A Clinical Lecture

ON

CARCINOMATOUS STRICTURE OF THE DUODENUM.

*Delivered at St. George's Hospital on March 11th, 1901,*By H. D. ROLLESTON, M.D. CANTAB.,
F.R.C.P. LOND.,

PHYSICIAN TO, AND LECTURER ON PATHOLOGY AT, ST. GEORGE'S HOSPITAL.

GENTLEMEN,—A plumber, aged 50 years, was admitted to the hospital on Nov. 29th, 1900, with weakness, anæmia, vomiting, and abdominal pain. His past history showed that he had been healthy until two years ago, when he began to suffer from pain in the epigastrium immediately after food; this pain had continued on and off since. In July and August, 1900, he was laid up with vomiting, and again on Nov. 8th. During the last year he had lost weight and had grown paler, and had suffered from constipation. He had had no previous illnesses, there was no reason to think that he had had syphilis, and he had taken beer moderately. The patient was big-boned, spare, and anæmic, and presented practically no objective signs of disease in the chest or abdomen. The tongue was moist and slightly furred, the teeth were bad, but there was no blue line on the gums. The lungs were normal, the heart was not enlarged, and the sounds, though distant and rather weak, were otherwise normal; the second sound was not accentuated either over the pulmonary or aortic areas. Nothing abnormal could be felt in the abdomen, but the skin was dry and inelastic. There was no abnormal resistance in the abdomen and no distension; at times, indeed, in the course of the case the abdomen became retracted, while before bouts of vomiting it became rather fuller. No enlarged glands could be felt in any part of the body. The blood showed a secondary anæmia, the red corpuscles numbered 3,340,000, the hæmoglobin amounted to 70 per cent., and there was a slight leucocytosis. The urine varied in specific gravity, with the occurrence of vomiting, from 1010 to 1030, and sometimes contained a trace of albumin. Further changes in the urine will be referred to later. The pulse was normal in rate, rhythm, and tension. The vomited matters were found not to contain any free hydrochloric acid. On admission a tentative diagnosis of carcinoma of the pylorus was made although no tumour could be felt. After a few days the stomach increased in size and seemed to support this diagnosis. On the other hand, the man's work, that of a plumber, and the history that he often took his meals without being able to wash his hands suggested that the anæmia, debility, and gastro-intestinal disturbance might be due to lead poisoning. However, there was no lead line on the gums such as there would have been, since his teeth were bad, if lead had recently been introduced into the system. There was no wrist-drop or paralysis and the pain was not that of lead colic. It is well to remember that it is easy to overlook the presence of grave abdominal disease in cases of suspected plumbism; thus I remember performing a post-mortem examination on a worker in lead who had a blue line on his gums and had had vomiting, constipation, and abdominal pain; he had a twist in the small intestine near the ileo-cæcal valve, at a point where the ileum was bound down for the last five inches to the posterior abdominal wall by a congenital deficiency of the mesentery. Incidentally it may be mentioned what an anxious problem the diagnosis of acute intestinal obstruction is in a patient with tabes; gastric crises may closely imitate mechanical obstruction and yet, of course, tabes in no way protects against acute intestinal obstruction. One is conscious of the importance of making a correct diagnosis so as to avoid an unnecessary operation on the one hand, and the calamity of allowing a patient to die from unrelieved obstruction on the other. Some years ago a patient under my care with tabes had an unusually severe and prolonged gastric crisis, and these questions were solved by waiting for developments.

A third possibility as to the condition at work in our No. 4051.

patient was that it was a case of oral sepsis and that he was suffering from septic gastritis due to micro-organisms and pus swallowed as the result of pyorrhœa alveolaris. He was, indeed, given Giesshübler water to wash his mouth and teeth with and was provided with a tooth-brush; this simple mineral water was recommended to me by Mr. H. L. Albert for its purifying and cleansing effect on the teeth. The fact that the patient's general aspect suggested malignant disease did not necessarily render it unlikely that the whole condition was one of gastritis due to pyorrhœa alveolaris, for cases in which an initial diagnosis of carcinoma of the stomach had been arrived at have been cured by removing the cause—pyorrhœa alveolaris (W. Hunter¹ and R. J. Godlee²).

Turning now to the progress of the case, the patient vomited occasionally after admission and on Dec. 6th brought up 11½ pints in 15 hours; the vomit contained bile but no free acid. Some of the vomit was dark in colour and extremely offensive; the presence of bile made it clear that the obstruction, if any existed, was below the level of the biliary papilla in the duodenum and it put the tentative diagnosis of carcinoma of the stomach out of court. After this copious vomiting the excretion of urine was suppressed. This is sometimes seen in cases of dilated stomach with copious vomiting and is analogous to the anuria that occurs in cholera. The stomach was washed out and the patient was put on rectal feeding. As the vomiting stopped he was, three days later, put back on to some food by the mouth, water being given by the bowel. On Dec. 10th the stomach was washed out. Two days later he vomited 78 ounces, having only had 30 ounces by the mouth since the stomach was washed out. There was therefore considerable gastric secretion or gastro-succorrhœa. This may be correlated with the fact that the chlorides in the urine were frequently found to be almost absent. After this rectal feeding was again resorted to for a time. On Dec. 17th the urine (specific gravity 1012) was found to turn of a dark port wine to brown colour when heated with nitric or any other mineral acid. The darkening was extremely marked and attracted instant attention. This colouration is produced by two different substances in the urine, the commonest being a colourless chromogen which represents indol in the alimentary canal and indican in the urine. The other body is melanin, the pigment found in melanotic sarcoma. Melanin is passed in the urine in cases of large secondary melanotic growths in the liver such as are generally secondary to a primary melanotic sarcoma of the uveal tract in the eye. Melanin is nearly always passed in a colourless or chromogen form (melanogen), and only appears after standing and oxidation or when nitric acid or some other agent, such as bichromate of potassium or a solution of perchloride of iron, is added to it. The colouration then occurs at once. The patient's urine did not darken with perchloride of iron, so the body was not melanin. It was therefore plain that there was some body allied to indican in the urine which was due to fermentation taking place in the intestinal tract and the absorption of bodies allied to indol. Auto-intoxication of intestinal origin frequently shows itself in this way in the urine. The appearance of the urine was exactly the same as that figured by Mr. A. Pearce Gould³ in a case in which death occurred from toxæmia following acute intestinal obstruction. Dr. G. A. Buckmaster, who devoted much time to examining the urine, prepared considerable quantities of indican from the urine and found that there was 1·6 per cent. of creatinin in the urine, making the approximate weight passed in the 24 hours' urine 2·4 grammes as against the normal 0·9 gramme. What this increase in creatinin was due to or what it signifies is doubtful. It occurred to me that possibly it was due to creatin taken in from the suppositories on which the patient was subsisting, but Dr. Buckmaster's analysis of a suppository showed that it contained practically no creatin. Creatinin in the urine is either due to creatin taken by the mouth or is derived from the metabolism of the muscles. As it was apparently not due to food, it must be assumed that it was derived from the muscles of the body. The amount of urinary creatinin is said to be increased in wasting diseases, and as the patient was certainly losing flesh this seems the most likely explanation. For a few days the patient rallied and he took food by the mouth, but on Dec. 21st he vomited four times,

¹ W. Hunter: Transactions of the Odontological Society of Great Britain, February, 1899.

² R. J. Godlee: Transactions of the Royal Medical and Chirurgical Society, vol. lxxxiii., p. 342, 1900.

³ Transactions of the Clinical Society of London, vol. xxxi., p. 47.

bringing up 58 ounces of bilious fluid, and rectal feeding was again employed. The next day hiccough began, and in spite of all kinds of varied remedies continued for a week, only stopping after intravenous transfusion (80 ounces) was performed by Dr. S. V. Pearson. After this the patient again improved for a time. On Jan. 7th, 1901, a rash appeared on the abdomen, and on the following day the amount of chromogen (indican) in the urine, which had for some time been small, was much increased, the urine, when warm, turning of a brown sherry colour with HNO_3 . The interest of this rash is that in Mr. A. Pearce Gould's case of toxæmia after acute intestinal obstruction there was an urticarial eruption associated with this change in the urine. The patient began to wander, tried to get out of bed, passed his urine and fæces in bed, and was presumably suffering from auto-intoxication. On Jan. 10th he was again transfused and he showed some slight improvement. His temperature now began to go up and the left knee became swollen. Mr. Sheild opened the knee-joint and let out some thin pus which was found by Dr. C. Slater to contain streptococci. A few abscesses appeared in other parts of the body and it was clear that he had developed pyæmia. The probable source of infection was the transfusion wound which had been slow to heal. The treatment was directed against the streptococcal pyæmia by giving subcutaneous injections of anti-streptococcic serum. Sera from different sources were employed so as to hit off, if possible, a strain of streptococci the same as, or similar to, that causing the hæmic infection. The patient gradually got weaker, passed into a condition of semi-coma, and, as before, had attacks of vomiting from time to time; the severity of the pyæmia passed away and as far as that was concerned the treatment was successful, but the patient died from exhaustion on Feb. 6th.

The urine, which throughout the course of the disease was diminished in amount, was constantly noted by Mr. A. S. Jex Blake. Its specific gravity was usually between 1010 and 1018; it was acid, sometimes it showed a trace of albumin, but never, even when suppuration was taking place, contained albumose. The amount of urea varied between 1.6 per cent. and 2.3 per cent., the normal being about 2 per cent. The indican reaction varied from time to time, sometimes being marked, at other times almost disappearing. The urine was free from urobilin; sometimes the chlorides were practically absent, while at other times they returned. The fæces contained bile and were often extremely offensive.

The case presented the features of recurrent attacks of vomiting, probably due to a dilated stomach, but as the vomit contained bile the obstruction was evidently lower down. The abdomen was never distended and was often much retracted, so it was assumed that there was obstruction in the small intestine, but as no tumour could be felt at any time the diagnosis was not thought to be sufficiently assured to justify an exploratory operation. It is noticeable that the bouts of vomiting followed the return to feeding by the mouth. That the obstruction was not absolute was shown by the passage of fæces containing bile.

At the necropsy, performed by Dr. W. J. Fenton, there was no ascites nor peritonitis. There was a tight stricture of the third part of the duodenum just where the mesentery crosses over it. From the outside it looked as if a string had been tightly tied round the duodenum; no growth could be seen externally. At first sight it looked like an example of stricture of the duodenum caused by pressure exerted by the superior mesenteric vessels and nerve. This condition has been described by Byrom Robinson⁴ who performed laparotomy unsuccessfully on a case with enormous dilatation of the stomach and duodenum from this cause; he has also noted 20 cases in which dilatation of the duodenum began at this point and considers that it is especially apt to develop in patients with visceroptosis when lying on their backs. This is perhaps rather a novel view, but it deserves testing, and is at any rate on the same lines as the production of hydronephrosis by the pressure of abnormal renal arteries on the ureter.⁵ Above the stricture the duodenum and stomach were slightly dilated and their muscular walls were a little hypertrophied. The small intestines and colon were collapsed. On opening the duodenum there was seen to be a white flat growth replacing the mucous membrane of the duodenum in the immediate neighbourhood of the stricture; there was more growth above the stricture than on the side

towards the jejunum. The growth looked like a thick filter paper perforated at the apex fitted into a funnel. The stricture just admitted a cedar pencil. Above the stricture the growth tracked up towards the biliary papilla which it touched, and was just beginning to obstruct the outflow of bile since the common bile duct was dilated.

Microscopically the growth was a carcinoma with columnar cells. There were no secondary growths in any part of the body. The pancreas was large and fibrotic, probably from extension of infective catarrh from the duodenum into its ducts; Wirsung's duct was not dilated; there was no trace of growth in the pancreas. The mucosa of the stomach appeared healthy to the naked eye. Microscopically the cells of the glands were much altered and degenerated, but possibly there was a post-mortem change. The liver, which weighed four pounds, was in a condition of cloudy swelling; the gall-bladder was full of bile and the ducts were dilated. There was no jaundice and there never had been any during the patient's stay in the hospital. The other organs were healthy except for obsolete tubercle at the apices of the lungs.

There was, therefore, a carcinomatous stricture of the third part of the duodenum, which, though not entirely occluding the lumen of the bowel, had given rise to recurring attacks of obstruction. Liquid food in small quantities could have passed into the jejunum, but it is probable that from time to time food collected in the commencement of the third part of the duodenum just above the stricture and by bulging it downwards led to traction and so to complete closure of the fixed and already strictured part of the bowel.

As to treatment, rectal feeding was successful in temporarily alleviating the symptoms but could not be permanently persisted in, as the condition of the patient was far from being good. Gastro-enterostomy would no doubt have relieved him for a time—i.e., until he died from malignant disease—but the diagnosis was never sufficiently dogmatic to justify a speculative laparotomy in a man so gravely ill. It is true that stricture or growth in the small intestine was suspected on the grounds of the bilious vomiting, but in the absence of anything palpable on the abdomen this hardly justified an appeal to surgery.

General Remarks.

Malignant disease rarely attacks the small intestine, and when it does the growth is usually either in the duodenum or close to the ileo-cæcal valve. Malignant disease is less infrequent in the duodenum than in the lower part of the ileum, but is decidedly rare even there, as shown by the following statistics given by Schlesinger.⁶ In 25 years there were in Vienna only seven cases of primary malignant disease of the duodenum among 42 000 post-mortem examinations, of which 3583 were cases of malignant disease, and of these 443 involved the intestines. In 18,000 necropsies at Guy's Hospital there were 10 cases of primary malignant disease of the duodenum, four of which were carcinoma (Perry and Shaw).

Malignant disease of the duodenum may be either carcinoma or more rarely sarcoma. Libman⁷ has collected 15 cases of primary sarcoma of the duodenum. Some of the cases described as lympho-sarcoma, however, may have been only lymph-adenoma. A comparatively extensive tract of the duodenum may be involved by sarcoma. Its wall is usually softened by the sarcomatous growth and is often dilated, so that there are no symptoms of stenosis.

Primary carcinoma of the duodenum is much more localised and tends in most instances to produce an annular stricture. The cases in which it does not produce this effect are those where a small growth arising from the duodenal surface of the biliary papilla proves fatal by inducing jaundice and cholæmia or suppurative inflammation of the biliary tract before it has had time to grow to any size. There was an excellent example of this in the post-mortem room last week; a patient under the care of Dr. Isambard Owen, a man, aged 52 years, with jaundice and rigors, had a small columnar-celled carcinoma involving the duodenal surface of the biliary papilla and setting up suppuration throughout the bile-ducts and in the gall-bladder. With this general exception duodenal carcinoma gives rise to stricture of the intestine, at least in the great majority of cases. Schlesinger, Letulle,⁸ and others have, however, recorded examples of exceptions to this general rule.

⁴ The American Practitioner and News, August 15th, 1900, p. 125.

⁵ G. N. Pitt: Transactions of the Pathological Society of London, vol. xlv., p. 107.

⁶ Wiener Klinische Wochenschrift, 1898, No. 10, S. 245.

⁷ American Journal of the Medical Sciences, vol. cxx., p. 309.

⁸ Gazette des Hôpitaux, Dec. 9th, 1897.

Like carcinoma of other parts of the body, carcinoma of the duodenum is a disease of late middle or advanced life. In 41 cases which I have collected from various sources the average age was 52 years, being 53.4 years in 10 females and 51.7 years in 31 males. In 10 out of 33 cases collected by Nattan-Larrier⁹ the patients were over 70 years of age. In the 41 cases which I have tabulated, probably including many of Nattan-Larrier's, seven patients were 70 years of age or upwards, the extremes being 80 years and 27 years. In 42 collected cases (not including the present case) 32 of the patients were males and 10 were females. The marked predominance of the male sex corresponds with the greater number of male victims in carcinoma of the tongue, œsophagus, stomach, and rectum. Malignant disease resembles ulcer of the duodenum in its preference for the male sex; in 127 cases of duodenal ulcer tabulated by Cullen¹⁰ 108 were males and 19 were females.

Carcinoma of the duodenum is a columnar celled carcinoma which may show a transition to a spheroidal-celled type or can undergo colloid change. The growth almost always leads to stricture of the duodenum and to dilatation and hypertrophy of the proximal part of the duodenum and stomach. In a few instances the growth has perforated into the general peritoneal cavity and given rise to peritonitis; a localised abscess has also been observed from perforation. A definite tumour is palpable in the position of the duodenum in a small number of cases.

Carcinoma of the duodenum is difficult to recognise during life and presents a different clinical picture according as the growth is situated in the first, the second, or the third portion. It will therefore be most convenient to describe the three different forms.

1. *Carcinoma of the first part of the duodenum* is rare; in 40 collected cases the first part was affected alone in eight and together with the second part in five more. It is indeed remarkable that carcinoma of the pylorus does not extend into the duodenum more often than it does. It is, of course in some cases, where there is a growth on the position of the pylorus, difficult or impossible to be certain exactly how much or how little of the commencement of the duodenum has been involved, but most observers believe that carcinoma of the pylorus stops short at the pylorus. It is a point of some importance to have grounds for or against this belief, since if carcinoma of the pylorus does not tend to infiltrate the duodenum, excision of the pylorus for growth may, as far as this point is concerned, be recommended with a fair prospect of success. This question has recently been investigated by Cuneo and Lucène¹¹; in 10 specimens removed during life for pyloric carcinoma, in only one did the growth manifestly extend into the duodenum and in three others there were microscopic foci of infection cells in the lymphatic vessels but not extending more than two centimetres from the pylorus; in the other six cases the duodenum was microscopically healthy. Therefore in cases where the pylorus appears to be healthy to the naked eye a surgeon should, in excising the pylorus for carcinoma, be fairly safe if he removed the first three centimetres of the duodenum at the same time. Carcinoma of the first part of the duodenum has practically the same clinical picture as carcinoma of the pyloric end of the stomach, and as it is a rare disease the commoner form will probably always be diagnosed in its place. It is, therefore, conveniently called "juxta-pyloric carcinoma of the duodenum"; another name for it, since it is above the level of the biliary papilla, is "supra-ampullary carcinoma." It is interesting to note that, just as in the case of the stomach, so in the first part of the duodenum, carcinoma may develop on a former ulcer. Perry and Shaw¹² give five cases in which a simple ulcer was thought to have become malignant. Nattan-Larrier refers to five additional cases of ulcer carcinomatosis of the duodenum, including one published by Letulle of colloid cancer in a man who had some years before been under his care with definite symptoms of duodenal ulcer. Ulcer can hardly be an important factor in the causation of duodenal carcinoma, since duodenal ulcer is practically limited to the first part of the duodenum, and carcinoma in that situation is rare. Thus 123 out of 149 duodenal ulcers collected by Dreschfeld¹³ were in the first part of the duodenum. Again, from the frequency with

which duodenal ulcer is latent during life, clinical evidence in favour of the previous existence of a simple ulcer is seldom forthcoming. It is, therefore, on the post-mortem observation that we have to depend, and it may be rather difficult to be sure whether there is wide ulceration and sloughing of a growth or the development of carcinoma in a pre-existing ulcer.

2. *Carcinoma of the second part of the duodenum.*—This is the most frequent form of primary carcinoma of the duodenum. In 40 collected cases the growth was limited to the second part in 24, while in five others the first part was invaded as well. If it occurs in the upper part of the second portion of the duodenum—that is, above the level of the biliary papilla—it will give rise to much the same symptoms as carcinoma of the pylorus; if, on the other hand, it involves the biliary papilla the flow of bile will be interfered with and jaundice or other complications will occur; while if it is well below the biliary papilla it will by narrowing the lumen give rise to obstruction with bilious vomiting. Carcinoma has a special tendency to arise in the duodenal mucous membrane covering the biliary papilla. This must be differentiated from carcinoma arising inside the biliary papilla or in the ampulla of Vater, the channel common to the terminations of the common bile-duct, and Wirsung's duct of the pancreas. The term "carcinoma of the ampulla of Vater" is sometimes erroneously applied to a carcinoma of the duodenum involving the biliary papilla. When carcinoma arises on the duodenal surface of the biliary papilla the flow of bile is interfered with, though it is not, as a rule, completely blocked. A change that very frequently follows on this and may rapidly kill the patient is suppurative inflammation of the bile ducts. The partial stagnation favours infection, and the growth, while not completely occluding the lumen of the papilla, favours duodenal catarrh and its extension into the common bile and pancreatic ducts. The duct of Wirsung may also become dilated. The biliary papilla is a favourite site for the development of carcinoma; possibly this is due to some foetal displacement or irregular inclusion of epithelial cells during the development of the hepatic diverticula from the primitive duodenum. It is interesting to note that the disturbance, incident on the out-growth of the hepatic diverticula from the duodenum, may lead to a congenital narrowing or to atresia of the bowel at this point, analogous to congenital atresia of the œsophagus. An innocent papilloma is sometimes seen to arise from the duodenal surface of the biliary papilla, and it is, I think, probable that carcinoma may subsequently develop in such a growth. The question has been raised whether impacted gall-stones inside the ampulla of Vater have any bearing on the development of new growth on the duodenal surface of the papilla. On the face of it this seems improbable, and though D. K. Dickinson¹⁴ has recorded the association of these two conditions, this experience is almost unique.

From its situation primary carcinoma of the intestinal mucous membrane of the biliary papilla is spoken of as juxta- or peri-ampullary carcinoma. As a rule, peri-ampullary duodenal carcinoma imitates carcinoma of the head of the pancreas and gives rise to jaundice associated with an enlarged gall-bladder. Jaundice was present in 23 out of 25 cases quoted by Mathieu.¹⁵ In rare instances, however,¹⁶ the growth, although involving the papilla or invading the bile duct, does not give rise to jaundice. The jaundice may vary, be intermittent, or, as in the case under the care of Dr. Isambard Owen, disappear for a time; it thus differs from the permanent and progressive jaundice seen in carcinoma involving the common bile duct, the cavity of the ampulla Vateri, or the head of the pancreas. The intermittence or disappearance of jaundice in duodenal carcinoma involving the biliary papilla must depend on the growth ulcerating and thus no longer obstructing the flow of bile; if the tumour goes on growing it may again lead to obstructive jaundice. Though the biliary papilla is a favourite starting point for carcinoma the growth may begin elsewhere in the second part of the duodenum and involve it by extension.

3. *Carcinoma of the third part of the duodenum* is the least frequent of all the three varieties. In 40 collected cases (not including the present example) it was only found in three. It is sometimes spoken of as infra-ampullary or juxta-jejunal carcinoma of the duodenum. The symptoms are those of intermittent obstruction, as in the case brought

⁹ Gazette des Hôpitaux, Dec. 9th, 1897.

¹⁰ The Scottish Medical and Surgical Journal, 1897, vol. i., p. 639.

¹¹ Bulletin de la Société Anatomique, Paris, 1900, p. 732.

¹² Guy's Hospital Reports, 1893, vol. iv., p. 274.

¹³ Allbutt's System of Medicine, vol. iii., p. 549.

¹⁴ New York Medical Journal, 1879, vol. xxx., p. 149.

¹⁵ Traité des Maladies de l'Estomac et l'Intestin, p. 921.

¹⁶ Descos et Bériel: Revue de Médecine, 1899, p. 633. Lannois et Courmont: Ibid., 1894, p. 291.

forward to day, with bile in the vomit. It thus resembles pyloric obstruction except for the presence of bile and pancreatic juice in the vomit. The occurrence of bile should at once suggest carcinoma of the duodenum below the biliary papilla or a gastro-biliary fistula. In such a case the vomit should be tested for trypsin by seeing whether fibrin is digested in an alkaline solution. In this way the diagnosis between the two conditions might be made.

AUTOPSYCHORHYTHMIA OR REPETITION PSYCHO-NEUROSIS.

MORBID RHYTHMIC FORMS OF AUTOMATICITY AND RHYTHMIC FORMS OF MENTAL ALIENATION.

By C. H. HUGHES, M.D.

THE pathetic story of the accountant who, in a state of nervous exhaustion and cerebrasthenia, was carried to Bethlem Hospital pitifully repeating, "Once one is two, once one is two," the mistaken calculation having ruined him, is well known in the literature of nerve perturbation. The record is a story of brain exhaustion often repeated in other forms, the real nature of which is often not well understood in time, either by the family medical adviser or the public, to avert disaster. There are other phases of this morbid mental state in which a fear of mathematical inaccuracy or mental agitation on account of the interrupted rhythm are not characteristic, but where simply an insistent impulse to automatic repetition exists that will not readily down at the bidding of the normal will, even though regard for the proprieties of environment demand suppression. The constant repetition of a rhythmical movement in the mind, regardless of time or place or circumstance, and which an enfeebled volition cannot regulate to conform to the requirements of environment, characterises this symptom of brain overstrain and psycho-motor automatic impulse. Neuropathic and consequent psycho-motor neurasthenia appear to be at the bottom of this condition, or have probably been at some time in the life of the nervous mechanism, before the inception of the morbid automatic repetitional impulse. It is as much a symptom as the ill-at-ease, restless, tired, and fidgety state and morbid phobias of neurasthenia are symptoms.

Take (Psychological Dictionary) touches this subject closely under the discussion of imperative ideas, coprolalia, and obsession, and mentions the instance of a friend who wrote to him after composing a poetical work, saying in his letter that he longed to get the poetical work out of his brain and to begin on "fresh woods and pastures new," but found it "difficult to make the vibrations cease when the intellectual chimes have been set to a particular tune," recognising the brain automaticity which is an essential feature of what we are attempting to describe. I would take this case from the class of imperative ideas and place it in the new psychological class like the following, to which I would apply the new term which I coin—"autopsychorhythmia."

A handsome, bright, and accomplished young lady, aged 18 years, with a maternal unstable nerve heritage but a healthy father, a student of music, advanced and promising, came to me from a distant city suffering from exaggerated reflexes, insomnia, hyperideation, troublesome illusional fancies, and a musical rhythm continually running in her mind. Day and night the automatic repetition of tunes and musical cadences ran constantly through her mind. Upright or recumbent, in the waking state or in her fitful sleep, the automatic rhythm persisted. She thought and dreamed of music and felt its rhythmical influence continually throughout her nervous organism. Her pulse was rapid, her heartbeats were over-forceful, her pupils were abnormally mobile and dilated, her digestion was tardy but finally adequate, the bowels were torpid, the skin was relaxed, and she felt continually tired. She recovered under rest, change of environment, cessation of study and piano practice, withdrawal from musical companionship, brain-tranquillising galvanisations, ether-menthol evaporating lotions to the head, chemical brain restraint, and pepsines and laxatives. Had she continued much longer in her vicious course of incessant over-study this handsome and promising girl would have passed

from the morbid psychical automatism of neurasthenic excitability into positive insanity, as I have seen others pass, especially ambitious, self-sustaining teachers, to go beyond the line that marks the morbid psychical automatism of incessant overaction into the realm of actual insane aberration. These cases can be saved if treated in time by the alienist and neurologist, but not by any local treatment outside of the brain, unless perchance the change of environment and its influences are of so tranquillising, diverting, and restful a kind as to bring about through Nature's unaided resources the needful recuperation of the nerve instability and morbid automatism of brain overtax. If these unfortunate persons get only throat treatment they are likely to be lost, unless perchance the brain-rest from cessation of work and changed environment should bring about a cure.

A young unmarried man, who speedily became hopelessly insane and soon after died demented, displayed the beginning of his breakdown by exclaiming *sotto voce* while riding with me, "Beethoven! Beethoven!" This he would continually repeat. An aged lady, over 70 years of age, who became somewhat demented, would often repeat, "Yes, I love God! Yes, I love God!" in the midst of conversation and when alone.

A music teacher and composer of great genius, and now perfectly well, could not refrain when he first saw me from going through the movements of fingering the key-board of the piano and a tra-la-la accompaniment. He had just finished a Herculean task and was on the verge of a disastrous breakdown characterised by profound insomnia, marked general restlessness, and psychical excitability.

A charming young lady patient under my care at the asylum at Fulton, Mo., in 1870 first attracted attention by repeating a call to the chickens, of which she was very fond when at home. "Chicky, chicky, chicky," she would repeat, and as her insanity became pronounced she would say "Chicky" all day and far into the night until put to sleep by hypnotics. A suppression of the menses accompanied or preceded her insanity and returned with the return of her sanity. She recovered after six weeks' treatment with bromide of potassium, timely hypnotics, tonics, aloetic laxatives and gelsemium.

Another patient under my care at Fulton, a man of upwards of 50 years of age who had gone insane and had turned grey in a few weeks' time under the strain and misfortune of the Civil War, having lost most of his property, principally in slaves, and become suddenly bankrupt, assumed a bent-over attitude as he walked about night and day exclaiming, "My God, how can I stand it; how can a man carry the world on his shoulders?" This man, who was possessed of good physical vigour for his years and was an excessive user of tobacco, reminded me of the pictures of the mythical Atlas. After the acute stage of his malady had passed he would repeat only the words "How can I stand it?" and this utterance he would make years after the inception of his insanity, even at times when provoked to smile or when asking for a chew of tobacco, after the fires of the early mental conflagration had gone out and his life seemed to be no longer one of psychical pain. The scar remaining among the cerebral cinders kept up the automatic cerebral refrain, "My God, how can I stand it? How can I stand it?" long after he had ceased to feel the poignant mental pain of the acute stage of his disease.

The peculiarity of Samuel Johnson who, after a good deal of mental strain, could not pass a single one of the stone posts which stood at regular intervals along the pavement of the streets in his native town of Lichfield without laying his hand on the top of each one is also *apropos* to our subject. Fortunately Johnson never broke down seriously in his nerve centres. His repetitional automaticity did not pass to an extremely morbid stage.

Under the heading of "Letter Counting," the Paris correspondent of the *British Medical Journal* mentions a case in point reported to a Bordeaux society by Dr. Ginostos. The subject was a young man who since the age of 10 years had had an irresistible impulse to count the letters in a word or phrase that he heard, saw, spoke, or thought. At night he slept without dreaming. When he did not talk he invented phrases and counted the letters in them. 32 was a number that gave him satisfaction; the number 13 displeased him, but nevertheless he did not recoil from arranging phrases with 13 letters in them. This unceasing automatic operation did not in any way interfere with his daily work or his reading or with the carrying on