

controlling power was lowered by pregnancy; and the original stability was abnormal owing to antecedent rheumatism or chorea, or because it had never reached the normal standard of development. Of 40 cases of chorea in pregnancy, in 37 patients it occurred in the first pregnancy eighteen times. In 10 cases the first pregnancy was not attended with chorea, but chorea occurred in later pregnancies. In 6 cases it occurred in subsequent pregnancies. There was a previous history of chorea in 23 patients. There was a history of rheumatism without chorea in 5 patients. There was no such history in 9 patients. The apparent cause in these 9 cases was—shock in 2, husband out of work in 1, secondary syphilis in 1, and unexplained 5. The month of pregnancy in which the movements began was—4 in first, 3 in second, 4 in third, 9 in fourth, 7 in fifth, 6 in sixth, 2 in seventh, and 3 in last. There were 5 fatal cases, and 5 patients out of 37 were single women. The proportion of cases in which spontaneous abortion occurred was very little, if at all, higher than in ordinary pregnancy. In subsequent pregnancies there was not necessarily chorea.”

Some Visceral Lesions in Acute Insanity. By GEORGE R. WILSON, M.D., Physician Superintendent, Mavisbank; and D. CHALMERS WATSON, M.B., F.R.C.P.Edin.

IN the following record two cases are described which seem to make some contribution to the question of the relation between insanity and lesions of the viscera. Dr. Wilson is responsible for the clinical record and Dr. Chalmers Watson for the pathological section of the work and for the remarks.

Miss Sixteen, age on admission, 25; admitted December 6th, 1901; duration of illness about six weeks; diagnosis, mania following erysipelas, following malnutrition; termination, death February 25th, 1902.

Summary of the course of the insanity.—1901.—November 1st, subacute mania. November 14th, apparent recovery in convalescent home. November 30th, relapse. December 6th,

admission to asylum in subacute mania. December 15th, apparent recovery, the patient calm and sensible. December 23rd, relapse. December 30th, menstruation.

1902.—January 4th, remission of acute symptoms and apparent incidence of convalescence. January 6th to 8th, acute mania, with delirium and some fever (99°—100° F.). January 10th, remission of acute symptoms. January 15th *et seq.*, acute mania with delirium and fever (99°—102° F.). January 19th to 20th, menstruation. January 25th, improvement, but still slight fever (99° F.). January 25th to February 25th, gradual decline and prostration, restlessness, paretic and atrophic symptoms. February 25th, death.

Miss Sixteen came of a north-country stock; her parents migrated from Orkney to Edinburgh, and they and their family were strong and energetic; there is no history of insanity on either the father's or mother's side. There is, however, some peculiarity amounting almost to eccentricity, and the patient, two brothers, and a sister, as well as the father, were of an unusual personality—people of a pronounced character, whose views and ways often differed from those of their neighbours. Miss Sixteen herself was perhaps the most pronounced—undersized, spare, fair in complexion, but with great energy and determination; as a child, reserved and thoughtful, but when she did speak she often expressed wise and mature views of things, and was generally intelligent and capable. In girlhood she was studious and earnest, fond of music, a devout girl, free of all frivolities. In adolescence she evinced an independent spirit that surprised and overcame her parents; she judged everything for herself and chose her own way; those who admired her called her resolute; others called her obstinate. Of her own accord she took a post as clerk; of her own accord she gave up a good post and became a mental nurse, persisted for some years, earned her certificate, then, refusing to be advised by her parents, went in for fever nursing, which she followed for four and a half years. This characteristic is worth consideration, though it is the fashion at present to ignore the personality of patients. During Miss Sixteen's illness, when nursing and tonic treatment were vital, her resistiveness was a very important factor in preventing recovery. It was useless, even when she was calm and quiet, to try to induce the patient to do anything she wished not to do, especially in the matters

of diet and of rest; and when she was excited the violence of her struggles in resisting the feeding-tube, the catheter, or the enema took much from the value of treatment.

There was no emotional factor of importance in the etiology of the insanity. In the early stages she brooded much over the untimely end of a free-thinking lawyer whose offer of marriage she had refused, but there is no evidence that the subject had previously worried her; on the contrary, she expressed herself as being assured of God's approval in this matter.

The history of Miss Sixteen's health is instructive. Until she took to nursing she was freer from illness than most girls. Though spare, she was strong; though not highly coloured, she never required treatment for anæmia. Menstruation was somewhat irregular and troublesome, but did not occasion illness or lay her aside from work. When she took to nursing, however, her appetite and digestion began to fail. This was particularly the case in the last two years, when she was fever nursing; very often she continued to work on a starvation diet, having no relish for her meals except when she was off duty for the day. Soon after she took to the work she suffered an attack of scarlet fever, from which, however, she seemed to make a complete recovery. During this period she was also under treatment for rheumatism. At the last she was put on special duty with a virulent case of erysipelas, and at the end of it she herself incurred the disease. For a young woman of twenty-five Miss Sixteen's experience was certainly exhausting—life as a clerk, with long hours; over two years mental nursing; over four years fever nursing, during the last of which she disliked her food; then a severe attack of erysipelas. As the fever and delirium passed off Miss Sixteen was left prostrate, and became excited, fanciful, and sleepless. Having been called in consultation, and in the opinion that improved bodily health would be accompanied by a return to mental soundness, we advised removal to a convalescent home in the country. There was immediate and rapid improvement in the home, and Miss Sixteen seemed quite well until one day one of her companions did something to displease her, and the patient, insisting upon having her own way, refused to be guided, began to be troublesome, and relapsed. Then she was taken to her father's house, where she ate as much or as little as she pleased, and otherwise resisted management; so that when she was brought to the asylum in an ambulance

on December 6th, 1901, she was worse than ever—emaciated, pale, prostrate, with a very feeble pulse, dry skin and hair and tongue, cold feet and hands, and in constant and talkative restlessness. For several hours her life seemed in danger.

The notes in this case were unusually voluminous. The following seem to be essential:

December 10th, 1901 (fourth day).—Patient has been given as much as ʒj, t. i. d., of Pot. Bromid., and has done very well with it. Her mania, which is now simple—mostly talking,—has subsided. She is eating a great deal, and she is stronger.

December 19th.—Miss Sixteen is fatter, quieter, and stronger, by complete rest in bed, simple diet—nearly all custard,—senna mixture, and bromide.

December 23rd.—Miss Sixteen is beginning to be excited. The bromide seems to lose its effect, and she is constantly talkative.

December 27th.—The patient is refusing food; conscious and rational efforts are diminishing.

December 30th.—Patient is wandering steadily farther from sane influence. She is refusing food still. She is menstruating.

January 4th, 1902.—Patient seems to be recovering now. Her attack has been practically one of acute delirious mania, though with no noteworthy rise of temperature. She has twice passed urine in bed (probably a motor symptom here). Her conversation has been rambling; she did not know where she was; imagined herself to be up; said or asked the same things again and again, and was very persistent in refusing food and in refusing to move. The treatment during this crisis, as it has been—the patient very weak, the pulse extremely shabby, the eyes squinting, the mouth covered with sordes, the tongue dry, brown, and cracking,—the treatment has been by rest and rectal feeding, with strychnine and strophanthus when she could be persuaded to swallow, and an occasional sulphonal suppository.

January 6th, 1902.—This patient has relapsed and is very ill. She has screamed nearly all last night and the previous night, and the heart is flagging.

January 7th, 1902.—Last night the patient was less noisy, but only because she is weaker. She screamed as if in agony—a sudden yell as if startled by a shooting pain (pleurisy, meningitis, or peritonitis),—and the least touch seemed sore, as if there were neuritis all over. To-day her temperature is 99° F., though her extremities are cold. There is no doubt, I think, about the neuritis. I cannot discover any pleurisy or peritonitis. The patient's breath is very bad—the odour suggestive of the decay of approaching death. About 1 a.m. the patient was constantly noisy, and I passed an œsophageal tube (the pulse practically gone in the process) and administered ʒij Hyp. Emuls. (Parald., Bromidia, and Pot. Brom.) in hot water; also some hot milk, after which she slept. At 4 a.m., as she seemed weaker and was wakeful, I injected strophanthus and strychnine into the buttock, and she rallied and slept until about 8 a.m.

January 8th.—This morning the patient, having passed much urine in bed, collapsed after the exertion of changing. Dr. Duncan found her at 9.30 semi-comatose; pulse about 150 and shabby; respirations about 45 and very shallow. Brandy, strophanthus, and strychnine were administered *per rectum*. She has now (12 noon) rallied.

January 9th.—Patient calmed somewhat during the night and slept. The respirations came down to about 36, the pulse to 118. At 9.30 the patient again “fainted,” and was restored by strophanthus and strychnine. Throughout the day Miss Sixteen screamed loudly at times, but took some food. At 10 p.m. she “fainted” again. Paral. 3iij was injected *per rectum*, and by 11.30 the patient was quiet and stronger, and said she would sleep.

January 10th.—Patient had a much better night. She was disturbed early by mucus and a little blood in the throat (note this again after tube which was passed yesterday evening), but slept when nurse cleared throat by finger. During the day the patient swallowed a considerable quantity of food.

9.30 p.m.—Strength steadily increasing. She laughed a great deal during our interview; knew me quite well, and took an interest in what went on.

January 11th.—Patient had a good night. Passed a pale, liquid stool, not so offensive as yesterday. Took food freely from her nurse this morning, milk in the forenoon, and a cupful of veal soup later.

January 11th to 15th.—Temperature subnormal; patient in all respects better, but very weak. She is having salol.

January 22nd.—Patient has suffered another relapse. The temperature has been higher this time, though never more than 102° F. As a result of a bruise from the edge of the bed-pan between the converging folds of the buttocks, a sore has begun over the sacrum—at first a blackening patch the size of a sixpence, but obviously about to slough. The delirium was deeper and more constant than formerly, but quieter, with less excitement.

January 26th, 1902.—Patient has been menstruating these past days. The temperature is down. She is quieter, but very aphasic and metaphasic. When her attention is not caught her mind wanders. She passes urine incontinently. The slough is about the size of half a crown, to the depth of a quarter of an inch, with much burrowing under the skin all round, but healing well. The pulse is constantly 110—120.

January 29th, 1902.—The stools (always pale), which were formerly very offensive, are so no longer. The sore is doing well. She was raised to-day, and could stand a little. In trying to walk the right leg swung across the left at each step, and was much more ataxic than the left. Confusion is considerable, and there is distinct aphasia, also impaired articulation. The right arm and hand are not disproportionately affected. The strabismus and the ptosis, which were worse on the left side, have now nearly gone.

January 30th.—This morning she seems to me stronger and clearer than she has been. She has hallucinations, however; squeals as if in pain, but denies pain; and it seemed to me to-day that one of her squeals was occasioned by some vision, probably of an unpleasant, or at

least startling nature. She has begun to be resistive. Salol was stopped three days ago.

February 16th, 1902.—There has been an alarming fall in temperature. The digitalis and occasional ergot are continued. The patient is obviously weakening. Diarrhoea has set in. Salol is resumed. All water is boiled, and nothing irritating or easily decomposed is given. The stomach is irritable. The back seems to be healing. One cannot carry out treatment, but must be guided by the patient's whims, which are quite inconsequent.

February 23rd.—Miss Sixteen's temperature has been down beyond the reach of the clinical thermometer (see Chart). She is on a water-bed, and that has been practically filled twice daily with almost boiling water. Coffee and other hot drinks have been administered, but the temperature will not come up. The incontinence is persistent, and the diarrhoea; the menstruation has ceased.

February 25th, 1902.—At about 12.30 p.m. to-day Miss Sixteen died. The diarrhoea had diminished with chalk. At the end her heart failed rather rapidly. Since this patient came to the house there have been more than the normal number of whitlows and pustular eruptions, and one rather severe (locally) case of erysipelas.

Miss Seventeen, admitted November 11th, 1902, at. 39. Acute Mania following many previous attacks; rapid progress of the disease, and speedy death on December 7th, 1902.

Miss Seventeen's case so closely resembles that of Miss Sixteen in essential features that it is unnecessary to enter fully into details. In this case the patient had not suffered bodily illness immediately before her attack of mania, but she had passed through several mental attacks.

Miss Seventeen was poorly developed and ill-nourished, anxious-minded, and somewhat exacting all her life; but very gentle, and devoted to the service of other people. She had not suffered grave bodily illness, but she was a victim of habitual constipation, with occasional attacks of diarrhoea. She was thirty-nine years of age, and during the last twenty years of her life she suffered many attacks of mental derangement, nine of them so severe as to require asylum treatment. She had repeatedly been suicidal; even in the intervals between her acute attacks she was discovered to be in possession of poison; and on more than one occasion her life was despaired of because of exhaustion following acute mania.

She was admitted to Mavisbank on November 11th, 1902, weak and emaciated, restless, incoherent, and sleepless, with a poor, irritable pulse and exaggerated reflexes, and very constipated, but not suffering

a violent mania. For the first week there was marked improvement; then a relapse followed, and on December 5th Miss Seventeen was in acute mania, with furred tongue, foul breath, marked constipation, and suppression of urine, dry hair and skin, almost no appetite, and a rapid, weak pulse. Her temperature was subnormal, but variable. The blood-count revealed nothing unusual; the last film taken (about ten hours before death) showed wide-spread bacterial infection. She had delusions of pregnancy and hallucinations of sight and of hearing, but soon became incoherent. This condition developed rapidly into muttering delirium, with collapse, and on December 7th Miss Seventeen died.

Post-mortem Appearances.

Summary.—Dilatation of stomach and duodenum, enlargement and caseation of mesenteric glands, chronic gastrointestinal catarrh, localised pulmonary areas of pneumococcal infection with fibroid changes around, sclerosis of the bony system with profound alterations in the bone-marrow, enlargement of the thyroid gland, brain cortex congested, and chromatolysis in the nerve-cells.

Post-mortem examination on Miss Sixteen.—This was made forty-eight hours after death. The body was markedly emaciated. On exposing the viscera the stomach was found to be enlarged and displaced downwards, its lower border being $1\frac{1}{2}$ inches below the umbilicus. The mesenteric glands were enlarged, and two of them were caseous. A general examination of the thoracic cavity showed fine adhesions over the upper part of both lungs, especially the right; there were no indications of recent pleurisy. The alimentary tract was removed *en bloc*, and washed through first with water and then with 5 *per cent.* formalin. The whole tube was then moderately distended with the formalin solution and secured above and below, its general examination being made on the following day.

Abdominal viscera.—The stomach was much dilated. Its transverse diameter at its broadest part was 12 inches; the great curvature measured $21\frac{1}{2}$ inches, and the small curvature 8 inches. The duodenum was also dilated, its transverse diameter when opened being 5 inches. The mucous membrane lining the stomach and intestine was in a state of chronic catarrh, this being most evident in the lowest part of the ileum, stomach, duodenum, and ascending part of the colon. The jejunum and upper part of the ileum appeared fairly normal. The catarrhal condition was most pronounced in the lowest 12 inches of the ileum, the point of maximum intensity being 4 inches from the ileo-cæcal valve, where minute ulcerations were visible to the unaided eye. There was no evidence of tuberculous disease. The *liver* showed some fatty change, also congestion. The *spleen* was normal in size, but of softer consistence than in health. The *supra-renal glands* were markedly congested. The *kidneys* showed no gross change. The *pelvic viscera* appeared healthy.

Thoracic viscera, etc.—The heart was unusually small in size. The cavities, valves, and heart muscle showed no abnormality. The lungs were œdematous and congested at the bases. The bronchi showed evidence of acute and chronic congestion. At the periphery of both lungs just underneath the pleura there was a number of small areas of consolidation, of fairly firm consistence and a white colour, the lung tissue around being specially congested. Some of these areas were enclosed by a dense band of fully formed fibrous tissue. There was no indication of tuberculous disease. The thyroid gland was unusually large, but otherwise presented a normal appearance. An examination of a complete vertical section of a femur showed the marrow to be abnormally red, with areas of gelatinous change throughout. A piece of rib was taken for histological examination.

Microscopic examination.—An examination of the brain, kindly made for us in both cases by Dr. Ford Robertson, showed the chromatolytic changes characteristic of acute disturbance of nutrition. The distinct histological changes present in the viscera of Miss Sixteen will now be described. The pieces of stomach and intestine examined were embedded in paraffin. Figs. 3, 4, and 5 illustrate the condition of the mucous membrane of the cardiac, middle, and pyloric ends of the stomach respectively. These should be compared with Fig. 1, which illustrates a fairly normal mucous membrane, which is seen to consist of long rows of tubular secreting glands, the irregularity on the surface of this section representing unavoidable *post-mortem* changes. A study of Figs. 3, 4, and 5 shows an atrophy of the mucous membrane, also a disappearance to a great extent of its glandular elements, which are replaced by large numbers of small round-cells; also a thickening of the submucous coat. The reader will observe that all trace of glands has disappeared in the section illustrated in Fig. 3, and the surface of the mucous membrane is here covered with a thick layer of tenacious mucus. The mucous membrane of the duodenum showed similar changes. The jejunum and upper part of the ileum, which revealed no distinct change to the unaided eye, showed pathological changes of a less advanced character. The results of the examination of these parts confirmed us in our belief that any opinion as to the integrity of the intestinal tract based only on naked-eye appearances is valueless. As previously indicated, pathological changes were most manifest in the lower end of the ileum. Fig. 7 represents a section of the mucous and submucous coat of the ileum, nine inches above the ileo-cæcal valve. There is a considerable degree of fibrous thickening of the submucous coat, many of the vessels of which are enormously dilated. The mucous membrane is in a condition of marked atrophy. The normal appearance and arrangement of the villi have entirely disappeared, the villi for the most part being represented by little masses of granulation tissue or a more fully formed fibroid tissue. In other parts of the ileum the cellular proliferations and other evidences of catarrh were very pronounced (Fig. 8). This change was most marked in and around Peyer's patches, but was diffusely present. A similar pathological change was present in the ascending colon, represented in Fig. 9, which shows profound changes in the mucous and submucous coats.

Microscopic examination of the peripheral lung lesion previously described showed the areas to be composed of great numbers of small round-cells, with few catarrhal cells. Suitable staining revealed large numbers of Fraenkel's diplococci in these areas. Fig. 10 shows a low power of the affected part of the lung. Note that the areas are enclosed by a thick band of fibrous tissue. The other viscera showed no distinct histological lesions, with the exception of the bone-marrow, spleen, and the thyroid gland. Unfortunately it is impossible to submit a report on the histological appearances of the rib, as it was found impossible to properly decalcify the section, and as a result paraffin sections could not be obtained. In sections prepared in celloidin the cellular elements had to a great extent disappeared. The great difficulty encountered in decalcifying the section is significant as indicating an important change in the constitution of the bone. The histological appearances of the spleen were those of increase in the number of hyaline leucocytes and marked proliferation of endothelial cells. Reference was previously made to the existence of an enlargement of the thyroid gland. Microscopic examination showed that the spaces were abnormally large, and the great cellularity of their walls seemed to be considerably in excess of what could be accounted for by mere tangential section of the organ; the appearances represented an early stage of cystic enlargement of the gland.

Summary.—Dilatation of stomach with pronounced atrophy of its coats, chronic intestinal catarrh, marked deposit of pigment in spleen and liver, slight interstitial changes in the kidneys, chronic disease of the bladder, sclerosis of the bony system with profound alterations in the bone-marrow, brain cortex congested, and chromatolysis in the nerve-cells.

Post-mortem examination of Miss Seventeen (conducted within eight hours of death).—*Summary.*—The body was markedly emaciated. The stomach was slightly dilated. The mucous membrane of the alimentary tract was in a condition similar to that described in the previous case. Unlike that case, however, the point of maximum intensity of disease was the stomach, the wall of which over a large area was in a state of extreme atrophy. This is represented in Fig. 2, which shows great attenuation of the stomach wall, with disappearance of the mucous membrane. The liver showed marked venous congestion, slight cellular infiltration in the portal tracts, and an unusual degree of pigmentary change in the liver-cells. The kidneys showed congestion, with early interstitial changes. The spleen also showed congestion, with a great amount of pigment deposit. The bladder wall was much thickened, and on microscopic examination very marked changes were present in all the coats. The epithelial lining had disappeared, the mucous membrane being represented by a thick band of organised granulation tissue (see Fig. 11); the submucous tissue was greatly increased, and showed pronounced thickening of the walls of the blood-vessels (*q. v.*); the muscular coat was much thickened, the thickening being in part due to

proliferation of the muscle-fibres, and in part to extensive overgrowth of fibrous tissue. The naked-eye appearances of the bone-marrow were similar to those described in the other case; as formerly, great difficulty was encountered in decalcifying the section of rib.

Remarks.—The points to which we wish to draw special attention are (1) the situations of the lesions found at the *post-mortem* examinations; (2) the nature of these pathological changes; and (3) the advisability of further observations on the pathology of acute insanity being conducted along the lines indicated.

1. *The situation of the lesions.*—In the case of Miss Sixteen very pronounced pathological changes were present in the gastro-intestinal and respiratory tracts, although clinically there were no distinct indications of the existence of such lesions. The parts of the alimentary tract which showed the most striking changes were the stomach, duodenum, the lowest part of the ileum, and the ascending colon. In the respiratory tract the lesions existed at the peripheral part of the lungs, just underneath the pleura, and also in the large and small bronchi. Special attention should also be directed to the changes described in the bone-marrow. In the case of Miss Seventeen the gastro-intestinal tract was also the seat of profound morbid changes. Here, again, we have to record that the clinical symptoms failed to indicate the severity of these lesions. An examination of the respiratory tract in this subject did not reveal any defined lesions such as those recorded and illustrated in the case of Miss Sixteen, but the large and small bronchi showed changes similar to those described. Investigation of the utero-vaginal tract revealed the presence of a small, pedunculated, submucous polypus just within the cervix uteri. The size and position of this small tumour precluded its discovery by the ordinary methods of clinical examination. Even the passage of a uterine sound would in all probability have failed to reveal any abnormality. These points are important as indicating the facility with which a possible source of irritation may easily be overlooked. The changes in the bone-marrow were similar to those recorded of the previous case. A special feature of this case was the pronounced thickening of the wall of the bladder; this will be further referred to.

2. *The nature of the lesions present.*—If we except the small

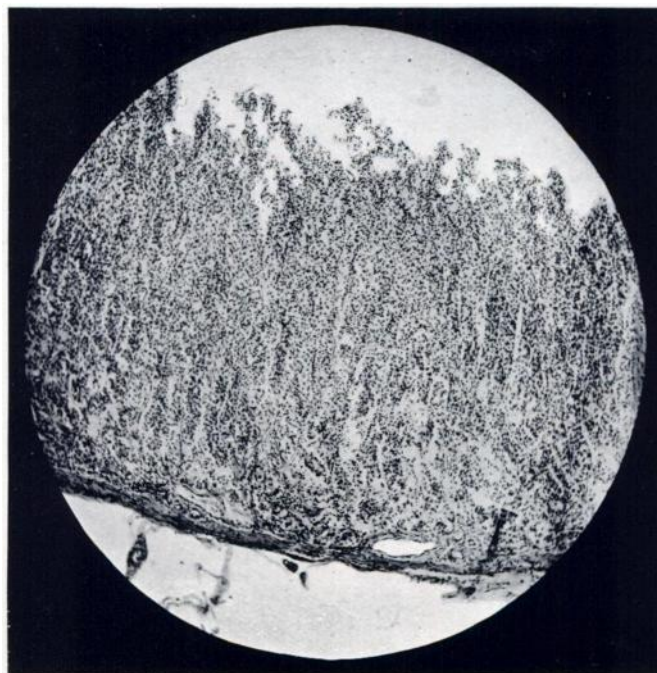


FIG. 1.—Mucous membrane of normal stomach, to show the thickness and normal appearance. The irregularity on the surface is unavoidable *post-mortem* change (cf. Pl. I, fig. 2, Pl. II, figs. 3 and 4, and Pl. III, fig. 5). $\times 50$.

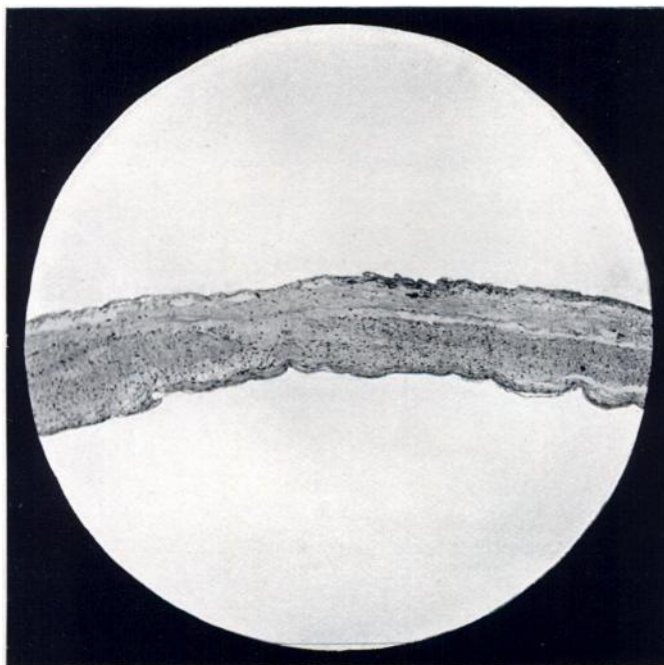


FIG. 2.—Section of the entire thickness of the stomach wall of Miss Seventeen. The mucous membrane has practically disappeared, and the other coats are considerably atrophied. $\times 50$.

To illustrate Drs. G. R. WILSON and D. CHALMERS WATSON'S paper.

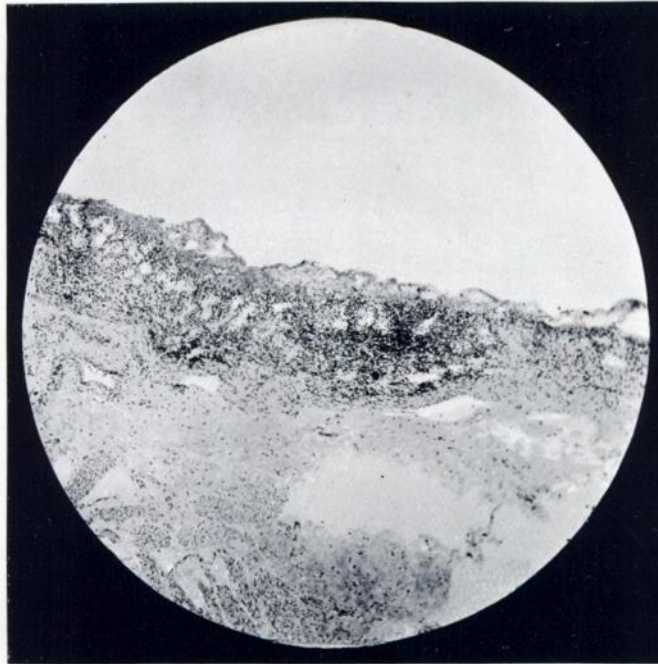


FIG. 3.—Cardiac end of stomach of Miss Sixteen. Shows *a*, marked atrophy of the mucous membrane; *b*, disappearance of the glands; *c*, great cellular infiltration; *d*, prominent thickening of submucous coat; *e*, a layer of mucus is seen on the surface. $\times 50$.

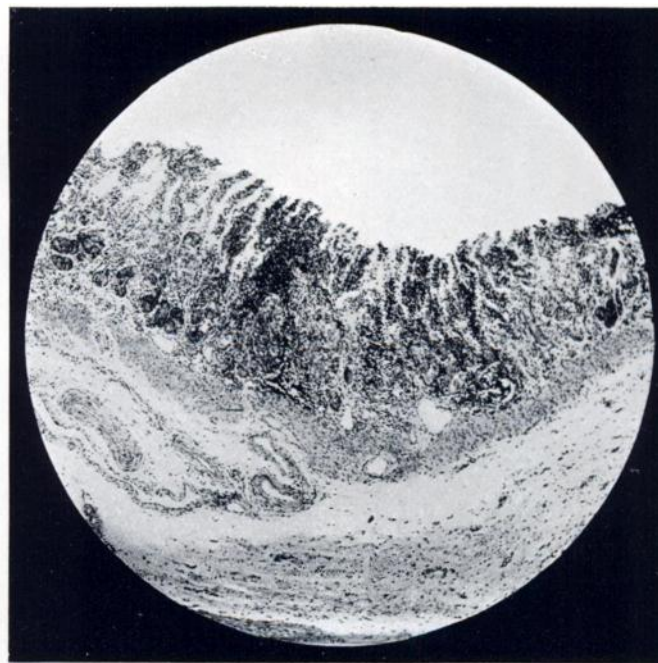


FIG. 4.—Middle of stomach. Changes similar to those in Fig. 3. $\times 50$.

To illustrate Drs. G. R. WILSON and D. CHALMERS WATSON'S paper.

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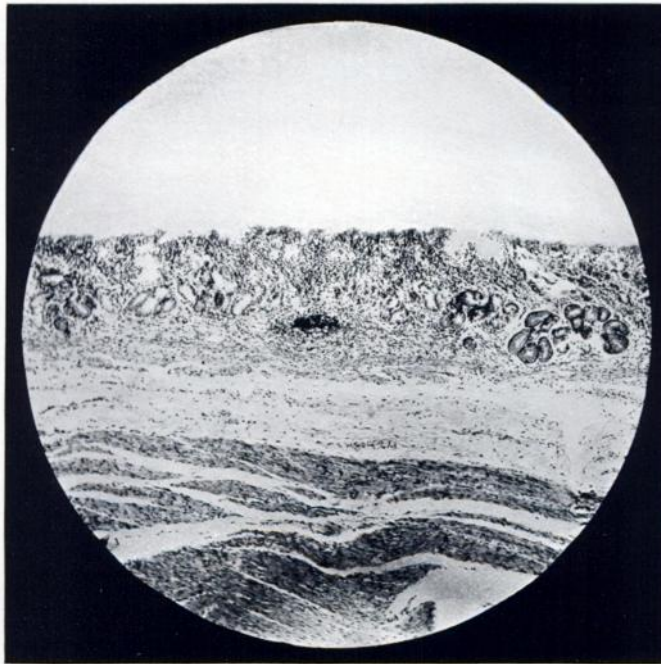


FIG. 5.—Pyloric end of stomach. Changes similar to those in Fig. 4. Note the remains of the glands. $\times 50$.

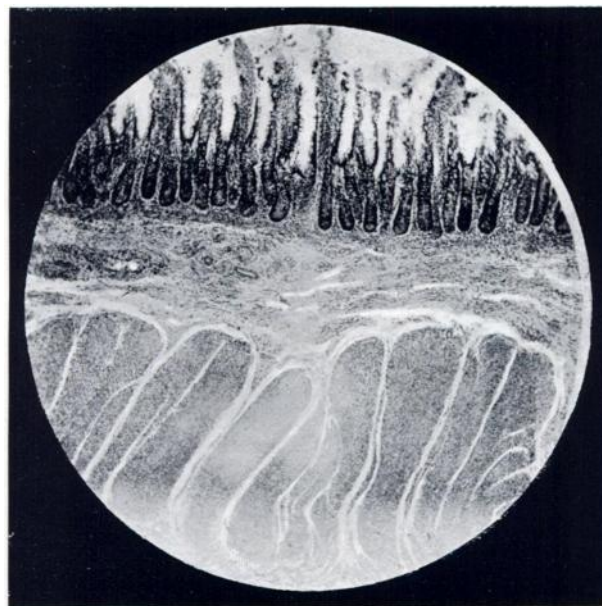


FIG. 6.—Ileum, nearly normal. For comparison with Fig. 7.

To illustrate Drs. G. R. WILSON and D. CHALMERS WATSON's paper.

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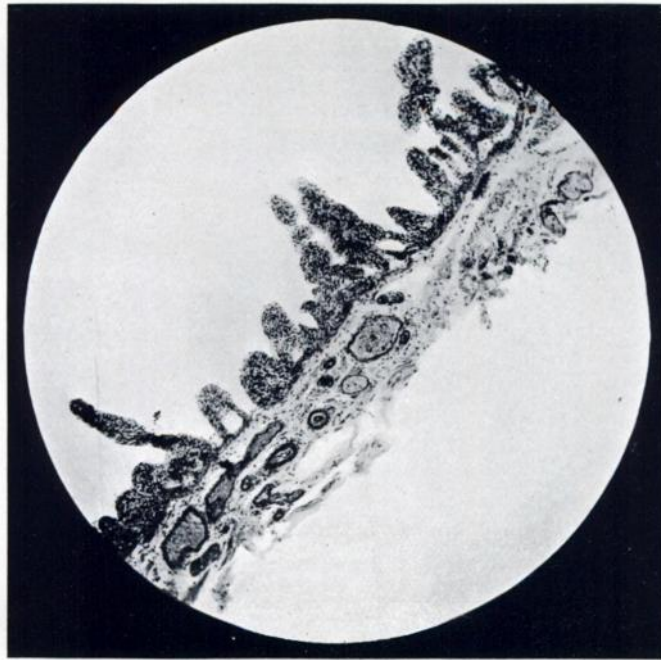


FIG. 7.—Ileum; extreme atrophy of mucous membrane. The villi are represented by small areas of granulation tissue, or more fully formed fibrous tissue. Note the thickening of the submucous coat, with great engorgement of its vessels. $\times 50$.

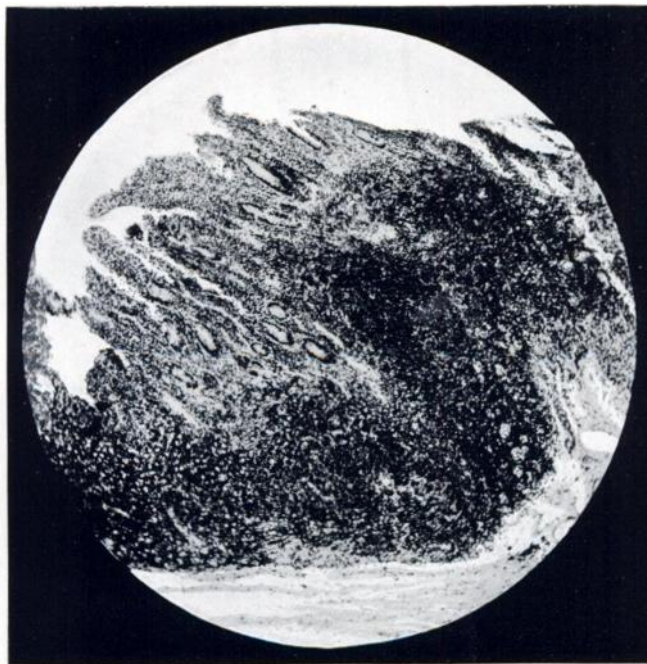


FIG. 8.—Ileum. Peyer's patch. To show great increase of small round-cells. $\times 50$.

To illustrate Drs. G. R. WILSON and D. CHALMERS WATSON's paper.

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FIG. 9.—Ascending colon. Note the disappearance of the glands, and marked cellular invasion. $\times 50$.

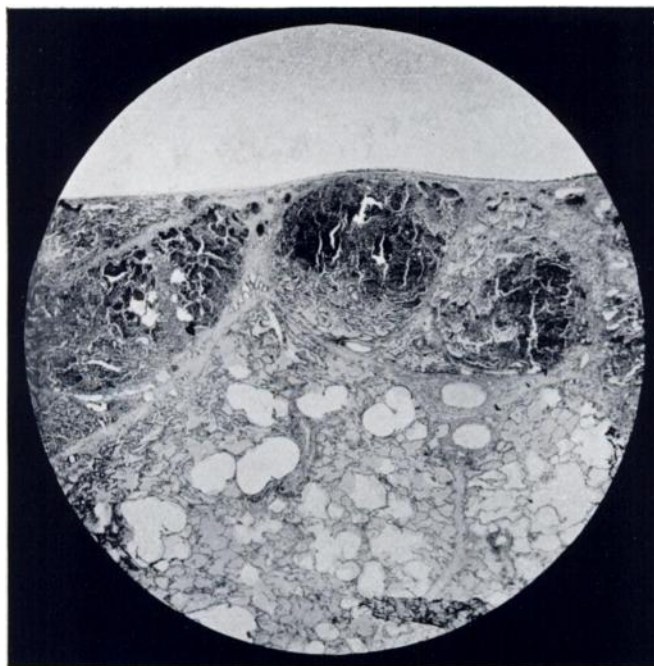


FIG. 10.—Lung. Note underneath the pleura the areas of small-cell infiltration described in the text; also the dense bands of fibrous tissue at their periphery. $\times 20$.

To illustrate Drs. G. R. WILSON and D. CHALMERS WATSON'S paper.

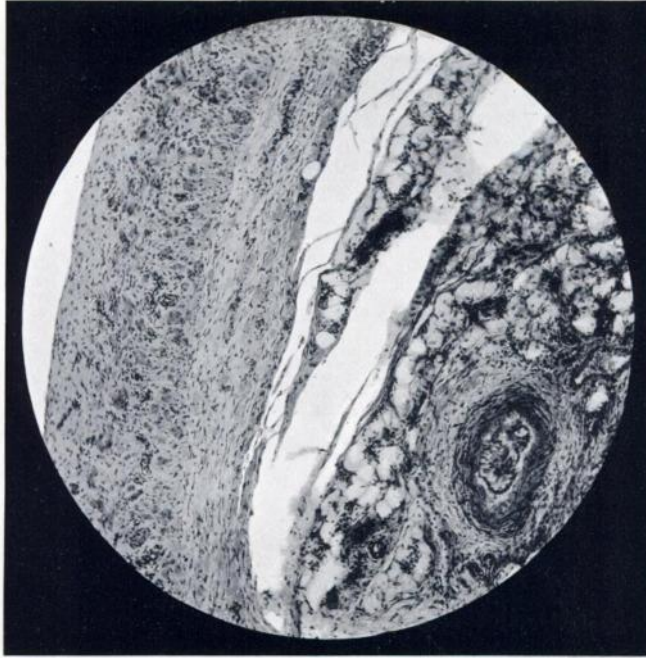


FIG. 11.—Mucous and submucous coats of the bladder (Miss Seventeen. (Note that the mucous membrane is represented by a thick layer of organising granulation tissue; the submucous connective tissue is much increased. Note the large vessel with much thickened wall. ($\times 50$.)

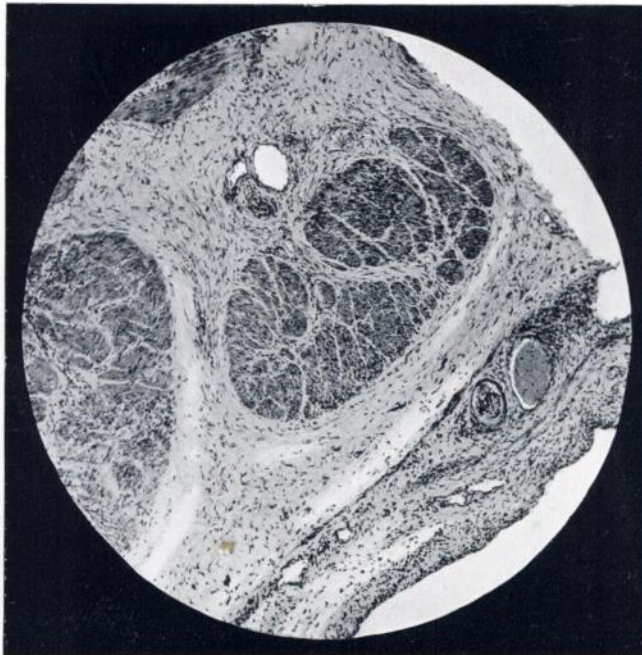


FIG. 12.—Outer part of bladder wall (Miss Seventeen). Illustration shows (a) great increase of connective tissue in the subserous coat; (b) marked hypertrophy of the muscle-fibres, groups of which are surrounded by (c) dense bands of fully formed fibrous tissue. ($\times 50$.)

To illustrate Drs. G. R. WILSON and D. CHALMERS WATSON'S paper.

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fibroid polypus, the nature of the existing lesions admits of a general description. The lesions in the alimentary, respiratory, and urinary tracts were those of more or less destruction and disappearance of the proper tissue elements of the organs involved, their place being taken by large numbers of leucocytes, small round connective-tissue cells, and fully formed fibrous tissue, the general appearances being characteristic of local reactions to bacterial infection. Fig. 10 illustrates the size and position of these foci in the lung. Suitable staining revealed the presence in these areas of large numbers of Fraenkel's diplococci. The fibroid changes around these areas clearly indicated the long-standing nature of the lung lesion. (The reader will have observed that the symptoms of mental derangement only appeared four and a half months before death.) The lesions in the bronchi were those of acute and chronic congestion. While these must not be ignored, we do not lay special stress on them, as their naked-eye and histological features indicated that they were largely of the nature of a terminal change. It was otherwise with the lesions in the gastro-intestinal tract. The changes were manifestly those of chronic irritation, which we may presume to be synonymous with chronic bacterial infection. These changes may be very roughly classified into two groups—*a*, an atrophic; *b*, a hypertrophic. An extreme illustration of the former is seen in Fig. 2, which represents a complete section of the stomach wall, and in Fig. 7, a section of the lower end of the ileum. Figs. 3, 4, and 5 are less advanced illustrations of the same morbid process in the cardiac, middle, and pyloric end of the stomach respectively. The hypertrophic phase, which is probably an earlier stage of the process, is depicted in Fig. 8. While this cellular infiltration is most marked in and around Peyer's patches, it is by no means confined to these areas. The marked degree of thickening of the submucous coat and the fibrous state of the villi showed that the pathological process was of long duration. The lesion in the bladder in the case of Miss Seventeen was an extensive small-cell infiltration of the mucous and submucous coats, with atrophy of the mucous membrane and great overgrowth of fibrous tissue through the hypertrophied muscular coat. The lesions illustrated were obviously of long standing. The changes in the bone-marrow and spleen were characteristic of the reaction of these organs to a

general systemic infection. We believe that the changes in the former tissue are specially worthy of careful study.

3. *The advisability of further observations on the pathology of acute insanity being conducted along the lines indicated.*—It is not our intention to form any conclusion from this record *re* the etiology of acute insanity. What we desire to emphasise is that a study of the history and clinical features of these cases, in the light of the *post-mortem* evidence, suggests the necessity of further observations on the pathology of acute insanity being conducted along the lines indicated in this paper. The investigations must be of a general nature and reasonably complete. All possible sources of malnutrition of the nervous system must be investigated, and special attention must be devoted to a study of the natural means of defence in the organism, and to the manner in which these react to bacterial and other untoward influences. Temperature alterations, whether of a febrile or subnormal character, should be studied. Information as to the total quantity of urine passed *per diem*, and the character of the alvine discharges, if obtainable, will be of the utmost service. Additional information of great value will be gained by a frequent examination of the blood as already carried out by Lewis Bruce. Careful regard must also be had to the individual variations in the powers of resistance, a study of which is essential to an explanation of the phenomena of disease.

These remarks are not to be taken as minimising the importance of a study of the hereditary factor in disease of the brain. This must ever occupy a paramount place, and we wish to clearly indicate that the lines of investigation to which we refer are supplementary to that study and in no sense antagonistic to it. In conclusion we would summarise the situations of lesions the existence of which, in our opinion, is worthy of a closer study.

a. *The oro-gastro-intestinal mucous membrane.*—The foregoing records show that clinical features may be slight or absent, and yet a condition have existed capable of profoundly interfering with the nutrition of the brain. The recent researches of Lorraine Smith⁽¹⁾ and Tennant on the presence of bacteria in the alimentary tract of animals in health and disease are of great interest in this connection.

b. *The respiratory tract.*—The examination must include the whole respiratory mucous membrane, including the naso-

pharynx. The importance of deafness in some cases of insanity is recognised; this deafness, in our opinion, is in the great majority of cases dependent on a very chronic infection from the nose and naso-pharynx. Hence the importance of studying the complete clinical picture of disease as it exists outside the nervous system.

c. The utero-vaginal mucous membrane.—This does not call for elaboration. We need only cite cases of so-called puerperal insanity as indicating the importance of this site in some cases of acute disease; it is possible that it may be important in some cases of chronic malnutrition of the nervous system.

d. The urinary tract, as in the case of Miss Seventeen described.

e. The skin.—It will suffice to refer to the mental symptoms met with in some cases of erysipelas, and further remind the reader of the diagnosis of the case of Miss Sixteen as one of mania following erysipelas, as indicating the importance of a study of the skin.

While attention should be directed to these situations as the main sources of chronic infection, it is equally essential to investigate the manner of reaction of the tissues to such chronic change. This involves the detailed study of the blood, temperature, pulse, and other changes during life; and later, if opportunity arises, a careful investigation of the bone-marrow and other leucocyte-forming tissues.⁽²⁾

In conclusion we may be allowed to indicate that we are aware that structural changes similar to those described may, and sometimes do, exist to some extent in subjects unaffected by acute mental derangement. But the recognition of this fact in no way minimises the probable importance of these lesions as sources of malnutrition of the brain in the cases involved. It rather emphasises the great importance of the closer study of the *individual factor in disease*, and leads to a clear appreciation of the fact that, with the possible exception of a small number of diseases of a specific nature, no two subjects react alike to the same pathological conditions.

(1) "On the Growth of Bacteria in the Intestine," *Brit. Med. Journ.*, December 27th, 1902.—(2) "The Reactions of the Bone-marrow and other Leucocyte-forming Tissues in Infections," *Trans. Path. Soc. of London*, vol. liii, 1902.