of the bowel in their onward progress along the colon, so that no longer acid salt is formed, or else, from the preceding construction of the large bowel, absorption of salt is rendered difficult; for if the changes be rapidly or partially active there is no reason why plenty of salt should not be formed, as the large intestine contains nearly no organisation of secretion hence any other part of the canal. But it has been shown above that the dextrose formed during the digestion of protein food, and as this is mostly completed, and the products absorbed, before arriving at the great intestine, which only absorbs the water constituents of the contents, rendering the feces drier, a ready explanation is obtained.

Obstruction of the bowel does not appear to be the only cause...
of Indian in excess in the urine, as Dr. Lorimer in his "Medicine," p. 23, refers it to states of insurrection, as cancer of the stomach, gastric ulcer, and pleurisy with diarhoea. Hibbins, also quoting the same authority, insists upon its appearance in wasting affections of the cancer as well as its presence in cases of diarrhoea and constipation, though also deems its presence in the latter cases, in this, to differ with time as ulcer of the rectum cases N° 18, 19. I should, mention that Dr. Forstall of St. Thomas's Hospital has worked at the same subject and come to the same conclusion as the above-mentioned observer.

Tests for Indian in the urine.

When concentrated acids or strong oxidising agents are added to the urine the Indian is decomposed and the indigo octane free. 1. The presence of Indian can be demonstrated by adding hydrochloric acid to a large quantity of urine placed in a long glass vessel, and then allowing the mixture to stand for twelve-four hours, when a darkish blue gum of Indian appears on the surface. The objections to this method from a practical or point of view are obvious. 2. A second method of determining its presence is by adding hydrochloric acid and chloride of barytes to the urine, and then shaking the mixture with chloroform,
which becomes bluish from the presence of indicain, and on being examined with the spectroscope shows the characteristic bands. There are serious objections to this method. 3. A third method simply requires the urine to be warmed and then nitric acid, yellow with nitrous, to be added, when, if the indicain be present in any quantity, above the normal a dark brown colouration appears, which goes quite black on further addition of the acid. 4. The method that I have adopted, as being the most convenient is as follows:— Add to 37 of urine an equal quantity of strong hydrochloric acid and afterwards a few drops of lig. Calci chlorica, or lig. Soda chlor. Indigo blue colour shows the presence of indicain. Brown red along with black accompanied and purple a mixture of the two. In this test it is possible to roughly estimate the quantity of indicain by the depth of the colour and the quantity of formation of chlorinated urine required to decolorize it. In some cases and in some instances where the hydrochloric acid is very strong I have found the blue colour without the addition of the chlorinated urine and especially if I have previously heated the urine. 5. D. Bodenstedt's method recommends the following test: 0.1 part of hydrochloric acid in a test tube a minute granule of Chlorate of Potash, then add 37 of urine and see quickly,
by shaking the tube, the blue colour quickly developed.
This is perfectly in accordance with your method. Although previously
he had used the test No 49, I have now altered it before your above S. No 43.

Cases

   and tenderness in left iliac region. A small ulcer in the left
   iliac region, with a slight Kernohan of fluctuation here,
   no evidences thereof. Temperature rose each night to 100°-
   101° F. recurring fever. Patient got worse. At first I was
   inclined to think there was some abscess connected with
   appendix or kidney. Urine gave no indication reaction with
   Hydrochloric acid and Chlorinated lime, the reaction
   was not marked, washing out the bowl and
   treated with gracies ointment of saline acid acetate
   materially lessen the reaction. The patient became
   worse and more diarrhoea and acidity increased.
   Patient died after lying seven weeks without
   treatment. In the fortunate event to persuade the husband to
   allow use to operate on patient, we give him
   permission to operate. He operated and
   F. of the very few cases in which I never got a postmortem
   examination? I found ulcerations along the intestine,
   probably tubercular, not excised gain sufficiently
   other organ.

Epiplastic pain, slight vomiting sometimes tinged with blood, losing flesh rapidly, never vomit after food, and especially at night. Stomach dilated, no tumour felt. The urine showed a marked excess of Indicain, was washed out every other day, balanced every other night, and Hydrochloric Acid given before food daily. The patient improved, and in 9 days declared himself well. The appetite returned, and the vomiting ceased.

Robert 7. Oct. 54. Acute pain in the epigastrium. Had been eating largely of cucumbers and onions at supper time. Vomiting but not stomacemic, could pass no feces or flatus, abdomen very distended. Indicain in excess in the urine, washed out, and on cessation of diet, symptoms rapidly became less and then vanished, and the Indicain at the same time.

Mary 7. Oct. 54. Had suffered from dyspepsia for many years, could not eat how long, teeth furring bad. Sometimes the pain was very severe, great flatulence, excess of Indicain in the urine but not well marked; ordinary treatment with Hydrochloric Acid, occasional washing out, and small doses of follow, diet regulated, patient improved, and ultimately left the district.

Henry 6. Oct. 59 A heavy smoker, said to have fallen in a fit
and toil his hand against a hook. Having been ill ultimately, two surgeons had to be consulted. Symptoms of blood poisoning. No previous history of fever, and as far as I am able to judge, no evidence of any, though I have seen the urine excellent daily going to and from his house. Urine contained much Indican at the times of his drinking fouts. Washed out and treated with Calomel, the Indican disappeared.

6. James D. terra. Acute symptoms of intestinal obstruction, no apparent hernia. Patient in two days passed some stool and a small astrot. Patient rapidly got worse, no operation was allowed although recommended by myself and another practitioner. Indican found in large quantities. Patient died on fourth day. No postmortem, but I judge from the symptoms there must have been some twisting of the bowel with a perforating ulcer, as there was marked distention of the abdomen, which increased on the first washing out.

7. Hannah H. 41. Had suffered many years from rheumatism. Deep, often up to 103°F, secure hard stools and much vomiting and tenderness, occasionally she told me that she had passed blood with her menses, but I never saw any. Indican increased in the urine at times with albumen, Diet regulated, washed out regularly.
balance, adenicitis, and hydrothoracic acid ascites.

The abdominal symptoms gradually disappeared

and with them the ascites.

8. Herbert L. 65. Had been a heavy drinker but for late
years a teetotaller. History of rheumatism, marked
edema of legs, and severe attacks of dyspnea.

Initial purification, urine showed much albumin
and marked hemaemia. Post: Digitalis reduced
the edema. Digitalis and Strophanthus adenoitised.

Blood washed out, but no improvement made. The
man went into hospital at Dehradun and died.

9. A case communicated to me by Dr. Cuthbert of Leeds.

A man was adjudged in a state of collapse, and died
in a few hours, concealed two days before adjudgement.

No albumin in the urine. Presence was traced to
through an aperture in the omentum.

10. Mary P. 60. Found unconcious in her bedroom.

Urine contained much albumin and Jucicatonic.

Tarry washed out and consciousness restored.

11. Robert G. 89. I was called to see this man in the

absence of his regular medical attendant. Chronic
endocarditis, with cyanosis, I drew off an arm by
means of a catheter, found albumen, but no Indian, on washing out was ordered. I should have mentioned that the man was convalescing at the time of my visit. I heard afterwards that the man recovered for a little but shortly died.


13. Thomas Reed 56. Very gentle, usually constipated. Large quantity of water and much Indian, no apparent change nor as many of the Yorkshire men people are washed out regularly. A mixture of Bromate of Soda and 15 Eebnici quim with Magnesia as an aperient. Indian disappeared and man improved.

14. Elizabeth 40 37. Sorely, no Indian in urine, and only a small amount of water. Passes much water of a medium specific gravity, but does not take much liquid nourishment, cat

15. William 46 61. Had suffered for many years from gout, sometimes diarrhea, sometimes constipated diarrhea, freely and ate much meat. Though I repeatedly examined this man's urine I never once found any albumen. He always responded to Eebnici and Magnesia, his symptoms disappearing, but he soon fell into his old habits and was attacked again. I have had many cases of a similar
natives expecting to find Indian in all of them but this about.

16. J. S. at 53. Case communicated. Ill on July 20 1875 a
  few minutes, got not through.

July 21. An hour after dinner cramps, beginning in legs
  and extending to legs and abdomen, followed by
diarrhea and vomiting.

July 22. Recurrence of cramps in the evening with
  diarrhea.

July 23. Next to work but was taken home unconscious
  at 3:30 p.m. Pulse 60, protrusion, vomiting,
diarrhea, thirst, pain in abdomen, cramps
  in legs. Stomach and bowels nitro-sulphate of
  silver, cocaine and coding contained fluid
  linings. No albumen, many chlorides, much
  Indian. Patient acted 5 times before 9 p.m.
  "treatment. Salt q.s. iv-v. milk and soda.
  water, coding to be washed out if diarrhea con-
  tinues.

July 24. 01. Picric 3% at 10 a.m. coding washed over
  1 p.m. Brandy od soda given. On Tuesday
  had 4 motions in addition to the washing
  out.

July 25. Salt q.s. every 4 hours. Peptonized milk
  60 rations.
July 26. Three motions.

July 27. Two motions, then some few until Aug.

Aug. 5. Up. Very little diuresis in urine, neither opium nor astringent was given. The treatment consisted in clearing away the source of the diuresis, and giving saline, diuretics. Although there was very marked diuretic coloration of the urine when tried in this case, it was certainly better than is frequently observed without salicin Juniperus. It was however enough to show that the intestinal contents were toxic, and must be cleared away. The diarrhoea was encouraged, or caesarea, or replaced by irrigation, and checked by opium etc.

14th. Mr. B. at 43. Diarrhoea had existed for 3 weeks. The stools were watery, and very offensive, sometime containing blood. The anal region rather tender. Tongue dry but not prostrated. Pulse quick and occasional, intermittent, tongue dry and rather brown. History of anxiety of and diuresis with much water taken instead of solid food. Arthritis, epigastry, 1018, no albumen, great excess of diuresis. Integument of face every 4 hours, powdering out. Peptonized milk and brandy as required. Rapid recovery followed.
18. Thomas H 32. Patient had had scarlet fever a fortnight previously, was up in a few days when he took some mutton broth, which always disagreed with him, next day some fish. Vomiting and diarrhoea came on. Abdomen distended, succession of large, apparently liquid stools.

Test urine: Urine 1020. Very deaf in left ear, no albumen, very marked excess of urojacon. Saline, calomel, quick, diet, color washed out. Rapid recovery.


Respirations 24. Face flushed, squirrel, tongue furred and dry, brownish in colour, deeply fissured. Some doubtful papular spots on abdomen. Patient lived on a barge, playing on a very foul river. Had had depression and nausea for 4 years. Complained of inability of passing in liquids and swellings formed showed marked excess of urojacon. Had been very constipated, acid on date of visit had had no motion for 6 days. An enema was given which was repeated next day. The temperature became normal and returned so. On the third day all symptoms and urojacon had disappeared. On the fifth day urojacon reappeared, another enema was given. On the seventh day she was quite well.
build never very strong, diuricidum, and edema of legs
occasional edema in hands and wrists, voice
has had much anxiety and privations during the
past six months. Diagnosed Sep 2, 1895. Treatment
Fluoride with fish and chicken, no special drug
or treatment.

Sep. 12. Notice oedema of wrists and hands, conduct
change will not answer question. Using 10 gr.
no albumen, very large quantity of salt.

Sep. 19. No improvement. Temperature 97°F. Pulse 96
Calorie 91 1/2. Salt 97 every 4 hours.

Sep. 20. Much better. Still marked edema.

Sep. 23. No edema.

Sep. 25. Slight return of edema. Sep 27. 10 gr.

Sep. 28. Well.

3rd 1897, page 1, mentioned by Dr. C. C. Leighe
of a man aged 31 suffering from "Stomach wth
Indicatemia" cured by calomel and irrigation.

22. Cases of Hyperesthesia with Indicationia are mentioned
in British Medical Journal by Anderson, May
16, 1896, p. 1204. They were cured by naphthalin.

23. Case of great interest communicated by Dr. Clearton, West.
Effect of ice and salt. John H. B. at 46, a waiter, who
for some years had lived chiefly on alcoholic fluids. He was admitted Feb 1 1873 to the South Infirmary for gout, and had been under the care of Dr. C. H. W. E. Miller and Dr. P. A. G. R. A. W. H. Miller. He was an old patient, and was treated with milk, and to the proportion that was of exercise to his digestive functions had led to their great impairment, nevertheless where he was other patients eating, he was urged to join in their meals.

Feb 10th A beginning was made with tea and dry toast

- 14th more milk was added.
- 17th milk and roast apples.
- 18th cocoa added.
- 19th boiled fish.
- 21st boiled chicken.
- 25th rice and apples only.
- 26th milk and rice only.

Mar: 1st tea and milk, orange.

- 4th free from pain, not much urate in urine, he begged again, as he had been daily for uncertain strength. Allowed to eat for himself; he selected a basin of broth, and took about 3/4 of a pint. It was thought possible that the broth might restore the gout in the knee and toe, but to everybody's amazement the following morning nearly every examined joint in his body
was painful and troublesome. Indican was found to excess in the urine with little urine.
Kreatinine. Convinced by this experiment he lived on mutton only for 4 days, and
took no animal food of any kind during his stay in the hospital. It was cured of
his gout and went to the Convalescent House.

Much indica found. Small doses of calomel were given and the bowels were washed out. He recovered
in four days.

24a. Thomas C. 58. Slightly gouty, suddenly seized with severe pain in lumbar sacral joints, so much
so that he could not bear the slightest movement of weight. Laying in bed for 3 days, on the fourth day
the bowels acted freely after a pain of calomel.
Indican had been found in the urine on the third
day. Five minutes after the perforation he got up
dressed and perceived his work, though with some occasional pain.

25. Mary H. 415. Suffering from acute diarrhoea.
Temperature 103°F. Much indican in urine, an enema
administered before treatment with salicylates
commenced, and this very considerably relieved.
the pain. Patient recovered after continued use of salicylates.

26. Sudden onset. A collier working in a damp pit
had had many attacks of pleurisy. He declared
found in urine on first examination, on the 10th
day of his illness and when he was recovering at
freely of salicylate. I was sent for in the
night and found him in intense pain. Indican
urine marked excess. I washed out the bowel
which relieved his acute and immediate of his pain.
He recovered under salicylate and properly regulated
diet.

27. Acute Heart. Suffering from acute pericarditis
with effusion. Heart's action much decreased,
and pulse irregular and intermitten with intense
pain over the pericardium. Was at first attended
by my former nurses who had quicker, fairly
large doses of strychnine 20 minims so that she had
had no motion for 5 or 6 days. I found an excess
of indignant, and gave a large dose. Large
masses of feces came away, patient was much
relieved. The pericardial area was painted
with 1% phenol and salicylic acid with
cardiac tonics administered. The patient well for
two or three days, when an consequence of great
pain I was compelled to administer potentials, 
giving her 3 grains every 2 hours. The pulse 
became intermittent and irregular, Indian 
was again found, washing out performed and 
the patient received. By this time the fluid 
had nearly disappeared and the patient 
slowly recovered without any bad symptom.

28. Henry S. 61/2. Suffering from double pneumonia with 
diarrhoea. Keep: receiving from 102° to 104° F. elevated 
and a largecube given on indiaran was-paracetin in 
excess. This was followed by an immediate drop in 
the temperature. Patient took large quantities of 
beef tea which invariably caused indiaran and 
diarrhoea, but these were removed on washing him 
out. At last I persuaded his mother to confine 
his diet to milk, bread, and egg, which diet 
caused no disturbance of bowels, and he made a 
good recovery.

20. Malcolm C. 71/2. Had been ailing 3 days, tongue 
dried and sunken, T. 102.4 F. Pulse 110. 
Gum examined, no indiaran. This case proved 
one of typhoid fever and the patient ultimately 
died. Although many examinations of the 
gum were made, indiaran was not discovered. 
Patient had uncle diarthea.
30. Four daughters of Henry C. All with typhoid fever, and each patient having many symptoms. Indicene was never found.
32. Anne B. Oct 34. Typhoid with constipation, no Indicene found.
33. Frances B. Oct 31. Mother of above, also with typhoid and constipation, no Indicene found.
34. James S. Oct 27. Typhoid with diarrhoea, Indicene found in small quantity. Bowel carefully washed out, and ½ grain arsene of Calomel given. Lowering of temperature followed and relief to patient.
35. Henry Y. Oct 41. Typhoid, diarrhoea, and Indicene. Patient was recovering when he had a relapse. Indicene was then found, although one week's diet was washed out and Calomel given. Patient relieved. Poisoned by too many times. This was done as left the card exchange of a tenth remedy. Patient actually recovered.
36. Mary H. Oct 39. Had been ailing many months. Strong phthisic face, history, emaciation, of much diarrhoea, passing bloody stools, sometimes pus and blood. Found Indicene
Racine, in this discharge, was being cut the bowel was performed on many occasions, always relieving the patient, but the patient died in the meantime.

34. 

Maleson. Progressed, much indicative for a few patients washed out as usual, which always relieved the distended abdomen. He ultimately died.


39. James. Oct 16. Oct 14. 142. Scarlet fever. Bowels normal as in case 38, abdomen quiet and washing not performed, indicated being found. Marked improvement in both cases, as in many others that I have attended, indeed it is almost always my routine treatment in cases of Scarlet Fever, when I have nearly always found Indica in excess.

40. Francis. Oct 38. Confluent, appeared from nausea, had an excess of Indica in the urine, though no nausea diarrea. Improved under the usual treatment, with calomel and washing out in addition.

from Eczema, always improved at Harrogate, but got worse as soon as he left. Indicacria was found in his urine, but no to a great excess. I taught him to wash himself out, put him on a proper diet and arranged his treatment. He made a grand recovery.

42. Case of Bronchopheumonia via gitæ. Temperatures up to 106 °F very restless, had been taking toddy, meat juices. I heard mention that she was the daughter of a fellow practitioner, who volunteered to take charge of the case, he thought it was "cystic from Indicacria was very marked, I have rarely seen the reaction more perfect. Deeper Palmar and repeated washing out of the elbow. The Indicacria disappeared, and there was immediate improvement. She made a good recovery under strict milk diet.

43. Pneumonia stupor Delirium Indicacria.
A case communicated.

William B. First seen Feb. 1896. was in a state of stupor. Occasionally he became irritable, thought, decisions, insisted on getting out of bed, walking and struggling his without success, vigor when persisted. The original movements
recalled from moral delirium, full bladder, etc., the others from efforts made to restrain the patient who was unable to explain. Indica being found abundantly in the urine the colon was at once forcibly washed out. In a few hours he was quite sensible, and remained so the next day.

Feb. 9th. Ate some biscuits.

10th. Indica in urine and with the delirium returned and was very worse. Must relieve the station and a quinine receeved.

11th. Indicinoma, 1 drachme of ipecacuanha, saline grain by the mouth, 1/2 Balsam 9 p.r. by the receipt.

12th. Appetite and nausea relieved.

 hele. The delirium disappeared at once. A patch of pneumoconia was discovered on the left base. 

44.


June 25th. Patient still dull, recalcitiant and apathetic with Indican, washed out, 1/2 drach. t. 1 d.
July 3rd. No indication until patient became quite cheerful and communicative.

The exact condition of the pleurisy was not clear, but neither pleuritic nor tubercular pleurisy is usually associated with mental or cerebral disturbances as this patient displayed, nor is indicacencia, a common associate of pleurisy, but no patient with marked indicacencia is markedly amenable, hence the listless condition of this patient may be partly attributed to the indicacencia or the tocrice which accompanied it.

14th. Case communicated by Mr. Macnab, Leed. Engr.

A boy aged 14 on Oct 1st 1876 ate a piece of uncooked turnip as large as half an orange, directly after his ordinary dinner.

Oct 2nd. Vomited after his food and dinner.

Oct 3rd. Vomiting continued.

Oct 4th. Admitted to hospital, large hexagonal cells and pugs like marbles found in mit. Surgery indicacencia, a quantity of lig. cord. Chloroform equal to the volume of urine and acid to seltzer, not causing complete decoloration.
Operation. A hernia of the centroreceintum
through an aperture in the mesentery was found.
The ileum perfectly empty, dejecum evidently
contained fluid. The hernia was released;
a mesentary cyst containing necrotic baedins
& B. colli, was also peroned, the child
died in a few hours, The intestines above
the obstruction also contained fluid.

46. Case is recorded by Mr. Pearce Gould, in the
British Medical Journal Dec. 18, 1897 p. 1796,
of death after successful operation for ob-
struction due to intestinal torsion.

47. Case is recorded by Mr. E. C.ock, of acute
obstruction from peritonitis in which the
material during the operation was supposed
to be actually dead, but the intestine having
been opened, and a large quantity of feces
drawn away rapidly recovery took place.
Clinical Society April 27, 1894.

At the same meeting Dr. Lauder Brunton &
Mr. W. J. Hambley, read a case to the same
barter.

48. Case is mentioned by Mr. Treves in British
Medical Journal March 10, 1894 p. 557, in which
he wrote forcibly upon the "treatment of acute
obstruction by the evacuation of the bowels before "all things" and he attributes the introduction of the practice to Beij Drava.

49. "...t.5. Chronic Bright's disease. Heart very bad, affected also, passed much albumen, up to 15 parts per 1000 by Estach's albuminometer. Though I examined his urine many times, I only found more than a trace of albumen or one occasion, and that was after a heavy meal.


51. Mary H. 64 yrs. Chronic Bright's disease and failing heart. Albumen 10 parts per 1000 and albumin found.

52. Francis W. 80 yrs. Chronic Bright's disease. Albuminuria so marked, albumen 10 parts per 1000, no albumin found.

It will be seen that cases 1, 2, 3, 4, 5, 6, 7 suffered from acute muscular lesion.

Case 6 was not a true epilepsy, but a patient who had been drinking hard, and the albumin was only temporary. This might be due to vascular changes, never in the same way.
way as glycerinia occurs for a short time, the vascular supply of the alimentary canal being in some way deranged, and the ulceration forming substance being thus allowed to be absorbed.

Case No. 1 only occurred from dyspeptic symptoms, but there were seven, of our four years duration and accompanied by much flatulence. No doubt there was a partial putrefactive change taking place along the alimentary canal, and as I have explained this gives rise to the formation of much subtil, and thus the excess of diarrhea which appeared in the urine is accounted for.

Cases No. 2, 6, had undoubted ulceration of the duodenum, thus affording a good surface for the absorption of any subtil present, and case 6 had an obstruction as well as an ulceration, accounting for the marked excess of subtil.

In case 3, acute obstruction existed without as far as I could discover any ulceration, and this obstruction alone, without any attendant ulceration would account for the excess of
Indican in the urine, because as the obstruction
began away the excess of indican disappeared,
thus showing strongly that in this case the ob-
struction was the cause of the excess of indican.
This also applies to cases 45 and 47.
Unless case 47 be considered one of dependency,
and she certainly had some intestinal lesion
to account for the blood and albumin in the
stools which disappeared, as did the indican,
I have had no cases of dependency to examine
unless case 47 be taken also as one of
dependency.
I have observed, with respect to indican that
there is no excess to the ordinary methods of
examination in cases of typhoid fever.
I have examined many writers from
a few patients and failed in every case
to detect an excess of indican excepting
in case 35 when it was found during a
relapse. I have not found it in cases of
"typhoid" with constipation, see cases 32,
33, which are quoted as examples, though
usually never have been examined.
In case 34 a trace of indican was found
but not in excess.
Dr. Macbride states that in a case of his
of "typhoid with constipation" Ecudian was
present in great excess. Dr. Clum has
told me, on the other hand, that in his cases
of "typhoid fever at the Leeds Infirmary,
Eudician is seldom found in excess, even when
constipation is present. He has forced large
amounts of it and treated it with success, by
daily washing out the colon and administering
large doses of calomel. With Dr. A. E. Pearson of the Leeds
City Hospital, I examined stool specimens
taken at random from typhoid patients
and in no case was Eudician found.

This absence may be accounted for in one of
two ways, either that the diarrhoea carried off
the contents of the intestines before any Eudol
formed, especially as in no case owing to
the diet of typhoids would be present, or that
the condition of the intestines in typhoid
is such that no Eudol is formed, digestion
probably not going far enough, or accurate of
this, although, on the contrary it is well known
that purgative changes are marked in
Eudol stools.

Cases 36 and 37 were both enteric fever, and
here again was an absorbing surface, and
neither diacity was found.

Other statements that diacity is not found in cases
of constipation is contradicted in cases 18 and 19, the
larger cases in case 13 may have accounted for
the excess of diacity.

Case 10 shows that the presence or absence of diacity
in the urine of convalescent patients is of importance.


I have rarely found diacity in albuminous
urines. Cases 49 to 52 are quite exceptions,
though there was some in case 10.

It is not usually found in urines of low specific
gravity. It is often absent in young cases, at
the same time cases 12, 13, 14, 15, 24 a, b, c,
that its presence is of benefit to the patient.

Since urine acid and diacity are both manu-
factured by the renal epithelium, their
absence in some cases in the urine suggests
a functional parenchis of the cells.

In acute cases where diacity is a
complication cases 16, 18, 20, 24, 26, 27, 28, 38, 39, 42, 43, 44, in acid specific
fetor, Quercetum, Ulexum, Bromelii,
The treatment is always arranged so as to
neutralize this symptom, and its peculiar
properties often to him the scale in favor of the
patient and against the disease.
In pulmonary fever especially, my first
step is to examine the urine for albumen, if
it is found, I give a dose of calomel. If it is
urgently needed to commence salicylic treat-
ment, I give one or two doses of salicylic
acid, of boracic acid, or boracic ointment, and
quinine or
pulophene, in addition to the salicylates, as long
as the albumen persists.
In the cases of oesophagus, I am convinced
that the removal of the indurated, eschar is
necessary to alleviate the distress; this is probably
the action of the starkeat treatment of the
hot strong sulfanum water, 21 to 36 3 being
prescribed daily.
Case No. 20, is of interest and having
marked toxic effects which disappeared
on removal of the indurated eschar in case
No. 21.
Case No. 22, partakes of a similar character.
Cases 23, 24 are of great interest meanwhile,
as they show the peculiar effects of injurious
dietary, when the patients are suffering from disorder digestion, and the alsever
instalments cases on the records of
Indian.

Any case collected in or not, but the
percept of my own experience, this dictum
regard, but the examination of since 85 to
90 million of patients on whom I have
operated for various reasons, hawkins
ming in the way of imparting any
guidance on this respect. I am of opinion
however that it has long been believed that
case, of intestinal disease treated by
operations may be lost by absorption of toxins
from the interior after the operation has
been successfully performed. Surgeons
are known naturally unwilling to add
to the length of time an operation performed,
as is very often the case, postpone patients,
but, if subsequent investigators should
prove that no patient is likely to recover
from operation for intestinal obstruction
if diabetes is present in great excess in
the urine, unless the source of this is
washed away or withdrawn through an opening in the gut. The additional procedure will not only be justifiable but will be imperative.

Inferences from the presence of indicanuria. That there is an excessive formation of products of putrefactive fermentation in the intestinal canal due to a deficiency of hydrochloric acid in the gastric juice, either absolute or relative to the quantity of food ingested, and hence unrestricted multiplication of the putrefactive micro-organisms, after entering the intestine, or that there is putrefactive decomposition in an access somewhere in the body.

Indicanuria may usually be regarded as evidence that there is a putrefying material in the intestine which must be removed, and that there are microorganisms in it which must be destroyed unchecked. It is possible of course that microorganisms are reinforced from without whenever the gastric juice fails. Cultures of bacteria may be swallowed with impunity, but only
The gaster pneumonic anemia, if it is acute, variable or acute and the bacilli then reach the intestinal mucous coats, shows results. It is also probable that this reinforcement of the intestinal microbes, signs at some peculiar or unique conditions than others.

**Toxic effects of Indol.**

Indol itself does not appear to be very injurious. It has been given freely to animals and has been subcutaneously injected, but though Indian was found in great excess in the urine, according to Jaffe, no symptoms of toxemia are observed. In some fermentations, however in which indol is produced, highly poisonous substances, alkaloids or alkaline are also produced; the filtrate of Kiiwi's broth culture of a variety of Bacillus coli was extremely fatal to guinea pigs. Some microbes as vibrius and perhaps also epithelium are inert and cannot elaborate their poison except when the products of pancreatic are present. British Medical Journal, Apr 21, 1894, p. 370. Indol-causing may therefore
be taken to indicate further, that there are
associated poisons actually circulating
in the tissues, and that the contents of the
faucal intestines, such as are a favourite
culture medium for some pathogenic
microorganisms. It may therefore be
confidently stated, that of the quantity
of Indican in the urine of any person be
at all considerable, he will be found to be
in some way acting, reeling in energy
or subject to some discomfort or pain.
Indicanuria is not commonly found
in all cases of intestinal disorder, as
an accidental result of no practical
value or importance, as it does not always
occur in all intestinal cases, especially
in cases of strangulation hernia, as is
pointed out by Chalmers. The presence and
the quantity of Indican depends upon
the nature rather than the quantity
of the intestinal contents. I do not
pretend that in all cases removal of
Indicanuria will be followed by recovery
from other disorders, frequently disposed
of the depressing cause and thus
contributes to the healthier nutrition of the leukocytes and tissues.

Indications may not be the chief feature in a case and even when it is the chief disease may recur, as in cases of typhoid, malaria, diencephalic fever, diabetes, etc., in many cases it is useless to expect the Indications of the purifying material can be removed from the cornea either by placing or by excision or by both combined, unless it is all cleared up to remove it.

**Treatment:**

When indications is found to be present, then if possible a course of simple perspiration from 1p to 2grains should be given and repeated as often as necessary, until the unification is completed.

Pepin and hydrochloric acid should be given with adequate food, and chlorine with specially food. The food taken should be made except for the utilization of fermentation, any food which is known to be di
faible by the patient may be taken
mixture etc. as I have stated above.
Salts and Soopheum may be given,
likely to keep down the effects of Bacillus
Coli. Aloe and Rheum may also be
part of necessary and aedicated.
The receive may be given under chloroform.
or other anaesthetic is necessary.
The free administration of tobacco
will indicate at once other intestinal
irritation is looked for and usually advise,
and may do harm.

Conclusion.

In writing this thesis have
attempted to show, from my own observation
and those of others, that the excess of tobacco
may at times be of great clinical
importance, and if these observations are
correct with regard to its unravelling
in dysphoria and its appearance in "liver
fever" or the belly, it may help, especially
in connection with other tests, on some occasions
to differentiate between obscure cases of
these diseases.
I cannot do better in conclusion than

quote the clinical investigations of Dr.
Charles E. Deitner of the Emeritus House
of Indicacemia area given by him in the American Journal of Medical Science
under the heading: "The Incidental Aspect
of Indicacemia."

1. The gastric juice possesses antiseptic
and gonicidal properties.

2. These properties are referable to the
presence of free hydrochloric acid.

3. A physiological amount of free hydro-
chloric acid will prevent any increase
degree of intestinal putrefaction.

4. The conjugates of the free amides of the degree of intestinal putrefaction.

5. The increased intestinal putrefaction
in cases of subsiding acidity of the gastric
juice is largely referable to an increased
formation of fauna.

6. The elicitation of Indicacemia in the
urine may be regarded as an index
of the amount of free hydrochloric acid
present.

7. A normal acidity of the gastric juice
is never associated with increased
indurinemia.

8. Cases of ulcer of the stomach apparently
form an exception to this rule, an increased
indurinemia being associated with hyper-
cholhydrin.

9. In other cases of hypocholhydrin, a second-
normal or normal amount of Indurin is
eliminated.

10. Simple constipation is not always, indeed
rarely accompanied by an elimination
of Indurin.

11. Diarrhea, referable to a catarhal condition
of the colon, often following a previously
existing esophagosis, as well as diseases
of the colon generally, is not associated with
an increased Indurinemia.

N.B. This is open to question.

12. In the differential diagnosis between
these acid esophagosis a small amount
of Indurin excels the former condition.

N.B. This is also open to question.

13. In cases of anaehilhydrin’s with much
lactic acid the Indurin is unnecessarily
increased.
14. No indican or but little indican with delayed Günsberg potassium sodide reaction, indicates the absence of free hydrochloric acid, with much lactic acid.

15. Much indican with a normal or active fasting Günsberg reaction is suggestive of ulcer.

16. In cases in which the use of the gastic tube is impractical or contra indicated, or in cases of mere superficial examination, the indican reaction will furnish a valuable index of the condition of the patient's digestive power.

19. By means of the indican reaction we are enabled to follow closely the results of treatment instituted in cases of gastric intesinal disease. The following are however necessary precautions:

1. That a reaction of decomposition precedes instead taking place anywhere in the body, as much as possible itself,

2. It is capable of producing an increased elimination of indican.
2. There does not exist a disease of the small intestine.

3. A normal mixed diet containing no excessive amounts of meat.

In this way