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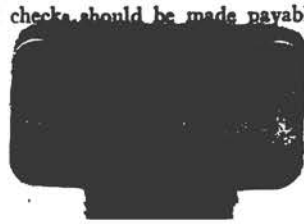

PSYCHOSOMATIC MEDICINE MONOGRAPH I

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A PSYCHOLOGICAL AND MEDICAL STUDY OF SIXTY CASES

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A PSYCHOLOGICAL MEDICAL STUDY OF SIXTY CASES

BY

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FOREWORD

A TWENTY-ODD YEAR OLD hospital nurse of New England background and Protestant training received the amorous attentions of a physician who was an Italian and a Catholic. In response to a letter telling her parents of her engagement, she was told that if she did not immediately break it, she would be disinherited and could never return to her home. When she informed her parents that she planned to marry in spite of their protests, they doubled the calumny which they heaped upon her. Two months intervened before the wedding. Throughout this time she suffered from a mucous diarrhea.

On the day of the wedding, however, she received a letter from her mother, saying that she had been forgiven, and inviting her and her husband to feel free to come home at any time. Her symptoms immediately disappeared and never returned thereafter. Such histories form the basis of the present study.

Diarrhea as a symptom of nervousness has been recognized for centuries. It is only recently, however, that the reaction as a whole has been recognized and given the status of a syndrome. The shortest and most acceptable name seems to us to be "mucous colitis." No apology is made for the use of the word "colitis" to indicate "disorder of the colon." This is the original meaning of the word, and only in the last fifty years has the genitive "itis" been used to mean "inflammation of" with the implication that bacterial invasion is the cause.

THE AUTHORS

I. HISTORICAL REVIEW

ALTHOUGH VARIOUS ALLUSIONS to mucous diarrhea had already been made, Da Costa (*1*) was the first of modern clinicians to emphasize its importance. He was familiar with the illness of the soldiers in the American Civil War among whom Woodward (*2*) had reported a high incidence of diarrhea. Da Costa had seen a great deal of nervous illness among the soldiers and made a thorough investigation of the "irritable heart" (*3*). In the paper on that subject he listed diarrhea as one of the principal "etiological factors" contributing to the causation of cardiac irritability. Unquestionably, some of the patients suffering from irritable hearts were debilitated by diarrhea. Others, quite probably, were suffering from two apparently unrelated manifestations of anxiety.

Da Costa described the syndrome of mucous colitis[1] with great accuracy and presented in detail the histories of seven patients. He commented upon the diarrhea with mucous casts, upon the high incidence of dyspepsia, upon the abdominal pain, and upon the relation of the symptoms to emotional tension. He examined the rectums of the patients with a speculum and noted that the mucosa was angry red and thickened, but showed no evidence of ulceration. He suggested that the low residue diet afforded the most effective form of treatment. His report contains also a scholarly review of classical references to the syndrome.

The subject of mucous colitis during the latter years of the 19th century was further studied by the dynamically minded clinicians of Europe. The earlier of these writers, Nothnagel (*4*), Marchand (*5*), and von Leube (*6*) emphasized the concept that the disease was really a secretory and motor neurosis of the intestine, while their immediate followers, Einhorn (*7*), Boas (*8*), Ebstein (*9*), and Schutz (*10*) disagreed to a certain extent with this simple concept. All the latter tended rather to emphasize the rôle of inflammatory processes in the colon. Von Noorden (*11*), in reviewing the evidence for these two beliefs, emphasized the fact that paroxysmal attacks of pain with mucous diarrhea were known to occur in frankly infectious enteritides, but he also pointed out that Rothmann (*12*) and Hemmeter (*13*) had demonstrated at the autopsy table histologically normal colons from patients who had suffered from severe "colica mucosa". Nothnagel, also, recognized that pain and mucus could occur in the presence or absence of specific lesions, and he sharply divided his neurotic cases from those which he considered infectious in nature. Westphalen (*14*) attempted to rationalize these views by formulating the concept that all excess mucous secretion was due to nervous influences, which, however, in the infectious enteritides, were secondary to inflammation. Von Noorden's concept was similar to that of the "secretory" school except that he felt the pain to be due to the peeling off of dried mucus from the bowel wall. He also emphasized the fact that almost all his patients with mucous diarrhea suffered from pre-existing constipation and he seemed to feel that the irritation from the hard movements might induce mucoid secretion.

De Langenhagen (*15*) in 1903 reported a series of 1200 cases from

[1] See Foreword.

Plombières. He spoke of the association of mucous colitis with the "neuro-arthritic diathesis," an inaccurate but descriptive term for those physically and emotionally inadequate persons who frequent European watering places. Among the series of 1200, there were 50 cases who had severe intermittent attacks of colic and 112 who had, at one time or another passed intestinal sand, a gritty excrement, originally described by Matthieu but generally attributed to Dieulafoy (*16*). The entire 1200 were described as being neurotic. Neurasthenia, hypochondriasis and "hysteria" were the neuroses most frequently encountered. De Langenhagen emphasized the manifestations of lability of the autonomic nervous system and the frequency with which severe anxiety was encountered. He felt that the rôle of infection was unimportant.

Fleiner (*17*) differentiated between spastic and atonic constipation. The spastic type of which he wrote corresponded closely with Stierlin's (*18*) constipation of the "ascending type", in which the cecum was dilated and the sigmoid spastic. Likewise the work of Singer (*19*) on the "spastic colon" dealt with the same general group of patients. The first accurate sigmoidoscopic observations in the condition are generally attributed to Singer. Singer and Holzknecht (*20*) contributed to the radiological knowledge of the syndrome and also emphasized the fact that the sigmoid colon could often be palpated as a firm, hard mass in the left lower quadrant of the abdomen. Schwartz (*21*) described the spastic changes in the colon demonstrable by X-ray and also the "string sign" which is often attributed to later workers.

Hurst (*22*) belittled the concept of the "spastic colon". He introduced the word "dyschezia" to describe a form of constipation supposedly due to rectal retention. In the Massachusetts General Hospital series, the rectums of most of the patients were empty at the time of proctoscopy, a fact which throws some doubt on the frequency with which "dyschezia" and mucous colitis coexist. Hurst believed that "dyschezia", or rectal retention, was the only form of nervous constipation. He felt that the passage of hard, small scybala represented an overflow from the rectal retention and that the secretion of mucus and abdominal cramps resulted from its irritating presence. While his idea of the mechanism differed widely from that of other writers, it is interesting to note that, during the World War, Hurst (*23*) again called attention to the fact that mucous diarrhea and the "soldier's heart" often occurred in the same individuals. This observation, made by Da Costa forty-six years before, was also observed to be true by Sir Thomas Lewis (*24*).

After the World War, interest in the condition largely returned to this country. A hoard of brief clinical papers appeared in the literature, most of them making no contribution to the subject. With the rise in the development of clinical allergy, a number of attempts were made to explain the etiological basis of the disease as being due to food idiosyncrasy. Duke (*25*) presented 5 cases of unquestionable food allergy in which there were abdominal pains and symptoms in many ways suggestive of mucous colitis. Hollander (*26*) added 6 more in 1927. Meanwhile, other allergists were working on the causation of gastrointestinal symptoms. Among the leaders in this movement, were Vaughan (*27*) and Rowe (*28*). Whatever the merits of their work, it is certainly true that an overemphasis was placed upon the significance of gastrointestinal allergy during the third decade of this century. Largely through the influence of Cannon (*29*), who studied the physiological manifesta-

tions of fear and rage in animals (*30*), there also developed a broader and more intelligent interest in the concept of vegetative neuroses. Alverez' studies (*31*), on a gradient of irritability in the gastrointestinal tract, did much to explain many of the symptoms of gastric neuroses, and his homely psychiatric approach (*32*) went far to interest clinicians in the emotional aspect of gastrointestinal disorders. This tendency was manifested by numerous contributions and addresses by notable authorities on the rather vague subject of psychosomatic disorders.

Bockus, Bank and Wilkinson (*33*) made a careful study of 50 patients with mucous colitis in which emotional problems were specifically studied. They described the syndrome almost exactly as has been done in this study, and found almost exactly the same incidence of signs and symptoms. They noted that most of the patients were not frankly "neurotic" although all of them were emotionally unstable. Hysteria was encountered in only 1 case. During exacerbations, the emotions were "near the surface"; that is, the patients were tense. A tendency toward depressive symptoms was noted in 23 cases, while a degree of introspection approaching hypochondriasis appeared in 22. Asthenia was a prominent feature in 16. The incidence of these tendencies compares reasonably closely with that found in the cases here presented.

Murray (*34*) reported the development of ulcerative colitis on an emotional basis. The first of the cases reported in his series was probably one of mucous colitis which developed in a situation almost identical with that of the nurse mentioned in the foreword. Sullivan (*35*) also studied the psychogenic basis for ulcerative colitis.

Even more specific than the work of Bockus, Bank and Wilkinson was that of Alexander (*36*) upon the unconscious motivation of gastrointestinal disorders. He employed the psychoanalytic technique and his results are discussed elsewhere.

Including the contribution of Bockus, Bank, and Wilkinson, there are at least 4 moderately careful clinical series of mucous colitis cases (*33*, *37*, *38*, *39*). Friendenwald, Feldman and Rosenthal (*37*) presented a complete review of the signs and symptoms, laboratory, X-ray and sigmoidoscopic findings in 500 cases. Their findings were essentially the same as those of Bockus, Bank, and Wilkinson, and agree closely with the incidences seen in the present study. Jordan (*38*) and Kiefer admitted patients in their series on the basis of less clear-cut criteria and one gains the impression that the term "irritable colon" in their clinic is used more broadly than mucous colitis in its current sense. The Mayo Clinic series (*39*) was not presented in comparable statistics.

A number of papers upon the roentgenological diagnosis of the condition have also appeared, among which those of Kantor (*40*) and Crane (*41*), which contributed the "string sign", are most widely quoted.

The concept of mucous colitis as a vegetative neurosis which may be precipitated by emotional tension can hardly be called a new one.

It is the purpose of this study to review a series of patients, studied from a medical as well as a psychiatric viewpoint, and to evaluate the evidence for and against this hypothesis.

II. CLINICAL SYNDROME

THE SYNDROME OF MUCOUS COLITIS consists essentially of gastrointestinal symptoms predominantly referable to the colon. In all the cases there is at some time constipation or diarrhea, accompanied by abdominal pain, and the passage of stools of small calibre. In the majority of instances the first symptom, usually coming on in the second or third decade, is constipation. Diarrhea, as a rule, is a later development. A certain number of patients have alternating constipation and diarrhea, and in many cases these short bouts of diarrhea are accompanied by the passage of long strings of mucus, or of mucous casts of the bowel, a process which is painful in the extreme.

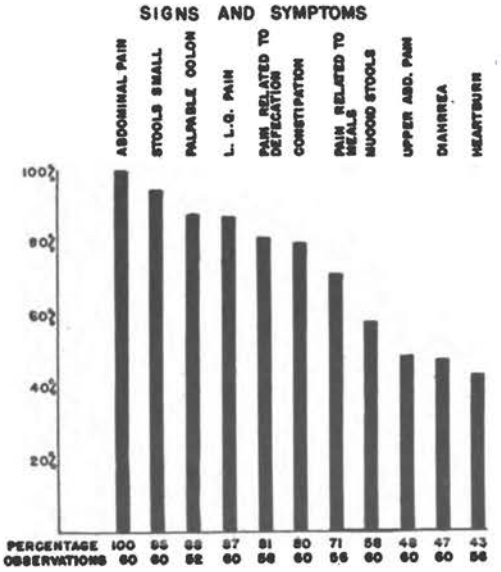

FIG. 1. Clinical findings in sixty cases of "mucous colitis"

Certain workers, Jordan (*38*), in particular, employ the expression "irritable colon" to refer to a wider range of symptoms than those outlined above. Jordan believes even this wider range of symptoms to be secondary to disturbances of the colon and one third of all the entries to her clinic are considered to be suffering from this syndrome. In her experience the commonest symptom of the "irritable colon" is upper abdominal distress, while frank lower abdominal symptoms are not always to be found.

TABLE I

INCIDENCE OF VARIOUS CLINICAL FINDINGS IN FOUR SERIES OF CASES

	FREQUENCY OF SPECIFIC SYMPTOMS			
	Friedenwald, Feldman and Rosenthal	This Study	Jordan	Bockus, Bank and Wilkinson
Dyspepsia or Upper Abdominal Pain	64%	48%	59%	58%
Abdominal Pain	93%	100%	87%–90%	70%
Diarrhea	19%	43%	9%	44%
Constipation	72%	80%	80%	80%
Males	16%	27%	23%	36%
Females	84%	73%	77%	64%
Food Allergy	1%	3.3%	—	—
Coincident Peptic Ulcer	8%	6.7%	—	4%
Spasm by X-ray	51%	18.0%	27%	43%
Asthenic Physique	64%	33.0%	—	56%
Sigmoidoscopic Changes	89%	89.0%	—	92%

In contrast to this liberal use of the irritable colon concept, many clinicians use the expression, "mucous colitis", to refer only to those cases in which there is frank diarrhea with the passage of large amounts of mucus. They often limit the use of the term to those now relatively rare cases in which there are severe attacks of abdominal colic followed by the expulsion of membranous casts of the bowel. This type of syn-

drome was apparently much more common in the first decade of this century than it is now.

In this study the concept of the irritable colon has been used more conservatively than it is by Jordan; that is, to refer only to cases in which good evidence is available that the symptoms were in fact due, at least in part, to a disorder of the colon. On the other hand, it has been used to include a wider range of symptoms than those recognized by most clinicians. The only symptom which has been taken as a *sine qua non* of the diagnosis has been pain.

In our series the original complaints and diagnoses varied considerably, but in 67 per cent the main trouble was immediately recognized. The commonest misdiagnosis was "gall bladder disease", with peptic ulcer, genito-urinary infections, and appendicitis not far behind (*see Table II*).

TABLE II

INITIAL DIAGNOSES IN SIXTY CASES OF MUCOUS COLITIS. IN SOME INSTANCES THE INITIAL DIAGNOSES WERE INCORRECT, IN OTHERS THEY BECAME SECONDARY DIAGNOSES

Initial Diagnoses

	Cases	Percent
Colitis	22	37
Psychoneurosis	18	30
Gall Bladder Disease	3	5
Peptic Ulcer	2	3·3
Appendicitis	2	3·3
Irritable Heart	2	3·3
Addison's Disease	2	3·3
Carcinoma of Stomach	2	3·3
Pelvic Inflammation	1	1.7
Pregnancy	1	1.7
Myxedema	1	1.7
Diaphragmatic Hernia	1	1.7
Asthma	1	1.7
Angina Pectoris	1	1.7
Allergy	1	1.7

The majority of the cases entered the hospital in the middle decades of life; the average age, coming under observation, being 35. Most patients had suffered from their symptoms for a period of several years before the correct diagnosis was made, the average age of onset being 25. The age of onset of symptoms and of hospital admission (with correct diagnosis) is recorded in Fig. 2.

All the patients in our series suffered from abdominal pain at some time or other. In addition, all of them had constipation or diarrhea at some time, stools of small calibre, with certain other characteristic changes and in most instances a palpable and tender sigmoid. Friedenwald, Feldman and Rosenthal summarized the symptoms and signs found in their series and their summaries roughly coincide with ours. In Table I the tabulations from four sources are shown in parallel columns. These data affirm the fact that Friedenwald, Feldman and Rosenthal were dealing with the same group of patients which have been studied in this series. For a detailed review of the symptomatology of the syndrome, their paper is the best reference available.

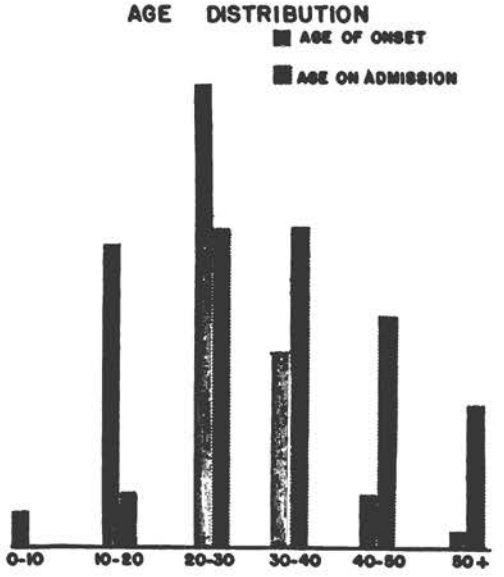

FIG. 2. Age distribution at onset of symptoms and at time of diagnosis. Note that the greatest number of cases develop symptoms in the second and third decades of life.

In most instances where diarrhea was a prominent complaint, the diagnosis was arrived at promptly, the more serious types of etiology for diarrhea having being ruled out by appropriate diagnostic tests. Where abdominal pain or constipation was the presenting symptom, however, the final diagnosis was often overlooked for a long time, and made ultimately only after the situation had been aggravated by the therapeutic use of cathartics.

When diarrhea was the presenting bowel symptom, the patient most often complained of the passage of many soft stools of small calibre. They varied in consistency from watery, to mushy, often contained mucus, very rarely blood. When constipation was the presenting complaint, the symptoms were somewhat more varied. The type of constipation differed from that of simple anal retention (dyschezia) in that the patient would sit at stool with no urge to defecate, and if any movement occurred it would be extremely small. In dyschezia, the patient complains of large, hard, painful dejections. Even in constipated patients with the mucous colitis syndrome, movements might be hard or soft. If hard, they were commonly composed of small, hard, dark scybala or "rabbit pellets". Occasionally these scybala, formed by excessive resorption of water in the colon, collected in the rectum and coalesced so as to produce a painful dejection, but generally they were passed singly. Often they bore a coating of clear mucous distinctly greater than the normal. If the movements were soft, they were also small in calibre, lighter in color, and stringy in appearance—generally described by the patient as "the size of a pencil". The history of these characteristic stools should set one on one's guard against the diagnosis of atonic constipation or of simple rectal retention.

The type of abdominal pain was of great help in leading to the diagnosis. Although upper abdominal symptoms such as heartburn, belching, sour eructations, post-prandial epigastric fullness, nausea, lack of appetite, furring of the tongue, and dry mouth were often complained of, in almost every instance there was some pain below the umbilicus. Jones (*42*) has shown that pain due to stimulation within the colon is usually referred to an area well below the navel. From most parts of the colon he showed it to be referred to the midline, but from certain regions which are fixed to the peritoneum, the pain is found to one side or the other. The pain in the lower abdomen in our patients often extended entirely across its width, but in many instances was more acute in the right or left lower quadrants. In most cases, the pain was described as "cramp like", although often it was referred to as a sense of pressure or a feeling of gas; less frequently, patients complained of a raw aching feeling in which they recognized grinding sensations. In almost every instance the pain was aggravated by certain stimuli which might be expected to have an action upon the muscular walls of the colon. Eighty-one per cent had aggravation of pain in association with bowel movements. A large number also had increased severity of pain after taking cathartics or enemata. Seventy-one per cent had exacerbations of discomfort after the ingestion of food, and usually about ½ hour to 1 hour thereafter. This period corresponds roughly with the time generally required for establishment of activity of the gastro-colic reflex. Almost all the patients found they were unable to eat cabbage or other foods high in cellulose residue, and nearly all the sufferers in the less neurotic group noticed an immediate aggravation following episodes of emo-

tional tension. Excessive exercise, exhaustion, and respiratory infections were also found to be excitatory influences.

Physical Status

No crude correlation with anthropological types of Kretschmer (*43*) could be determined. Forty-three per cent of the cases belonged to the leptosomic group, 32 per cent to the pyknic group, while the remaining 25 per cent were of indeterminate build. There were, however, certain stigmata of dysfunction of the autonomic nervous system and other physical findings which occurred with regularity and were apparently of importance.

A *general* nervous excitability was indicated by the appearance of tension, restlessness, and in a large percentage of cases of grossly hyperactive tendon reflexes.

A *specific* incoordination of the autonomic nervous system was indicated by dilation of the pupils (5 mm. or wider) in a small number of the cases, flushing of the skin, particularly of the face and neck, coldness of the extremities, marked sweating, particularly of the palmer surface of the hands, and a definitely exaggerated "red" response to stroking of the skin (*see Fig. 3*). The red response was usually not accompanied by actual wheal formation. In addition, the descending colon was generally palpable as a firm, tender, tubular structure. Some of the patients had recognized it themselves and referred to it aptly as a "rubber hose". The only other physical findings of importance were lability of the pulse rate and irregular sighing respirations, both of which were frequently observed. The evidence for vascular instability is reviewed elsewhere in discussion of the Schneider and Turner tests of physical efficiency (p. 80).

Value of Special Diagnostic Procedures

The conventional routine laboratory procedures yielded no help in the diagnosis of mucous colitis. Blood studies showed no evidence of anemia or

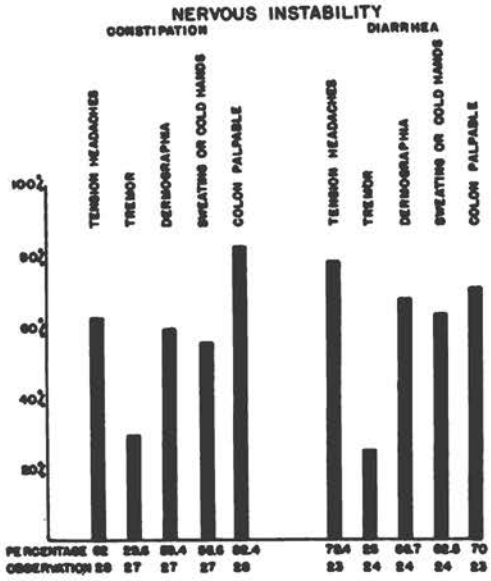

FIG. 3. Stigmata of nervous instability. There is no appreciable difference between the patients with constipation and those with diarrhea.

leukocytosis, the differential blood count was within the normal range, and even eosinophilia was absent. An increase in eosinophiles might have been expected in view of the close parallelism between the underlying pathology and that of bronchial asthma. The urine examinations also showed no deviations from the normal.

Stool examinations were important only from the point of view of shape, consistency, color, and the presence or absence of mucus. These features are discussed elsewhere in relation to symptomatology. Gross or occult blood occurred only in cases where there were local lesions in the anal canal. Many of the stools were examined for para-

sites, ova, and cultured for dysentery organisms without success. In Fig. 4 are recorded the significant characteristics of the stools in the different syndromes of mucous colitis.

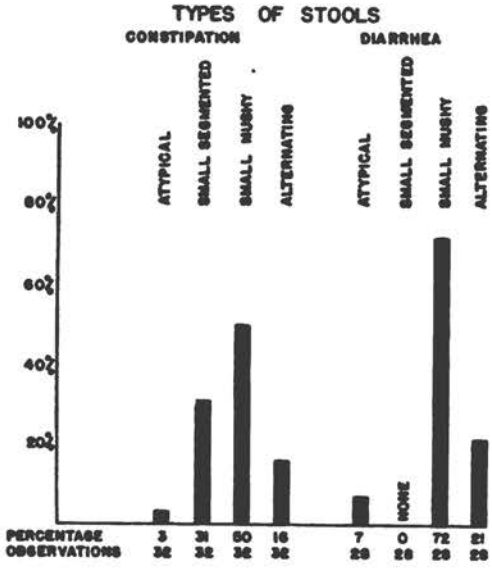

FIG. 4. Shape and consistency of stools. Note that in the presence of diarrhea small mushy stools are almost invariably present. In constipated subjects small, hard, segmented stools and mushy stools occur with almost equal frequency.

The most important single diagnostic procedure is that of sigmoidoscopy. In Friedenwald, Feldman, and Rosenthal's series, recognizable sigmoidoscopic changes were noted in 89 per cent of the cases. This figure is in agreement with our observations, in which 89 per cent showed changes similar to those which they described. According to their work there are three stages of the development of the characteristic sigmoidoscopic picture.

Stage 1 consists in a dilation of the smaller veins, slight generalized injection, the appearance of fresh glairy mucus and greater or lesser degrees of spasm (so called, shad roe appearance).

Stage 2 represents a longer duration of the process. The generalized injection is more marked, so that the veins lose their identity in the surrounding field; the mucus is drier and more tenuous.

Stage 3 is still more severe. In it the tenuous mucus peels off the mucosa with difficulty, leaving small granular indentations in its wake. A certain amount of spasm may be present in any of the three stages.

Although it was not attempted in our study to make a clear cut differentiation into three stages, in general our observations were in accord with those of Friedenwald, Feldman and Rosenthal. In Fig. 5 the incidence of the characteristics described by them is recorded. The cases of short duration in which constipation was the predominating symptom showed only slight abnormalities. Cases with more severe constipation or with symptoms of longer duration usually showed more distinct changes, consisting generally of dilation of the superficial veins and venules, the presence of a mild degree of injection, some glairy secretion of mucus, and an abnormally great irritability with a tendency to spasm. All cases with diarrhea showed alterations of at least this degree of severity; the most marked changes appeared in persons with prolonged constant diarrhea, or in those with acute bouts of severe colic followed by the expulsion of mucous casts. This last group showed the most marked alterations. They were similar to those described in stages 2 and 3 of Friedenwald, Feldman and Rosenthal's schema. The generalized injection, puckering, and wrinkling of the mucosa tended to mask the dilation of the veins. The mucus was dry, tenuous, and adherent, at times stripping with difficulty. Spasm as a rule was more marked than in the early constipated cases, but it was not present in all of them. In several instances when spasm was present, it was relieved following the local application of a 0.1-0.5 per

cent solution of atropine in the rectum, but this phenomenon was only observed in 6 of the 12 cases on which it was tried. On the other hand, drugs which stimulate the parasympathetic nervous system, such as Acetyl-B-methyl choline chloride, pilocarpine, and physostigmine, when applied locally, were almost without effect on the sigmoidoscopic picture. This is in striking contrast to their effect upon the normal rectosigmoid, which is discussed in a subsequent chapter.

The sigmoidoscopic picture of mucous colitis is not specific. It can occur in the normal rectum and sigmoid following repeated irritant enemata, and it may be seen in patients recovering from acute infectious enteritis. It may also be seen in those with localized inflammatory lesions such as diverticulitis, proximal types of infectious colitis, regional ileitis, etc. The observed signs are really only those of chronic irritation, which may be and, in many instances, is mediated through the parasympathetic division of the autonomic nervous system. These non-specific changes are of great value in making the diagnosis when they are considered in the light of other diagnostic criteria. They indicate that a sufficient focus of irritation to produce the symptoms is present and, by the absence of ulceration, polyp formation, etc., they help to eliminate the diagnosis of more serious types of disease.

The roentgenological examination, on the other hand, is of almost no value from a diagnostic point of view. In our series, only 18 per cent of the cases showed suggestive changes by the routine barium enema technique. Even in the carefully controlled series of Friedenwald, Feldman and Rosenthal, only 51 per cent of the cases showed spasm at the time of examination, and spasm was the sign most frequently encountered (*see Table I*). Whatever its failings from a diagnostic point of view, the X-ray examination has great academic interest from the point of view of abnormal physiology. This is true because the X-ray is capable of demonstrating

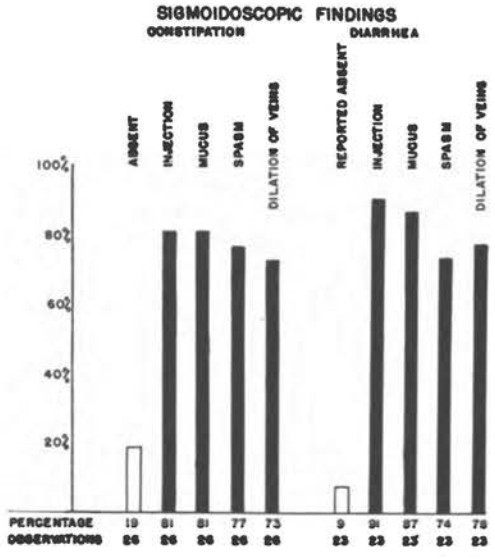

FIG. 5. Sigmoidoscopic findings. Entirely negative observations occurred more frequently among the constipated subjects. The two negative observations in patients with diarrhea were routine hospital observations.

the motility of the colon better than any other one method, and the early studies of different types of constipation were based upon roentgenological differentiation.

Fleiner was the first to introduce the concept of atonic versus spastic constipation. This work stimulated many further investigations which have led to much confusion of the nomenclature. The spastic constipation of Fleiner is presumably the form which was encountered in this series. Subsequently Stierlin introduced the concept of "constipation of the ascending type." He described X-ray changes in the colon in which the rectosigmoid was grossly narrowed and spastic, while the cecum was distended by retained fecal matter. This is precisely the situation which obtained clinically, on the basis of sig-

moidoscopic examination and abdominal palpation, in our series. The type which Stierlin described is apparently related to the spastic constipation of Fleiner and is one of the forms which constitute the mucous colitis syndrome.

Singer and Holzknecht were among the first to describe such spastic changes in mucous colitis. Schwartz in 1914 emphasized the presence of spasm of the descending colon, and observed patients in whom very rapid spasm and relaxation of the entire descending colon could be easily observed. Schatski, in studying one of the cases in this series under experimental conditions, was able to confirm this sudden constriction and relaxation of the descending bowel. In his case slight pressure over the left abdomen would produce spasm of the descending colon and relaxation of the transverse colon. Conversely, a similar stimulus applied in the epigastrium would produce spasm of the transverse colon and relaxation of the descending colon. This interplay was repeated an indefinite number of times. Other workers made observations which largely confirmed those of the early German workers. In 1927, Kantor described with some accuracy the changes observed in the colon in mucous colitis and emphasized the importance of the administration of barium by mouth. This technique enabled him to study the rate of passage of the barium column from the cecum to the rectum. He observed that whereas in the normal person the head of the barium column was usually at the hepatic flexure in 9 hours, it might, in patients with mucous colitis, be at the region of the splenic flexure or even in the rectum by this time. He also noted, as was subsequently confirmed by Jordan, that the filling time by barium enema was decreased. Kantor emphasized the importance of deep haustral markings in the spastic areas, reduction in calibre in the transverse and descending colons, the rapid passage of barium, and in some instances, the appearance of residual "strings" left after the passage of the barium column. These strings, supposedly composed of barium and mucus, cast rather striking shadows when they were present. Crane was the first to emphasize the specificity of this sign which occurs in only a small percentage of cases. Schwartz had recognized and described it 15 years earlier. With the advent of the mucosal relief method which was introduced by Forssell (*44*), careful study of the mucosa of the rectosigmoid became possible. Knothe (*45*), working in Berg's (*46*) clinic, made observations which showed the mucosa to be finely wrinkled and to show a preponderance of vertical folds. The observations of many German and American (*47*) workers are essentially in agreement as to the X-ray signs which are often seen in these patients. The disagreement lies in the inability by *routine* methods to reveal them in every case, and in their lack of specificity. From the theoretical angle they are of interest in throwing light upon the physiological mechanism which is operative.

The X-ray observations most often encountered in mucous colitis are: 1) Rapid filling of the colon by enema or rapid downward passage of barium taken by mouth, 2) Spasm and irritability of the descending colon, 3) Increase in the depth of haustrations in the spastic areas, 4) The presence of strings of barium in the transverse or descending colons after the passage of barium, and 5) Increase in the number of mucosal folds, with a tendency toward an increase in the number of vertical folds, when studied by the relief method. When observed by *routine* technique these changes are easily missed, and hard to evaluate; hence, the usual X-ray examination may be considered to

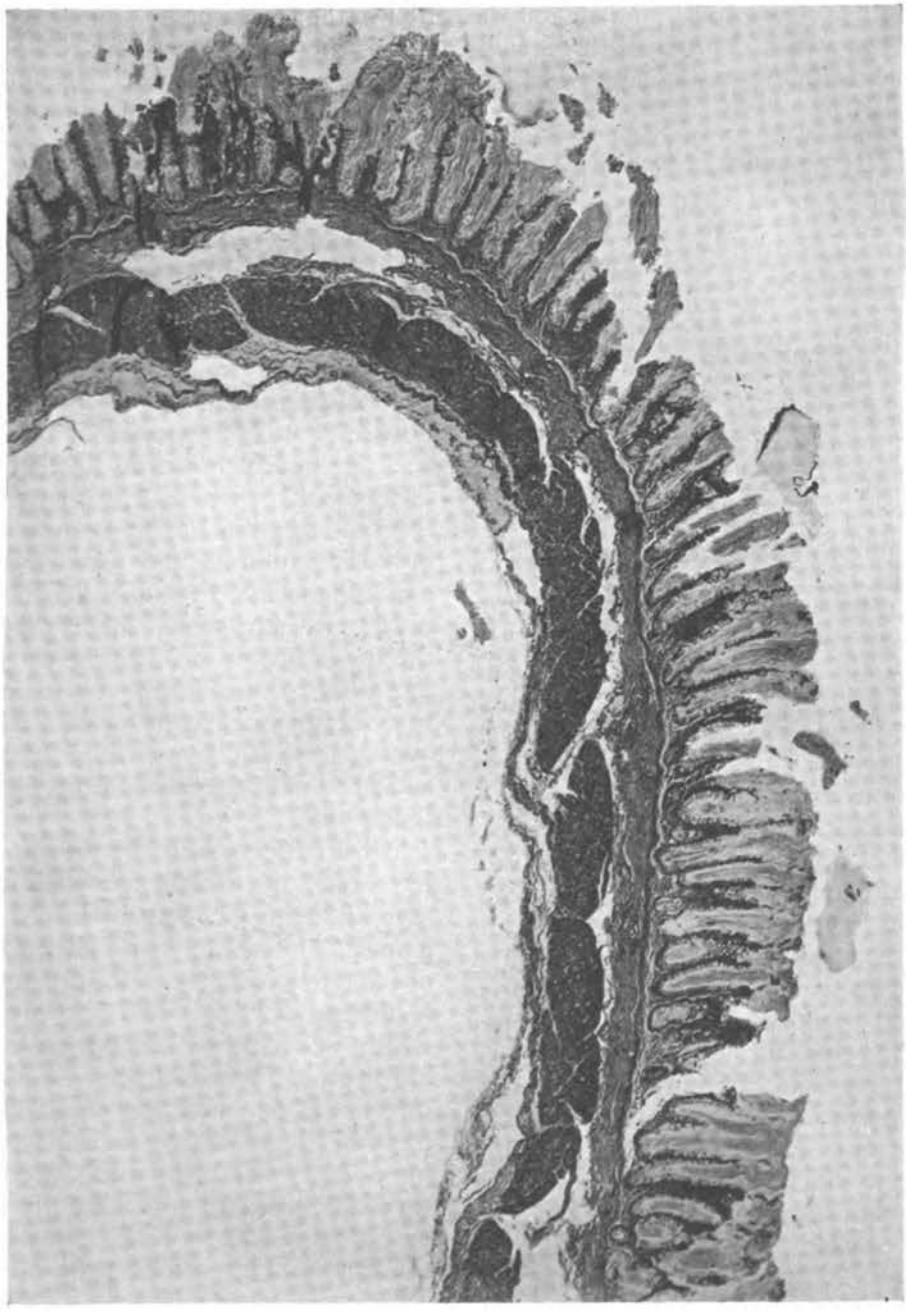

FIG. 6. Photomicrograph of a section of the colon of a fifty-two-year-old woman who died with no other anatomical lesion than mucous colitis. Note the large amount of mucus pouring from the intestinal glands. There is very little evidence of round cell infiltration. No eosinophiles were seen.

be of no value excepting to rule out the more dangerous and permanent lesions such as carcinoma and ulcerative colitis.

The Histopathological Picture

Inasmuch as mucous colitis is rarely a fatal disease and bowel resections are not commonly performed, there are few opportunities to study the histopathological picture. Holsti (*48*) reported one case in which the bowel was resected surgically. Mallory[1] has an autopsied case in the files of the Massachusetts General Hospital. From a study of his sections, one is impressed with the similarity of the picture to that of bronchial asthma. The goblet cells can be seen to be secreting large amounts of mucous. There is, essentially, no infiltration of leukocytes. In Fig. 6 is reproduced a photomicrograph of Mallory's case. The muscular spasm, characteristic of both bronchial asthma and mucous colitis, does not appear in the fixed specimen, and there is no evidence of muscular hypertrophy. It is of interest that not only are the two conditions characterized by the same changes, muscular spasm and glandular secretion, but in both instances similar muscular and glandular activities may be mediated through the parasympathetic nervous system. The mechanisms, which seem to precipitate the two conditions, apparently differ in some respects which are discussed elsewhere. The pathological process itself appears to be almost identical in the two conditions.

Course of the Disease

The course of the syndrome is not fatal. Cases which come under observation in the early stages, where constipation is the predominating bowel symptom, are almost always immediately amenable to treatment. The percentage of such cases which go on to develop intermittent or constant diarrhea cannot be estimated from our figures. One's impression is, however, that only a relatively small number go on to the stage of diarrhea. This impression is based upon the relative frequency with which "spastic constipation" is encountered in well-to-do practice and how seldom the picture of full blown mucous colitis occurs. Inasmuch, however, as almost all the patients with severe diarrhea of this type recall its having been preceded by constipation of the "spastic" type, one cannot say that the prognosis is necessarily favorable, merely because the diagnosis has been made early. On the other hand it is probably true, barring certain extraneous factors, that the average case can be satisfactorily treated and need not progress to a more serious level.

Most patients with diarrhea had suffered from pre-existing constipation for several years. Once diarrhea develops, it may be of one or two types. On the one hand it may be a continuation of recurrent diarrhea with exacerbations which are closely related to dietary indiscretions, overexertion, respiratory infections, or emotional turmoil. On the other hand, it may be characterized by sharply circumscribed attacks of severe, excruciating cramps, followed by the discharge of mucous casts from the bowel. This second type does not seem to bear any close relation to the factors just outlined but recurs at stated intervals with moderate regularity. Roger (*50*), in 1905, introduced the concept that there existed an enzyme which was capable of altering mucus from its normal consistency so as to become hard and tenuous at it is in these

[1] We are indebted to Dr. Benjamin Castleman for preparing a photomicrograph from this case.

cases. His idea was that these "colica mucosa" attacks were mediated through an overproduction of the enzyme, which he called mucinase.

Most patients with diarrhea of the type precipitated by the usual factors obtain relief from any form of treatment which alleviates the factor principally at play. In many instances, as is indicated below, this factor is an emotional one. If the situation is insoluble, the prognosis as to comfort and recovery may be very bad. If, on the other hand, it can easily be brought to a solution, a very great improvement may follow. Likewise the removal of inauspicious articles of diet, allergens, overexhaustion, and infectious agents may produce a great degree of temporary or permanent relief.

For some reason "colica mucosa" attacks are relatively rare. De Langenhagen studied a series of 1200 cases of mucous colitis in 1903 of which only 50 suffered from typical severe attacks of colic. There were less than 6 cases in our series, and those which were observed showed almost no relation to any of the customary precipitating factors. In most instances patients with this form of the disease apparently continue to suffer patiently for years on end, perhaps obtaining relief from the pain of the spasms by the use of opium or other drugs.

W. J. Mallory (*49*) suggested that spastic constipation, mucous colitis and ulcerative colitis represented subsequent stages in the development of the same physiological and pathological process. Our observations bear out the correlation between spastic constipation and mucous colitis. The relation between mucous colitis and ulcerative colitis is less certain. Sullivan adheres to the view that mucous colitis may lead to ulcerative colitis. This theoretical possibility was not observed in any of the cases under our observation, nor have the histories of patients with ulcerative colitis as a rule confirmed the concept of their previous suffering from mucous colitis. The danger of developing ulcerative colitis is apparently remote even in patients with severe "mucous colic."

The course of the disease, in any of its manifestations, is chronic with frequent exacerbations. The outcome is usually not bad from the point of view of malnourishment, wasting, anemia and other such complications of severe gastrointestinal disease. However, inasmuch as the great majority of the patients have major emotional problems, which often are virtually insoluble, the outlook for a satisfactory life adjustment is bad. As a rule there is chronic or recurrent tension which is associated with aggravation in the symptomatology. Many of the cases go on to chronic invalidism of a type which is understandable in the light of their personality characteristics.

Etiology

A discussion of etiology is relegated to the end of this chapter because of the need for a comprehensive picture of the symptom complex and its clinical manifestations before attempting to discuss its causes. Certain aspects of the etiology are unknown. Other precipitating etiological factors are well known but none the less in a state of poor evaluation. The syndrome may fairly be said to result from hyperirritability of the sigmoid colon, and all factors which contribute to this hyperirritability may be said to be etiological in their effect. Some of the contributing factors apparently act directly on the mucosa of the colon, others in an unknown manner in the local tissue (allergens) and still others through autonomic

nerve fibers. In enumerating the factors the exact point of operation is not emphasized. In some cases it is not clear (*see Fig. 7*).

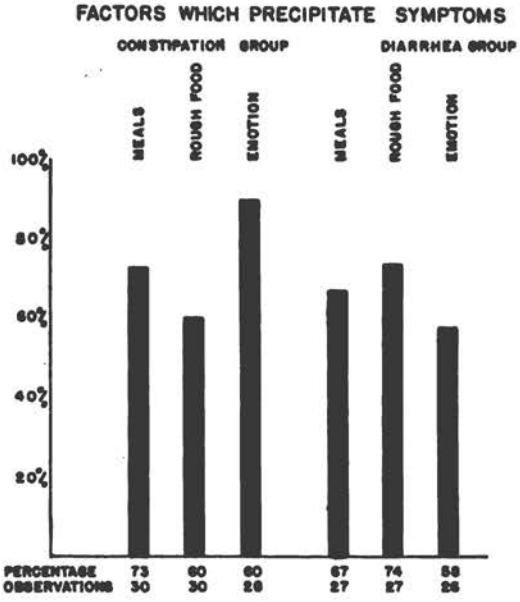

FIG. 7. Factors which patients recognize as precipitants of symptoms. It is not be to presupposed that the symptoms brought on by a bland meal, by rough food, or by emotional tension are necessarily of the same degree of intensity or duration.

1. *Physique:* The anthropological build of the patients is of little significance. There were leptosomic, pyknic and mixed builds in almost equal numbers. However, the physical status is apparently of great importance from the point of view of athletic training. Most of the patients appeared to be "soft" and out of training. The syndrome was rarely encountered among persons doing hard manual labor, but on the contrary, a point which was also noted by Bargen (*39*), was frequent among sedentary workers. It was with difficulty that the authors could collect 60 cases from the out-patient department of the Massachusetts General Hospital in a period of 18 months, while in the out-patient clinic of another institution catering to a slightly less penurious class, one of them encountered a higher relative number of cases. Jordan found the symptomatology present in 33 per cent of all the gastrointestinal admissions to her clinic, which is largely frequented by private patients. While it is true that private patients consult physicians for relatively minor ailments, and that Jordan uses the term "irritable colon" more broadly than the authors, still the element of physical "softness" appears to be one of the factors in the disagreement between her figures and those observed here. All the patients in the present series who were rated on either the Schneider or Turner tests for physical efficiency had low scores. The averages were strikingly below those of any other reported series (*Fig. 28, 29 and 30*).

Vasomotor lability is apparently the principle factor measured by such tests, and from a teleological standpoint it is to be expected that a disease syndrome, characterized by visceral evidence of instability, may also be accompanied by some vasomotor effects. In addition to the evidence from physical efficiency tests, which is reviewed elsewhere, there were certain clinical findings which led to the belief that vascular as well as visceral disturbances were generally present. The heart rate was usually rapid and unstable, as White and Gildea (*51*) had shown it to be in mental states characterized by somatic evidence of anxiety. But more striking were the skin changes. These consisted of: 1) cold extremities, 2) flushing, especially of the neck and breast, 3) increased "red" response to cutaneous scratching and 4) the frequent history of urticaria. Cold extremities, usually blue and sweaty were the rule, but were not present in all the cases. Some, by contrast, were warm and moist; others did not seem to differ from the normal. A flushed appearance was extremely common and was most often noticed along the lateral aspects of the

neck and the upper part of the chest anteriorly. To be "red with anger" and to "boil with rage" are well-worn aphorisms which are pertinent to the physical and mental states of these patients. An increased response to skin stroking (though usually without actual wheal formation) was observed in over 60 per cent of the cases. Urticaria was reported in the histories of 35 per cent of the cases, whereas other frequently allergic manifestations were reported with no greater than the usual frequency, hay fever in 8 per cent asthma in 4 per cent and infantile eczema in 1 per cent of the series. Rackemann (*52*) suggested that the high incidence of urticaria might have been due to the use of cathartics containing phenolphthalein. This suggestion prompted the tabulation of all the cases in which cathartics containing phenolphthalein had been given against the incidence of urticaria. The result showed that urticaria was more common in those who took no phenolphthalein (60 per cent) than in those who took the drug (40 per cent).

Grant, Pearson and Comeau (*53*), working from the standpoint of vascular pathology, reported several instances of urticaria apparently caused by emotional stress. These observations can be corroborated by our experience.

Vasomotor changes are at least in part mediated through the *autonomic nervous system.* Other manifestations of disturbance of this system were also noted. Prominent among them were: 1) dilation of the pupil, 2) ptyalism or aptyalism, 3) sweating, 4) exaggerated pilomotor response, 5) sighing respiration, and 6) sphincter spasm. There were also less easily demonstrable changes presumably due to alterations in function of the autonomic system, such as heartburn (esophagospasm according to Jones), loss of appetite (flattening of the gradient of the upper gastrointestinal tract, Alvarez) and the intestinal cramps, mucous secretion and bowel disorders of the mucous colitis itself.

In listing these manifestations those due to sympathetic hyperactivity as well as those due to parasympathetic overstimulation are included. This is done because no complete differentiation of patients into "sympathicotonic" and "vagotonic" types is possible (*54*). Many persons, predominately vagotonic, have widely dilated pupils or cold hands, which are sympathicotonic features. There is in these cases, a dysfunction of the autonomic system rather than a hyperfunction of either component alone. In Fig. 4 are listed the various signs and symptoms of autonomic nervous system instability and their respective frequencies.

The autonomic nervous system is connected with the central nervous system and its discharges cannot be thought of entirely independently of the latter. The work of Cannon (*55*) and of Bard (*56*), on decorticate and decerebrate animals showed the presence of autonomic centers or pathways in the hypothalamus. Keller, Hare and D'Amour (*57*); Light, Bishop and Kendall (*58*); and Cushing (*59*) lent emphasis to the clinical application of these relations by the production of ulcerative lesions of the gastrointestinal tract after various types of central stimulation. In this clinical series, not only was evidence of dysfunction of the autonomic and vascular systems demonstrated, but also some evidence of increased tension of the *central nervous system* itself. These manifestations were 1) Psychological (to be discussed below) and 2) Physiological. The physiological manifestations consisted of: a) muscle tension, particularly of the longus colli and trapezius groups, b) tremor of the extremities, and c) hyperactive tendon reflexes. These findings were frequently encountered.

Referred spasms of the gastrointestinal tract, on the basis of neurogenic lesions without necessarily psychogenic components, are well known in the field of clinical radiology. Pylorospasm due to ulcers of the duodenum or lesser curvature of the stomach is regularly recognized. The *incisura* observed with

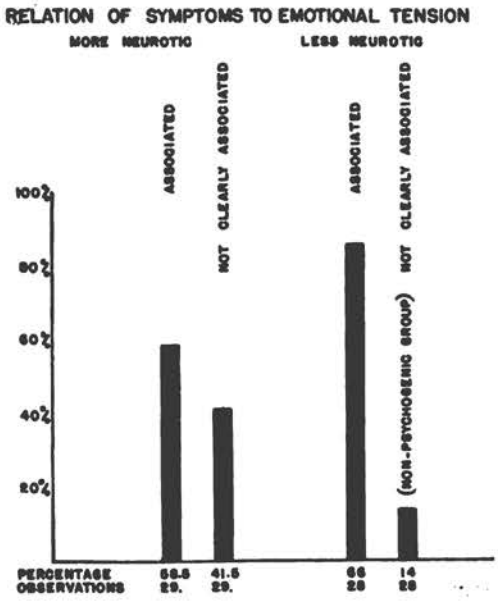

FIG. 8. Relation of exacerbations of symptoms to emotional tension. The non-psychogenic group consisted of two allergic cases, one patient who suffered from colonic symptoms for a year after emetine therapy for amebiasis, and a fourth patient with chemical changes suggestive of Addison's disease.

gastric ulcers is also a form of spasm. Diarrhea may occur in patients with renal colic, and the X-ray picture of spacticity in the colon may occur as a result of such lesions as carcinoma, or diverticulitis.

Diarrhea as a complication of purely *neurogenic* disease is not common. This is apparently because there are few neurological diseases characterized by generalized tension involving the parasympathetic nervous system. Those in which diarrhea commonly does occur, pellagra, pernicious anemia, multiple sclerosis, deliria, etc., are usually complicated by vitamin deficiency, loss of sphincter control, and other factors than simple over-activity of cholinergic fibers. The theoretical possibility of cortical or hypothalamic lesions accompanied by abdominal cramps or diarrhea is a real one, but one of actually infrequent occurrence.

In contrast to the rarity of specific neurogenic lesions, *psychogenic* causes of tension are moderately frequent. They may occur in so-called normal persons, or they may be seen in neurotic patients. For the purpose of this study all the subjects were divided into two groups—1) the more neurotic group, and 2) the less neurotic group. In both of these groups clinical evidence of tension was frequently encountered. In the *more neurotic group*, exacerbation of symptoms was associated with easily recognizable sources of tension in about 58 per cent of the cases. In the remainder, although the tension was obvious in most instances, nevertheless the psychological chains were so long and complicated that satisfactory causes for the tension could not always be recognized. In the *less neurotic group*, on the other hand, the sources of tension were always superficial and readily understandable. This relation is illustrated in Fig. 8.

There are four exceptions, persons in whom neurosis did not seem important and in whom psychogenic causes could not be found. These four persons compose the *non-psychogenic group:* 1) S.M. A woman of 52 had known glandular tuberculosis for which she was institutionalized for many months. Her blood sodium was 138.6 m. eq. (lower limit of normal) and the probability was that she had Addison's disease. Her bowel symptoms developed while receiving constant cathartics in a state hospital. 2) T.H. A single, white male of 34, suffered from amebic dysentery in the tropics. After treatment with emetine his abdominal symptoms continued

and he had periodic bouts of constipation and diarrhea suggestive of the mucous colitis syndrome. He was seen first, 18 months after his amebic dysentery. A follow-up visit one year later revealed that he had no further symptoms. 3) J.S. A 26-year old, Jewish salesman had his first attack of abdominal cramps and diarrhea during an attack of urticaria which followed the ingestion of shellfish. Subsequently he had evidences of indigestion and spastic constipation which appeared to be worse at times of dietary indiscretion in which his urticaria recurred. 4) C.F. A thirty-year old, Italian male had emotional problems which did not appear to be related to his mucous colitis. His mother had diarrhea after eating pork or milk. The patient had sensitivity to the same foods, which was verified by skin tests, and his symptoms were reproduced under observation by the administration of disguised pork.

Allergy to specific food proteins thus appears to be a precipitating factor in about 4 per cent of the cases. Rowe (*60*) has indicated that food allergy is more important than our 4 per cent would indicate. In reviewing Rowe's cases, however, one is impressed with a great vagueness of symptomatology. Certainly severe bowel colic, nausea, vomiting and diarrhea can all occur on an allergic basis. Duke reported 5 cases of unquestionable gastrointestinal allergy in adults, and Hollander reported a series equally convincing. Healy, Gallison and Brudno (*61*) reported one case which was studied in great detail. Gallison (*62*) also reported a second case. Such evidence is irrefutable. It is apparent, however, that a strikingly clear case of bowel allergy in an adult is a rare finding. Allergy to milk, wheat, and eggs on the other hand is so common in children as to be almost physiological. Most such children outgrow their sensitivity to these substances.

Sensitivity to bacterial products in the bowel is a phase of allergy which received attention from Dorst and Morris (*63*). These workers found that in mucous colitis there were no specific pathogenic organisms which could be isolated from the stools. They, therefore, cultured the seven or eight most common organisms and prepared vaccines. When the patients were skin tested to the vaccines a certain number showed positive reactions. The vaccine suspensions were "detoxified" with sodium ricinoleate and the patients were desensitized with subcutaneous injections. Marked improvement was recorded in many of the cases.

This work has not been adequately confirmed by other workers and is open to certain criticisms: 1) No clinical criteria for the diagnosis of mucous colitis were furnished. 2) Skin tests to autogenous bowel vaccines in control subjects were not made. 3) Cognizance was not taken of the fact that patients with mucous colitis do well on any forms of therapy in which their confidence in themselves and in their doctor can be assured. On the face of it, it is unlikely that bacterial allergy plays a great role in mucous colitis when the usually more dramatic extrinsic proteins and ingested foods appear so rarely to produce gastrointestinal symptoms of this type. However, until the work on bacterial allergy is either confirmed or disproved, it must be considered as of possible etiological significance.

While the occurrence of *respiratory infections* cannot be said to be causative in nature, nevertheless, such infections do much to bring on exacerbations in patients already suffering from mucous colitis. Hence, all debilitating factors such as physical exhaustion, malnutrition, overexertion, respiratory infection, etc., must be considered as tributary rills feeding the basin whose overflow means mucous colitis.

III. EXPERIMENTAL PRODUCTION OF LESIONS

NUMEROUS INVESTIGATORS have produced gross and microscopic lesions of the gastrointestinal tract by various forms of nervous stimulation Watts and Fulton (*64*), following the production of artificial hypothalamic lesions in monkeys, found post mortem that there were extensive ulcerative lesions throughout the entire gastrointestinal tract. Keller, Hare and D'Amour produced lesions in the region of the hypothalamus and found that in a certain percentage of cases, there were gastrointestinal changes. These occurred particularly in those preparations in which hemorrhage into the lateral ventricles had occurred and also in those preparations in which lesions had been made in the anterior portion of the hypothalamic region. Their studies were made in both dogs and cats. Light, Bishop and Kendall consistently succeeded in producing ulcerations of the stomach by injection of 10 mgs. of pilocarpine hydrochloride into the lateral ventricles of rabbits. In their study other parts of the gastrointestinal tract were not specifically examined.

All these data tend to confirm the clinical observations of Cushing upon the incidence of gastrointestinal ulceration seen in patients operated upon for brain tumors in the hypothalamic region. Confirmatory evidence has also been furnished by Banting and Hall (*65*) who administered acetylcholine intravenously to dogs over a period of days and succeeded in demonstrating not only cardiovascular lesions, for which they were seeking, but also extensive hemorrhagic ulcerations of the stomach, small intestine and large intestine. Subsequently Banting, Ettinger and Hall (*66*) repeated this work by direct stimulation of the vagus nerves following the surgical implantation of secondary coils within the tissue of the neck. The actual stimulation was effected through placing the animals in a magnetic field. This type of Faradic stimulation over a period of hours produced cardiovascular and gastrointestinal changes comparable to those effected by the daily administration of acetyl choline. While these studies do not contribute directly to the problem of the muscular and mucosal changes in mucous colitis, nevertheless, they indicate the nature of changes produced by the stimulation of the parasympathetic nervous system upon the upper part of the gastrointestinal tract. At least the descending colon and probably the entire colon receives a parasympathetic innervation.

Certain direct studies upon the colon have been made. Larsen and Bargen (*67*) introduced a technique for withdrawing an isolated loop of colon through the anterior wall; by this means they were able to study quantitatively changes in the rate of mucus formation in the dog. They found that the amount of mucus secreted during sleep was at a minimum, that it increased after defecation and still more increased after defecation stimulated by cathartics. The greatest quantity of mucus was secreted following castor oil. They did not report observations on the effect of drugs which stimulated or inhibited the autonomic nervous system.

The use of the X-ray has also afforded a method of studying the activity of the colon. By this technique, von Bergmann and Katsch (*68*) were able to show the action of physostygmine and atropine upon the musculature of the

colon. Their observations were made three hours after the introduction of barium by enema, so that disturbances of motility inherent in the method of introduction were largely eliminated. Their protocols show that physostigmine produces a marked reduction in the calibre of the colon particularly in the descending portion; and adds materially to the depth of the haustrations. Conversely atropine relaxes the musculature and results in an X-ray picture of a large organ with shallow haustrations. Observations by Schatski in two of the patients in this series by a somewhat different technique confirmed the general nature of these observations. Direct observations on the mucosa through the sigmoidoscope affords still another method of study.

The effect of irritants and drugs affecting the autonomic nervous system upon the normal mucosa: Observations were made by two of us upon the rectosigmoid mucosa of a group of normal medical students between the ages of 22 and 26 (*69*). All of them had essentially normal bowel habits although two had been subject to changes related to emotional strain. The observations were made through an electrically-lighted sigmoidoscope. Some of the drugs were applied topically to the mucosa by the use of gauze pledgets; others were given by mouth over a period of days during which time serial observations of the mucosa were made. The sigmoidoscopic examinations were made without antecedent enemata, excepting where indicated. The mucosa was observed particularly for changes in the following characteristics.

1) Injection: the degree of injection, its location in relation to the rectal valves and to a certain extent the duration of change.

2) Mucus: The appearance of mucus whether as a diffuse glairy sheen, a frank accumulation of moist secretion, or a dry film adherent to the bowel wall.

3) Dilation of veins: The degree of dilation and engorgment of the larger and smaller veins and venules.

4) Granularity and wrinkling of the mucosal surface: The degree of roughness of the mucosal surface as evidenced by the reflections of light and the multiplicity of fine folds.

The observations of the 10 subjects were made under standard conditions as follows:

1) *Under normal conditions:* In most instances there was no deviation from the normal. In a few cases there was slight injection or a little spasm of the rectosigmoid valve which was usually of a transient character, and at times there appeared to be slightly more mucus than one would expect. In some of the cases it was observed that with repeated sigmoidoscopic examinations the subjects approached the procedure with less apprehension and it was noted that in such instances the minimal abnormal findings of the first examination disappeared. This phenomenon was not striking but was observed sufficiently frequently to be of interest.

2) *Following the administration of a soap suds enema:* Only two of the subjects were observed following a soap suds enema. The changes produced by this procedure were not dramatic. There was a slight increase in the degree of injection of the mucosa and there was a fresh, glairy secretion of mucus on the surface. The changes, however, were far less than those noted in patients with mucous colitis.

3) *Following the application of highly irritant salt solution:* In order to determine the effect of non-specific irritation upon the mucosa of the colon, local applications of strongly hypertonic salt solution (17 per cent) were made. The application consistently produced a highly localized area of brilliant in-

jection which was covered by a definite secretion of clear, moist mucus. There were, however, no remote effects and no effect upon the musculature of the colon providing that the substance was applied above the rectosigmoid valve. When the irritant was applied below the rectosigmoid valve, certain peristaltic movements were observed which have been reported elsewhere (*69*).

4) *Following acetyl-beta-methylcholine chloride:* The drug was applied in 1 per cent solution. It was found to produce a small circumscribed area of injection similar to that produced by hypertonic saline. The effect was, if anything, more transient that that of the salt.

When given by mouth in massive doses, however, acetyl-beta-methylcholine chloride produced consistently changes in the rectosigmoid which were very similar to those observations in the second stage of mucous colitis as described by Friedenwald, Feldman and Rosenthal. To three subjects 200 mgs. were given orally two hours before the sigmoidoscopic examination. In the other subjects repeated large doses of 1000 mgs. per day were given over a period of time and examinations were performed on the mornings of the 2nd and 5th days. In some instances still larger doses up to 3000 mgs. daily were subsequently given, but the changes produced by these doses were not substantially greater. In general the changes produced by orally administered acetyl-beta-methyl-choline chloride consisted of a generalized injection of bluish red color which was most marked between the middle and upper rectal valves. The veins were usually obscured in this injected area, although they tended to be prominent below the middle and upper valves. There was a fine wrinkling of the surface of the mucosa in which the ridges of the wrinkles seemed to point in all directions. The surface was velvety rather than glairy. The calibre of the rectum and rectosigmoid was somewhat reduced although real occluding spasm was present in only two instances.

Subjective symptoms of a mild nature were noted in all the subjects who took the drug for a period of several days. Five of them noted a tendency toward diarrhea while three suffered from definite constipation. Abdominal cramps were noted in one instance and two of the men had an uncomfortable low-back pain.

Carbaminoylcholine chloride was shown by Starr (*69a*) to be more selectively effective upon the gastrointestinal tract than acetyl-beta-methylcholine chloride. In two instances carbaminoylcholine chloride in doses of 0.012 g. to 0.024 g. daily was administered orally. The changes produced in the rectosigmoid were identical with those noted after acetyl-beta-methylcholine chloride but the difference in dosage was stupendous.

5) *Following pilocarpine hydrochloride:* The drug was administered locally in 1 per cent solution. There were found to be very dramatic changes consisting of an immediate bluish red injection with a brilliant, glairy mucoid surface in the vicinity of the topical application. This was followed by the rapid formation of moderately coarse invaginations of the mucosa and, in the course of 3 to 5 minutes, of complete occluding spasm of the lumen.

6) *Following physostigmine sulphate:* This was applied in 0.5 to 1 per cent solution and was found to produce striking changes though less rapidly than following pilocarpine. The first change occurred only after about 5 minutes when there was noted a cloudy diffuse swelling of the mucosa. The surface was generally glossy and injection was less prominent than pallor. In some instances there appeared a cen-

tral pallor surrounded with areas of injection. At points where the mucosa was traumatized by the sigmoidoscope, a very coarse wrinkling of the surface then developed and heavy invaginated folds appeared. In the course of 15 minutes or less, they met in the midline to produce a picture of complete spasm such as that which followed the administration of pilocarpine.

Similarity of experimentally-produced lesions to those seen in mucous colitis: None of the lesions produced by the administration of drugs stimulating the action of the parasympathetic nervous system is an exact replica of the changes seen in the disease syndrome, mucous colitis. The results following the oral administration of acetyl-beta-choline chloride are most nearly similar to those seen in the diseased colon. This is to be expected inasmuch as through the oral route a more general effect from the drug is obtained than when it is applied locally upon a single spot. However, the character of the lesions produced by the locally applied drugs was similar. The dilation of blood vessels whether of large calibre, as seen in the early stages of mucous colitis, or of smaller calibre, as seen in the later stages, may in either case be produced by stimulation of the parasympathetic nervous system. The action of the parasympathetic system is normally opposed to the vasoconstrictor effect of the sympathetic fibres. Likewise the secretion of mucus and the contraction of the smooth muscle of the gut are changes which may be brought about through the action of cholinergic substances. The wrinkling of the mucosa is presumably a function of spasm, which reduces the amount of surface to be covered by a given amount of mucosa. It is, hence, a secondary change brought about through the effect of the parasympathetic system in producing spasm. There is no characteristic change in mucous colitis which is not represented by the changes observed following the administration of these drugs in normal individuals.

It would be desirable to produce these same changes by direct stimulation of the sacral autonomic system rather than by the use of drugs mimicking its action. Banting, Ettinger and Hall chronically stimulated the vagus nerve and observed changes in the upper gastrointestinal tract similar to those which had previously been obtained by the use of drugs. Unfortunately, because of the filamentous nature of the sacral autonomic system, no single nerve trunk is available for stimulation. However, it is a reasonable assumption that the changes observed in normal medical students after the use of cholinergic substances could also be produced by impulses transmitted along the nerve fibres and that through this route nervous tension may play a rôle in the development of mucous colitis.

IV. PSYCHOLOGICAL CONSIDERATIONS

IN STUDYING AND PRESENTING emotional material which has a bearing on clinical disease, two extremes may be approached. On the one hand, one may enumerate in chronological order the social mishaps which have overcome a patient and see to what extent exacerbation of his symptoms accompany or follow these insults. When applied to a statistically significant number of cases such a technique is of value and has contributed to our knowledge of asthma, arthritis and other diseases. It leaves out of consideration, however, a study of the personality which receives the impacts. A masochistic wife may welcome a beating; while a sadistic one may become acutely resentful of such an experience. To evalute the effect of social experience then, requires that some knowledge be had of the individual personality on whom the noxious influence impinges. It is not the objective fact which is important, but rather the way in which it is *experienced.* Kahn (*70*) has done much work to emphasize this fact.

The second extreme which may be approached is to study a limited number of cases in great detail. The technique of free association as employed by Freud (*71*) and his school offers the most complete method at present available. Unfortunately such a technique, which requires many months for its consummation in the single case, is only with difficulty adaptable to the problem of making a survey of emotional problems in a large clinical group. Alexander has made some progress in this direction, but as yet the number of cases that he and his co-workers have studied is too small for any accurate clinical concluions.

Somewhere between these extremes lies a method which consists in making a fairly adequate anamnesis of each patient and describing his mental status in a certain degree of detail. In such a study it is possible to determine in many instances to what extent external traumata to the patient are experienced with an appropriate degree of pleasure or pain, anxiety, sorrow or resentment as the case may be. And it is possible also to learn through conversation with him which of these experiences have been noxious in their effect upon him and which ones have not. This information is largely revealed by the manner in which he discusses his problems and by the degree of tension, resentment, or evasiveness with which certain points are reviewed. It may be noted that some apparently insignificant matters are disclosed with great difficulty while others, of objectively much greater significance, appear to burden the patient but little.

In making this study the first step in each instance was to make a chronological life chart (after Meyer) on which were entered on the left side, the development of the gastrointestinal symptoms. In a parallel column at the right side of the midline were subsequently entered the course of the patient's social and emotional development. Such a chart is illustrated in Table III.

METHOD

In our study of the personality in these patients an attempt has been made to evaluate the experience in question from a *subjective* point of view, *i.e.*, to estimate the manner in which the

TABLE III

LIFE CHART*

NAME: Case No. 15 Hospital #_____

HEREDITY: Not remarkable Date: *Sept. 18, 1937*

Year	*Medical Data*	*Symptoms*	*Social Data*	*Age*
1903				8
1905				10
1907				12
1909			First marriage	14
1911				16
1913				18
1915			First child (working)	20
1916				21
1917			Second child (working)	22
1918				23
1919			Third child (working)	24
1920				25
1921	Hernia repaired Appendix removed			26
1922				27
1923	Sick.? gall bladder symptoms	▓▓▓	Fourth child	28
1924				29
1925				30
1926				31
1927			First husband died	32
1928				33
1929			Remarried	34
1930	Acute diarrhea	▓▓▓	Fifth child	35
1931		▓▓▓		36
1932				37
1933	Onset of constipation	▓▓▓	Sixth child / Constant financial	38
1934		▓▓▓	worry over settle-	39
1935	Alternating constipation & diarrhea	▓▓▓	Lost house / ment of first hus-	40
1936		▓▓▓	band's estate	41
1937	In bed two weeks	▓▓▓	Treatment	42
1938		x x x		43

* In each instance medical data were filled in on the left hand side. Social and emotional data were subsequently entered upon the right hand side. Exacerbations of the relevant symptoms were indicated by the crossed lines in the center column.

patient *experienced* the occurrence. By such a method it was possible to learn roughly in what percentage of cases experiences which appeared to be difficult for the subject had been associated with exacerbations of symptomatology. The personality of each subject was described in terms of a brief schema, (modified from Kahn). The personality was represented as being composed of three spheres:

1) *Impulse life:* Under this heading are included energy output and instinctual forces, *e.g.*, sexual drives. Related to it, are, in Kahn's estimation, certain personality deviations such as obsessions, compulsions and phobias, whatever secondary psychological mechanisms may determine their exact character.

2) *Temperament:* In this sphere are included such characteristics as depth of feeling, which Kahn calls resonance or *warmth*, a quality which is generally most marked in persons of pyknic physique, its antithesis, shallowness or *coolness* of temperament, being more frequent in persons of leptosomic build. Lability of mood, again most marked in pyknic persons, and thought to be allied to the manic-depressive tendency, is also considered as belonging in the realm of more or less constitutionally conditioned temperament. Also are included such qualities as irritability, explosiveness, excitability, vivacity, timidity and moodiness.

3) *Character:* Character is the sphere which deals with self esteem, which contains the rational *self* or ego. In its development it is largely influenced by educational experience and other environmental factors. The realm of psychopathic character is divided by Kahn into four common sub-groups and numerous smaller atypical ones. In the first division are included such men as Napoleon Bonaparte, men who *overevaluate their own egos*, who stand on their feet and are *not dependent* on the opinions of others. Such men are active and Kahn calls them the *Active Autists.*

In the second group are included those who *overevaluate* their own egos but who are *dependent on the opinion of others.* They are the great group of seekers after prestige. Many are very actively successful persons, but they are noted for their touchiness. Kahn calls them the *egocentrics.*

In the third group are included the characters of those who *underevaluate their own egos* and who seek solace in a retirement from competitive life. They do not care what other persons think of them as long as they can avoid meeting competitive problems. They are the light house tenders, the forest rangers, and the country gentlemen. Kahn calls them the *passive autists.*

The fourth group is composed of those who *underevaluate their own* egos but who are so *dependent* that they must cling to others for moral support. They are self-effacing, and as long as they can remain attached to a leader, they will make every personal sacrifice to do it. They are the research assistants. Kahn calls them *ego searchers.*

Normal characters show only traces of these four types of reaction.

Abnormal types, in which more than one of these reactions are present, or in whom one reaction occurs in certain circumstances and another in different ones, are classified by Kahn as *ambitendent.*

(To simplify the reading of this paper, it may be said at this point that the abnormally independent character types were not seen in patients with mucous colitis. Rather, the cases fell into the *egocentric, ego searcher, ambitendent,* and *normal* groups.)

In addition to the character descrip-

tion outlined a note was made in each instance as to the extent to which each case fell into the superficial personality types described by Alexander. He has reported a correlation between activity, independence, and the obligation to give, on the one hand, and the nature of a gastrointestinal disease on the other. His types are as follows:

1) *Gastric type:* Active, independent, efficient.

2) *Colon type:* Giving, guilt, need for giving.

3) *Constipation type:* Taking, no guilt, no need for giving.

Our findings with regard to this correlation are set forth in a subsequent paragraph.

The concept of a sense of conscientiousness, whether arising from conscious or unconscious levels of personality, does not receive adequate description in Kahn's schema as it is set forth here. Hence a few words have been added to elucidate the overdevelopment or underdevelopment of this function in each instance. The *super ego* of Freud is a valuable crystallization of this quality.

The cases were arbitrarily divided into two groups: 1) the more neurotic group and 2) the less neurotic group. The *more neurotic group* comprised those subjects who suffered from more or less incapacitating personality problems. The *less neurotic group* comprised those whose neurotic symptoms, if any, were purely ancillary. The severity of the gastrointestinal symptoms was in no case used as a criterion for this arbitrary selection.

The number of phobic symptoms in the two groups is illustrated in Fig. 9, the compulsive symptoms in Fig. 10.

There were 29 patients in the *more neurotic group*, of which 17 showed a clearly traceable relation between readily understandable emotional tension and

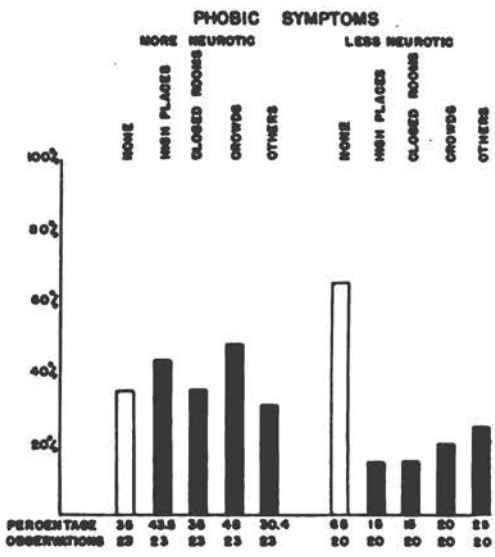

FIG. 9. The occurrence of phobic symptoms in the more and less neurotic groups. There was an average of 1.5 phobic symptoms per patient in the more neurotic group, an average of 0.75 phobic symptom per patient in the less neurotic group.

the development or aggravation of symptoms. There were, however, 12 of these patients in whom no such relation was easily discernable; in fact, in one the relation seemed to be inverse. Hence, in the grossly neurotic patients a clear relation was observed in roughly 58 per cent. In the other cases, distinct neurosis was present, but the responses to stimuli appeared to be so complicated that one could not be certain as to the cause and effect.

In the *less neurotic group* there were 28 cases. Twenty-four of these showed irrefutably clear evidence of a direct relation between emotional tension and the development of symptoms. In some instances such tension was chronic, *i.e.*, related to a social problem of weeks, months, or years duration. In others, it was acute, *i.e.*, related to a brief period of tension. Of the *less neurotic group* there were 4 patients in whom there seemed to be no relation between tension and symptoms. These 4 pa-

tients' illnesses appeared to be based on a non-psychogenic etiology and are described in detail in a previous paragraph (p. 16).

The relation of emotional stress to

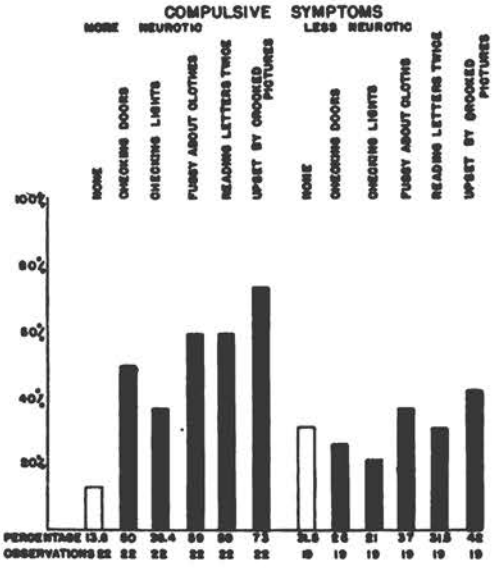

FIG. 10. The frequency of compulsive symptoms in the two groups. There was an average of 3.0 compulsive symptoms per patient in the more neurotic group, an average of 1.5 compulsive symptoms in the less neurotic group.

the development of symptoms in both the more neurotic and less neurotic groups is represented in Fig. 7.

Incidence of Clinical and Diagnostic Types: The patients did not fit into the Procrustean bed of formal psychiatric diagnosis. If any one label is applicable to the greatest number of cases it is that of *anxiety or tensional state*, for exaggerated anxiety was present in 42 out of 50 cases, and pathological, free floating anxiety was present in almost all of the more neurotic group.

If any one label is inapplicable to the group as a whole, it is *hysteria*. There was only 1 patient in whom a clear cut dissociative and dysmnesic state (hysteria) was the predominating feature. There were 3 other patients in whom a dissociative and dysmnesic symptom or evidence of veiled malingering had at one time or another occurred. In none of these 4 patients did the hysterical symptoms seem to be related closely to the abdominal ones.

There were depressive tendencies in a large number of the patients; in 5 of them it seemed probable that they at one time suffered from a manic-depressive psychosis. In the numerous other patients with depressive symptoms, no effort was made to apply diagnostic criteria, but they seemed to fall into the vague group of psychopathic, or neurotic reactions.

There was only 1 patient with a phobia which played a rôle in her major conflict (Case No. 5), although minor phobic symptoms were frequently encountered in both the more neurotic and less neurotic groups. Likewise no patient was incapacitated by a compulsion or by a full-blown obsession. A

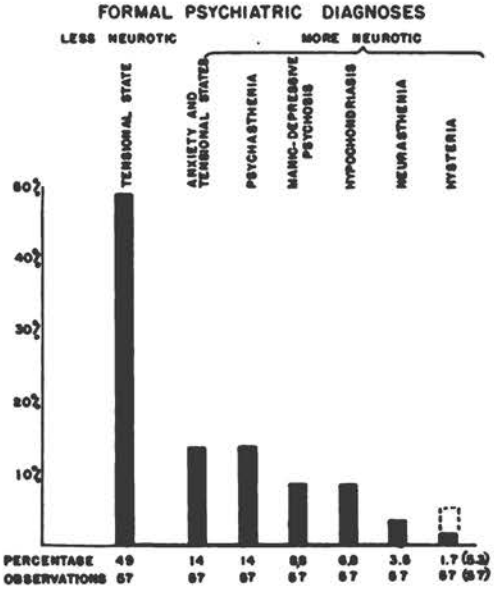

FIG. 11. No one formal psychiatric diagnosis is applicable to all patients with mucous colitis. Tension is common to the entire group, including the less neurotic or normal cases. Hysteria is most uncommon.

peculiarly rigid type of thinking, presumably related to obsessions, was very prevalent, and was dubbed by one of the clinic members "obsessive thinking". This is discussed more fully below. Hypochondriacal complaints were encountered in a number of cases although they constituted the principal illness in only about nine of them. Schizophrenia and the "organic" phychoses were not encountered. A graphic representation of applicable diagnostic terms is illustrated in Fig. 11.

To say that the majority of the patients suffered from an acute or chronic *tensional state* is perhaps as closely as one can approach a single diagnostic classification.

Incidence of Specific Personality Characteristics: There were certain characteristics of the individuals studied which were strikingly common and which to a certain extent made their particular reactions reasonable and understandable.

Foremost among them is the physical fact of autonomic instability as evidenced by physical examination and by cardiovascular efficiency tests. This subject, not a purely psychological one, is discussed elsewhere. To a certain extent exaggerated subjective and objective responses to tension and anxiety may be dependent upon it.

A diminution in energy output is also characteristic of the group as a whole. Most of the persons required more than the average amount of sleep, tired rather easily at occupations which required prolonged standing in one position. Asthenia was present in 71 per cent of the males and in 78 per cent of the females. In some cases the asthenia was incapacitating in nature. To what extent it was neurocirculatory in nature and to what extent due to other causes was not clear. If psychogenic in origin, it appeared more closely related to depressive phenomena than to those of dissociative and dysmnesic nature (hysteria). Likewise there was a high incidence of sexual indifference among the patients. Two-thirds of the women were

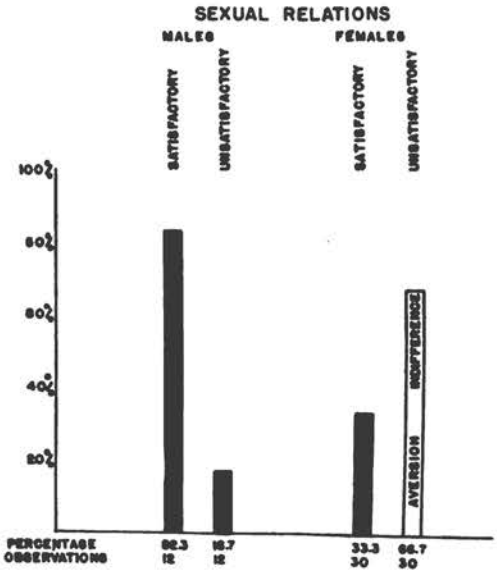

FIG. 12. Dissatisfaction with sexual life was observed most frequently among the females. The dissatisfaction varied from mild indifference to strong aversion.

frigid. The men tended to be satisfied with sexual relations at infrequent intervals. Active distaste for the sexual act was observed in 40 per cent of the women but in none of the men. In Fig. 12 are illustrated the percentage incidence of sexual maladjustment in the two sexes.

It is apparent that, whatever the etiology, there were definite insufficiencies in the *available* instinctual forces of the group as a whole.

Minor *compulsions* were observed in a large number of the patients, both in the more neurotic and the less neurotic groups. (*see Fig. 10.*) Many of these were unquestionably tics of minor importance. It is apparent that among the more neurotic group, the number of compulsive symptoms per patient was

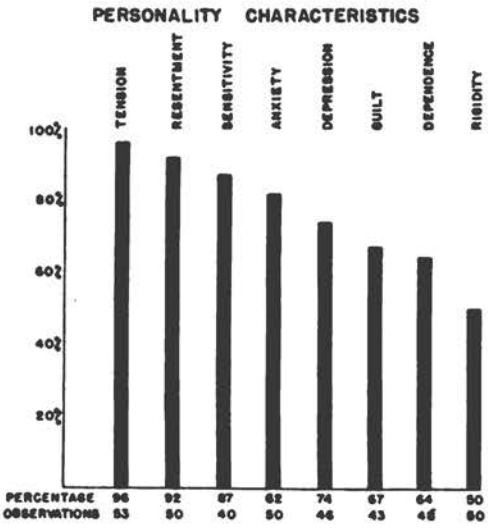

FIG. 13. Personality characteristics. Note the frequency of tension, which was often accompanied by resentment, anxiety, or guilt. A rigidity of thinking was often observed which presumably played a rôle in prolonging periods of tension.

very much higher than among the less neurotic ones. This relation may be true of all neurotic people, whatever the diagnosis, and be of no significance. As has been mentioned elsewhere, there was no subject so inconvenienced by a compulsion that it became a major problem in itself. One gets the impression, however, that the tendency toward excessive neatness, compulsive completion of tasks, meticulous care in avoiding errors, and overconscientiousness in meeting obligations was distinctly a characteristic of the group.

True *obsessions* of incapacitating nature were not encountered in the patients reported here. One patient with mucous colitis refused to cooperate in the study. She was obsessed with the idea that she had a tapeworm, was unwilling to accept any other explanation for her illness. Although she had had repeated stool examinations, she continued to bring in strings of mucus for segments and grape seeds for ova. She was not suffering from a *delusion* because she did not blindly adhere to the idea contrary to all fact. She was simply obsessed with the belief, on each successive examination, that ova or segments would be found to justify her preoccupation. Although none of the completely studied persons showed a frank obsession of this nature, an extremely rigid method of thought was observed in half of them (*see Fig. 13*). They would dwell upon isolated problems for months or years. One patient was concerned with the idea that her illness would not have occurred had her father settled in a different city ten years before she was born. She would then have been able to go to a normal school and could have gone into her chosen profession, teaching. These persons were also observed to have a peculiar difficulty in making decisions. They would line up the pros and cons of each decision, carefully weigh them, and then fail to decide. As time went on, they would again and again attempt to make the decision, again and again seeing the problem in identical form and presenting a dilemma with the same two horns. Neurotic persons might, as in the case of patient No. 5, repeatedly face a dilemma of which one horn was neurotically determined. This woman's problem was how to have children when syphilophobia drove her to douche her vagina after intercourse. Patient No. 7 was faced by a dilemma, one horn of which was the result of her rigid belief that to go on teaching, she needed to have the "label" of a professional trade guild, in her instance, a Ph.D.

Less neurotic persons might face a dilemma of more objective nature. Patient No. 12 developed his symptoms in a state of dilemma as to what he should do when he wanted to marry a girl whose religion was different from that of his strenuously objecting mother. The capacity to dwell on such

problems twenty-four hours a day, while they are acute and to *ruminate* about them indefinitely after they are dead is a quality found in a large majority of the cases. Like Lot's wife they look back. For this admixture of qualities, which comprise rigid adherence to an idea, indecision in the face of a dilemma, and rumination over failure of choice in the dilemma, Barrett (*72*) has coined the expression "obsessive thinking". Molholm, who performed Rorschach (*73*) tests on some of the patients, felt that the quality was also apparent from his objective viewpoint. He agreed that the word "obsessive" was inappropriate and suggested the vernacular "stew". "Ruminate" expresses a part of the quality when it is concerned with past experiences, "indecision" when it concerns the future. Molholm's observations are discussed in a subsequent chapter.

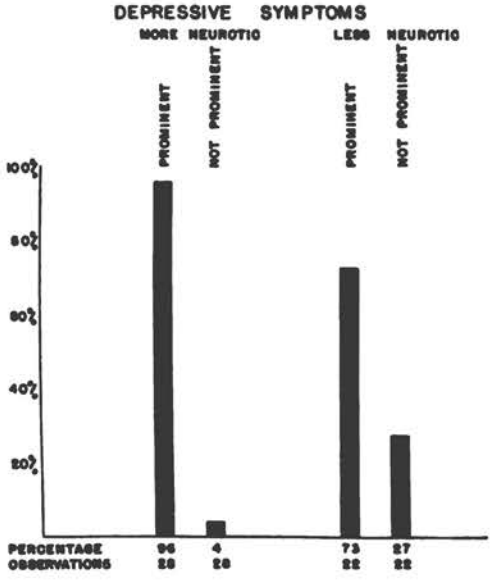

FIG. 14. Depressive symptoms, although common to both groups, were most frequently observed among the more neurotic patients.

Minor *phobias* were present in a large number of cases, among members of both the more neurotic and less neurotic groups. As is illustrated in Fig. 9 they were about twice as common among the more neurotic patients. In most instances phobias were not severe, although in Case No. 5 syphilophobia appeared to be one of the important factors in causing the tension from which she was suffering. The commonest phobias observed were those of high places and crowds which occurred in 30 and 34 per cent of the cases respectively. The fear of water was present in four instances out of forty-four in which information was available. Phobias did not seem to be of particular etiological significance.

There seemed to be no correlation with "resonance" of feeling tone (tempermental warmth) or with bodily physique. Persons of leptosomic, pyknic and mixed types were encountered with almost equal frequency. Some were emotionally very warm and friendly, others, cold and egocentric. Lability of

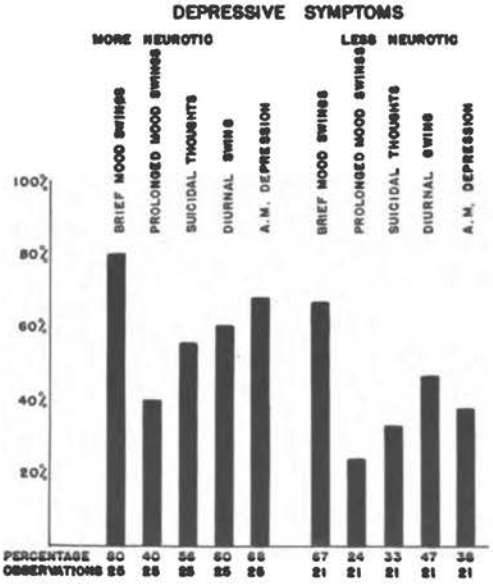

FIG. 15. The individual symptoms of depression were also more often encountered among the more neurotic group. The average more neurotic patient suffered from 3.0 depressive symptoms, while the average less neurotic patient suffered from 2.1 depressive symptoms.

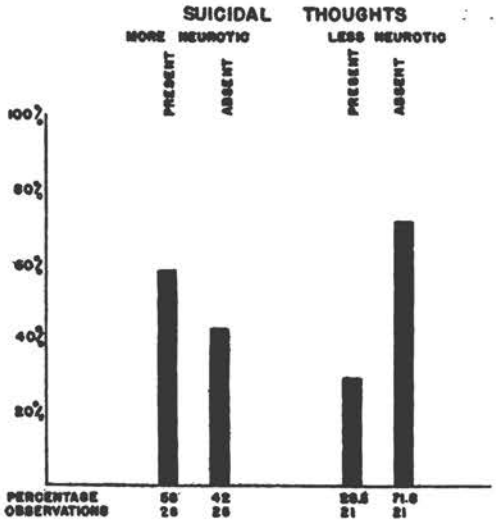

FIG. 16. Suicidal thoughts were encountered in 58 per cent of the more neurotic patients. The much lower incidence in the less neurotic group is evidence that suicidal thoughts are not a component of normal adult life.

mood, however, was strikingly frequent. Definite depressive tendencies were regularly present in the more neurotic patients and three-fourth of the less neurotic ones (*see Fig. 14*). These fluctuations were either of brief or of prolonged nature. They were in many cases accompanied by difficulty in sleeping or of waking up too early in the morning. In some cases depression or exultation came on apparently for no apparent reason (*see Fig. 15*). At times periods of discouragement were sufficiently great to justify thoughts of suicide (*see Fig. 16*).

There were 5 patients whose mental status examinations warranted the diagnosis of manic depressive psychosis. With these exceptions, so far as is known, none of them had actually attempted suicide, demonstrated striking evidence of retardation of thought, speech, or action. The depressive tendencies seemed rather to be of a psychogenic nature associated with the particular problems of the patients. Among the more neurotic persons the response was thought to fall in the group of so-called "psychopathic depression", in the less neurotic group to represent only an exaggeration of appropriate affect; *i.e.*, "reactive depression". It was not possible to clarify the depressive tendency with any satisfactory degree of accuracy. After all in most instances it was not of incapacitating nature and hardly amenable to the diagnostic criteria employed in the study of hospitalized patients. Perhaps the most that can be reasonably said is that mood swings were a frequent occurrence, in fact so frequent that statistics alone would militate against their being due to subclinical manic depressive disease.

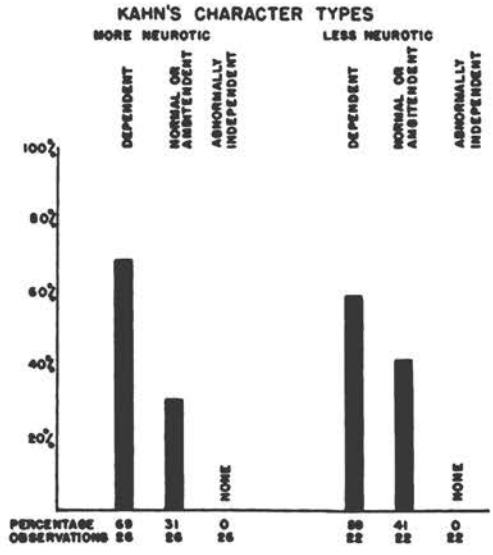

FIG. 17. Kahn's types of psychopathic character development. Most frequently encountered were the egocentrics and ego searchers (dependent types). The abnormally independent types, active autists, and passive autists, were not observed to be present. There were a moderate number of persons with normal character development or with an inconsistent mixture of characteristics.

In character development one fact stood out clearly. There were no persons with conspicuously independent characters. There were no *active autists* (Napoleonic types) and no *passive*

autists (seclusion seekers). On the contrary the great majority of the patients were either *egocentric* (dependent on prestige) or *ego searchers* (passive dependents). The remainder had either normal or ambitendent character development.

On the contrary there was roughly an equal incidence of types showing ego overvaluation and ego undervaluation. There were as many egocentrics as ego searchers. The striking fact is that a great degree of ego dependence was present in a large number of the cases, and there was no abnormally independent person in the entire series. The relative number of persons falling into the dependent groups is illustrated in Figs. 17 and 18. These patients were extremely sensitive, as is illustrated by Fig. 13.

When reviewed from the angle of Alexander's superficial character description, there was a slight discrepency

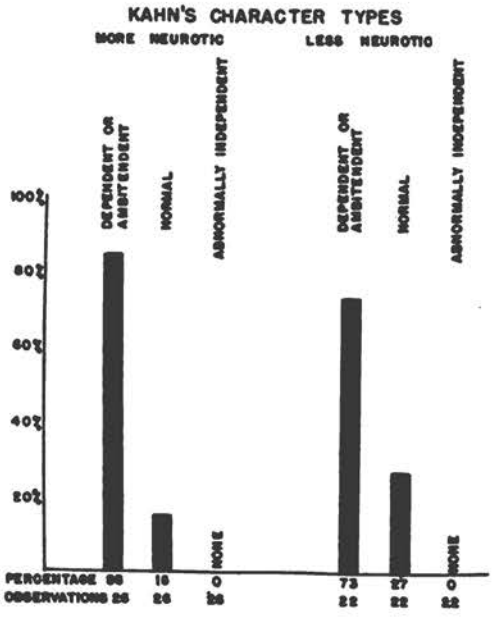

FIG. 18. Kahn's character types. In this chart the ambitendent persons, who had some dependent traits, are included with the completely dependent groups. There remain a small number of normals, but there are no abnormally independent persons in the series.

from the above observations. A small number of patients gave the superficial impression of being "active, independent and efficient". They hence belonged to his "gastric type". They were not *abnormally* independent, however, and hence were labeled as normal or ambitendent in Kahn's classification. There were no abnormally independent persons encountered in the series.

In regard to Alexander's "colon" and "constipation" types more need be said. There were many persons who felt strongly the need to give, and in whom this feeling was obviously closely linked to a feeling of guilt or at least obligation. These persons apparently were closely allied to his "colon" (diarrhea) group, in whom there is supposedly a need for giving dependent on an underlying sensation of guilt. There were also among our patients a somewhat smaller number who seemed to belong to the "constipation" group. These persons it will be recalled have "projected" their sense of guilt so that it is not active. Hence they feel no need for giving, but on the contrary, take everything that comes within their grasp. This type was seen frequently among our group; most frequently among those who had had the disease a long time. Where our observations failed to agree with those of Alexander was in regard to the correlation of these two groups with constipation and diarrhea. In our series there was only a suggestive correlation as is evidenced by Fig. 19. A possible explanation for this discrepency is discussed in a subsequent paragraph. Fig. 20 shows that the "colon type" was most frequently encountered in the "more neurotic" group.

One other characteristic, noted in almost all the patients of our series, was a highly developed sense of conscientiousness. From whatever strata of the personality structure this quality de-

rives, it was strikingly well developed in the great majority of cases. There were few shirkers in the series. There were, on the contrary, many painfully

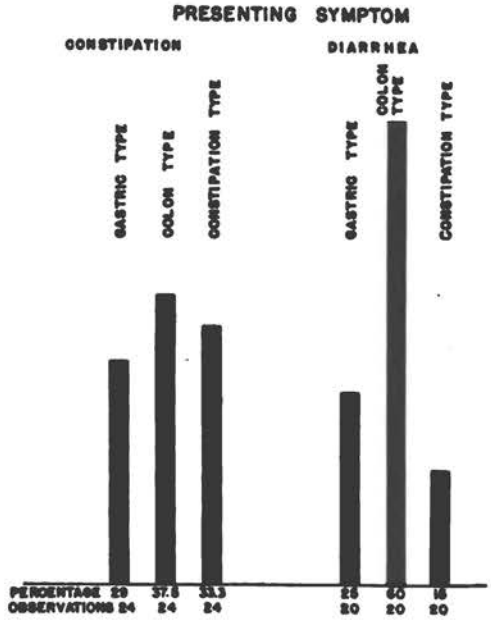

FIG. 19. Correlation of symptomatology at the time of mental status examination with the personality types of Alexander. Note that in constipated subjects the gastric, colon, and constipation types occur with equal frequency. In patients with diarrhea, however, the colon type is decidedly more common.

thorough persons. Most of them had a highly developed moral sense, were unsparing of themselves and of others in their demands for perfection. Nor did they evade responsibilities or allow their symptoms to intercede for them. With one or two exceptions none of the patients derived any objectively understandable "secondary gain" from their symptoms. Unconscious mechanisms were not studied.

Tension: As is apparent from the foregoing paragraphs the only psychiatric state common to the entire group of patients was tension. Many had anxiety; some, phobias; some, compulsions; but most of them, a characteristic personality type. Tension was common to the group. Tension is not necessarily a symptom of primary emotional disorder. It may occur in various primarily physical states such as hyperthyroidism, paralysis agitans, and the menopause. Or, it may occur psychiatrically in association with any of a large number of emotions: guilt, fear, resentment, excitement, anticipation, sorrow, dread, etc. In this particular study the emotions most commonly associated with tension were resentment, fear, and guilt, in that order.

A word as to a type of situation which can provoke tension is perhaps in order at this point. Wherever irreconcilable antagonistic forces are simultaneously at play a state of tension is likely to result. Such antagonists may consist of the two horns of a conscious dilemma between which a decision must be reached.

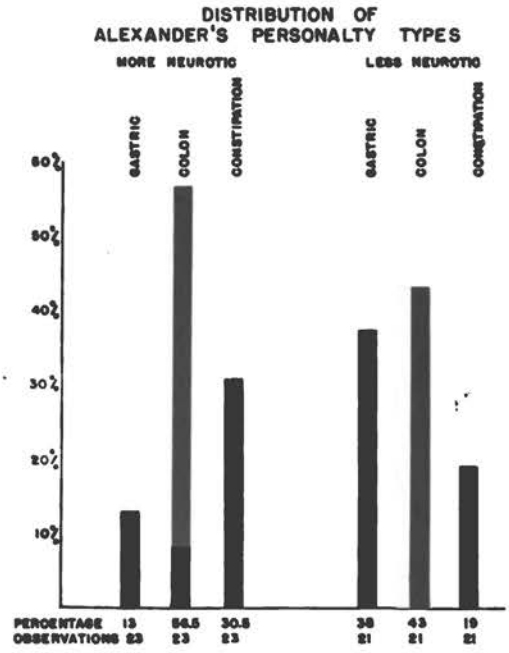

FIG. 20. Frequency of Alexander's personality types in the more neurotic and less neurotic groups. The colon type was encountered frequently in both groups. It was much more common than the other types in the more neurotic group.

Such dilemmas confronted some of the patients in this series (note particularly Cases Nos. 5, 7, 11, and 13). On the other hand, tension may develop in the case of a currently existing situation from which there is no escape but which is intolerable to one or another part of the personality. Such intolerable situations may exist on a neurotic basis or may be established in the coldest of reality, between which all stages of gradation may be observed.

It was characteristic of the patients to have particular difficulty in making decisions, hence often to become tense in the face of problems which they encountered. In studying the histories it often appeared that unresolved dilemmas found their own solution in the passage of time. Such a solution might be a happy one and result in relief or might be an unhappy one and land the patient in an intolerable situation from which there was no retreat. Regret and resentment readily developed when the latter result obtained.

It seemed wise, therefore, to classify the patients according to the type of conflict which appeared to underly the state of tension. While there were persons in whom more than one type was present and the division was frankly arbitrary, still it afforded a means of comparison and exposition which seemed justified. Accordingly, the patients were divided into those whose tension appeared to be of brief duration, the *acute* group and those who remained tense over prolonged periods, the *chronic* group. The *acute* group was then subdivided into those whose acute tension appeared to be due to neurotic causes, and those in whom the exogenous life situation alone was apparently a sufficient cause in itself.

The group of persons suffering from *chronic* tension was not only divided into the *more* neurotic and *less* neurotic groups, but also according to the presenting problem on a temporal basis. If the tension seemed to arise from indecision in face of a problem of neurotic origin, the individual was placed in the group entitled: *Chronic Tension; More Neurotic; Indecision in face of a neurotic dilemma.* If on the other hand, tension appeared to develop in the presence of an exogenous dilemma of sufficient intensity to operate in the absence of a marked neurosis, then the patient was included in the group entitled: *Chronic Tension; Less Neurotic; Indecision in the face of an exogenous dilemma.* If the state of tension appeared to be associated with an already established problem from which no escape appeared possible, the patient was so classified. If the problem was one whose sting depended upon the neurotic nature of the sufferer, he was placed in the group, *Chronic Tension; More Neurotic; Inability to accept life situation.* But, if the problem was one of

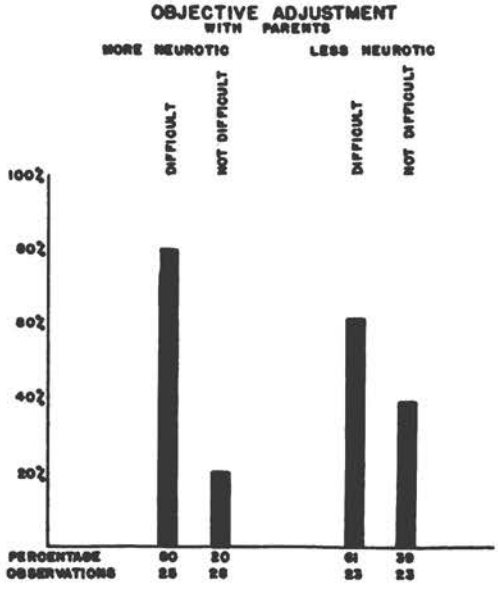

FIG. 21. Objective difficulty in adjustment with parents was observed to occur more frequently in the more neurotic group than in the less neurotic group.

such severity as to occasion tension in a less neurotic person, he was classified among the group labeled, *Chronic*

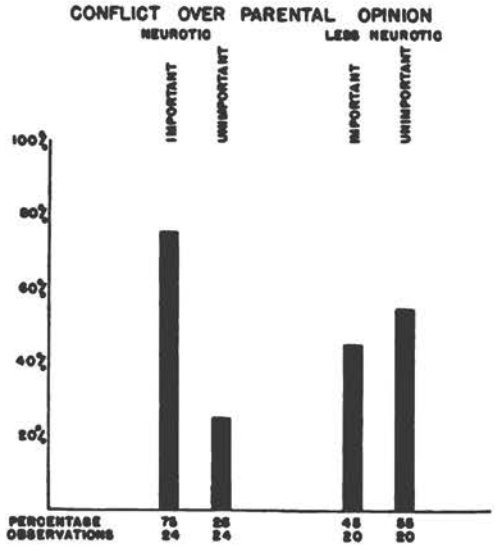

FIG. 22. Conflict over, or engendered by, parental opinion was encountered in 75 per cent of the more neurotic patients. In the less neurotic patients such conflicts were important in only 45 per cent of the cases.

Tension; Less Neurotic; Victims of overwhelming social adversity.

Types of conflicting force: Numerous types of social tenets, instinctual drives, and inhibiting influences, both within and outside the personality were found to be active components of the conflicts and dilemmas confronting these patients. The opinion of one or both parents or of a step-parent, proved to be a source of tension in a large number of cases. Although the incidence of parental friction was not noticeably different in the more and less neurotic groups (*as is shown in Fig. 21*), conflicts arising from this source were more common among the more neurotic patients (*see Fig. 22*). Occupational difficulties on the contrary appeared as horns of dilemmas much more frequently in the less neurotic group, where occupation was of very forceful significance in 44 per cent of the cases. Among more neurotic people, however, the real significance of occupational factors appeared to be rather slight (*see Fig. 23*). It is not to be gainsaid that there were occupational quarrels and inefficiency among the more neurotic people; but it appeared clear that these maladjustments were secondary to the personality disorder rather than etiological in its development.

Types of tension observed: The most frequently observed forms of tension were resentment, anxiety, and guilt. Of these, resentment seemed most characteristic of the group as a whole and was seen in 92 per cent of the cases (*see Fig. 24*). It appeared in the more neurotic and less neurotic groups with about the same frequency. There was the distinction, however, that in more neurotic patients the resentment was often colored by the neurosis and in many instances was grossly misdirected; so that in lay parlance it might be said

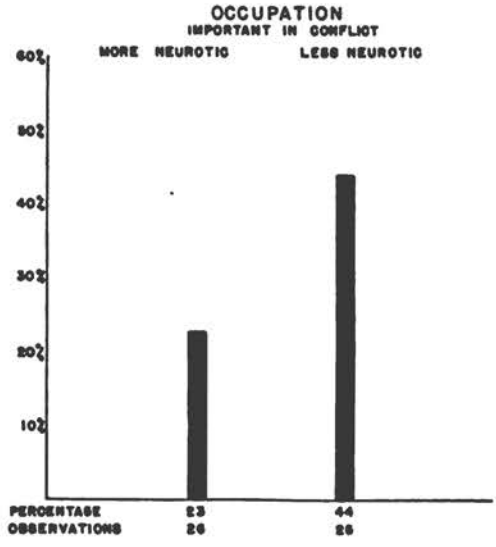

FIG. 23. In contrast to parental opinion which was more commonly a factor in the conflicts of the more neurotic patients, occupation figured more frequently in the difficulties of the less neurotic.

to have been *unjustified* by the objective facts. In contrast to this, among the less neurotic patients, the resentment was usually the normal outgrowth of an external life situation. In Fig. 25 are shown the percentages of persons in the two groups in whom justified and unjustified resentment respectively were observed.

Guilt was observed in association with feelings of obligation and depressive tendencies, both of which were very commonly encountered (*see Fig. 14-16*). It was not, however, the principal preoccupation of the majority of patients, and it was not evaluated in any quantitative or statistical manner. Anxiety, fear and dread were noted in many instances to play a very significant rôle.

Presentation of Case Histories

Forty-five of the 53 carefully studied emotional cases were quite typical and are adequately represented by the sixteen case histories which follow. The other eight cases differed from them in certain aspects. They are included in the statistical tables, but are not individually presented.

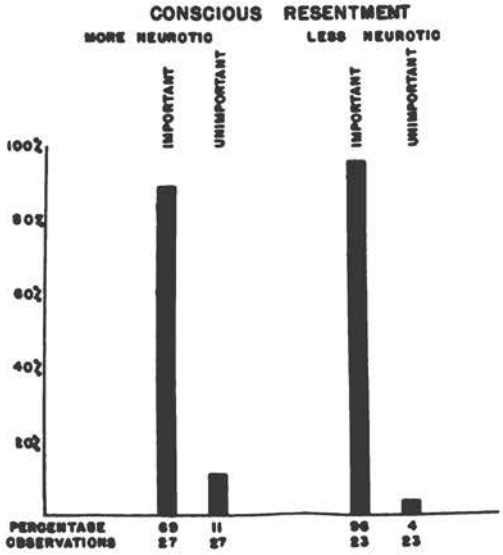

Fig. 24. Conscious resentment was important in the conflicts of both the more and less neurotic groups. The slightly higher incidence in the less neurotic group may be due to a greater ability to recognize resentment consciously.

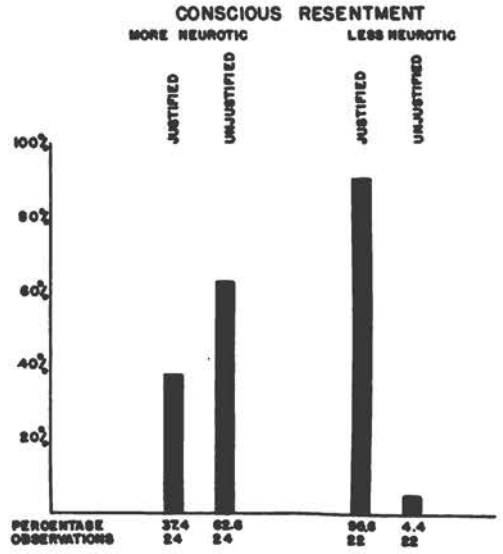

Fig. 25. Relative frequency of justified and unjustified resentment. Note that in the less neurotic group resentment was most frequently justified by environmental circumstances. Among the more neurotic patients this was less frequently the case.

To simplify the presentation the following outline is followed:

I. Acute tension.
   A. More neurotic.
   B. Less neurotic.

II. Chronic tension.
   A. More neurotic.
      1. Indecision in face of neurotic dilemma.
      2. Inability to accept life situation.
   B. Less neurotic.
      1. Indecision in face of exogenous dilemma.
      2. Victim of overwhelming social adversity.

Among the cases demonstrating *acute tension in more neurotic individuals* are

Nos. 1 and 2 whose histories are recorded below:

CASE NO. 1

The patient was a timid somewhat hypochondriachal middle aged man who had always worked for one employer and had plodded along in a dependent way. He had, however, on several occasions been greatly upset by experiences which might have been of less traumatizing importance in less neurotic persons. On one occasion while at work in the shop a fellow employee lost the fingers of one hand in a circular saw. The patient was so upset at witnessing the scene that he became nauseated, vomited and suffered from mucous diarrhea for three days. The symbolic significance of this accident to those schooled in the Freudian camp is apparent.

Case History in Detail:

Case No. 1. A 48-year old Portuguese power-house worker entered the hospital Sept. 23, 1936.

Chief complaint: Precordial distress of indeterminate duration.

Family history: Not remarkable.

Past medical history: Irrelevent except as noted below.

Present illness: The patient had been essentially well until 20 years before admission, at the age of 28, when he developed constipation characterized by the presence of hard, small stools for which he took cathartics once or twice a week throughout the ensuing 10 years. In 1924, at the age of 36, he suffered from upper abdominal pain supposedly due to a peptic ulcer. An exploratory operation failed to reveal the ulcer and his appendix was removed. In 1926 he again suffered from abdominal pain, this time chiefly of a cramp-like character and predominantly in the lower quadrants of the abdomen. This pain was readily controlled by the use of a bland diet and agar preparations. From that time until admission, the patient continued to suffer from occasional bouts of constipation which were definitely aggravated at times of over-fatigue, emotional stress, or after the ingestion of rough foods. His occasionally recurring lower abdominal pains usually followed two to three hours after meals and were maximal before and during defecation. His bowel movements were small and mushy.

About 1916, the time of the onset of his illness, the patient saw the fingers cut off a man's hand by a circular saw. He immediately ran to the bathroom and vomited and for the ensuing two or three days was ill with diarrhea. About 1933, at the age of 45, the patient borrowed some money which he lost and was particularly pressed financially. At this time his constipation and pain became considerably worse.

At the time of admission, he was particularly anxious about his health, not because of his intestinal symptoms which he had had for 20 years, but because he had become convinced that he was suffering from heart disease. He had numerous attacks of palpitation, shortness of breath, belching, etc., which had been worse during the preceding year.

Physical examination: revealed a well-developed and nourished man who looked somewhat older than his age and was tense and worried. There was an operative scar on the abdomen. He showed no dilatation of pupils; tremor, dermographia; peripheral vasoconstriction or sweating. Descending colon and sigmoid flexure were not palpable. There was no evidence of cardiac disease.

Special data: Repeated blood, urine and stool examinations were essentially negative. X-ray examinations of the heart, spine, esophagus, stomach, duodenum and gall bladder were negative. Electrocardiogram was within normal limits. A sigmoidoscopic examination showed the mucosa of the recto-sigmoid to be slightly injected and granular with a marked hypersecretion of mucus and constant spasm in the sigmoid.

Psychiatric observations: Born in Madeira in 1888, the patient's early childhood had apparently been normal excepting for the frequency of frightening dreams. He had apparently enjoyed contact with both his parents. A part of his childhood (from 8 to 14 years of age) had been spent on a coffee

farm in South America so that he had little formal education. At 14 he and his parents returned to Portugal. When the patient was 16 his father had come to America and he had been left to take care of his mother and five siblings. At 20 he came to the United States himself, got a job working in a cotton mill and lived with his father for two years until, at the age of 22, he married, and his father returned to Portugal. His wife was an intelligent, attractive but over-solicitous woman upon whom he grew to be extremely dependent. Two months after marriage he became employed with a large traction company, where he worked in the power house and retained that job thereafter, beginning at $10 a week, making $35 a week at the time of admission. With the exception of his timidity, dependence and anxiety, he always made a good social adjustment, but suffered from exaggerated manifestations of anxiety, tension, and strain under certain circumstances. One example of this is the time when he witnessed the amputation of a fellow-worker's fingers. A second time when such tension developed over a longer period was when the patient borrowed $300 which he lent to his father-in-law to buy a house. His mother died, and his father-in-law and he both suffered extreme cuts in salary, so that the mortgage on the house was foreclosed and the patient lost the $300. During the ensuing years, he paid a large part of his salary every week toward the repayment of this debt and simultaneously was working extremely long hours at the power house, four men doing the work which had formerly been assigned to twenty. During this period of emotional tension, financial embarrassment, and physical exhaustion, he had again suffered from an aggravation of his symptoms.

He was a tense person who spoke in a somewhat effusive manner about his symptoms and was primarily concerned with worry over the condition of his heart. He was also concerned because he had been psychically impotent for a year, and because he was physically tired and depressed. He suffered from no delusions, hallucinations or ideas of reference. His energy output was average, his sexual drive heterosexually directed, although perhaps somewhat weak. He had no conventional phobias, compulsions or obsessions, but had at many times suffered from exaggerated anxiety. He was temperamentally warm with rather marked fluctuations in mood from one day to the next, although he showed only slight diurnal swings. He had occasionally felt despondent to the point of suicide. Despite his relatively good social adjustment with constant employment and responsibility, he was predominantly a very passive person who was utterly dependent in every way. He had a very meticulous sense of financial obligation and strongly felt the need for meeting his just debts. Clinically, in addition to his clear-cut manifestations of anxiety, there was a distinct element of hypochondriasis.

Course: Following the patient's admission to the hospital and reassurance as to the condition of his heart, he was seen on numerous occasions in the Psychiatric Clinic and although no intensive treatment was instituted, he showed a coincident improvement in energy output, disappearance of despondency, return of sexual desire, and there was a gradual disappearance of his gastrointestinal and cardiac symptoms.

Almost a year after discharge from the ward, the patient came back one day to say that his abdominal cramps had returned. He had sat up all the previous night taking care of a dying friend. This trigger had mobilized his anxiety.

CASE NO. 2

The patient was a frail, unstable, passive youth, who all his life had been bullied by his mother and sisters. All his deficiencies were ascribed by him to their doings. When he was in the hospital for psychotherapy of his asthenia and anxiety, a pretty little ward maid ordered him to go to a doctor's office. This apparently innocuous command mobilized uncontrollable resentment which made him utterly miserable, and simultaneously he developed abdominal cramps.

Case History in Detail:

Case No. 2. A 31-year old, white, native born gardener entered the hospital for the first time Dec. 1, 1936.

Chief complaint: Attacks of nervousness of 16 years duration.

Family History: Non-contributory except for asthma in one paternal uncle.

Past medical history: Patient had influenza at the age of 14 and for many years had suffered from urticaria, asthma, and hay fever. He had had a hernia repaired at the age of 15. For many years he had also suffered from frequent tensional headaches, palpitation, hyperpnea, generalized tremor and a sensation of weakness in the knees particularly at times of nervous unrest.

Present illness: The patient entered the hospital on Dec. 1, 1936 because he wanted psychiatric assistance in allaying fear and anxiety which, in his mind, had been associated with continued masturbation, and also for the control of asthma which he and his doctor had felt to be partially on a psychogenic basis. He had suffered from constipation for a few days after a brief period of hospitalization the previous year, but otherwise had had no gastrointestinal symptoms. On February 1, during his stay in the hospital and at a time when psychotherapy had progressed to a fairly deep level, he suddenly developed severe left lower quadrant abdominal cramps and the production of mucus in his stools. *These symptoms came on for the first time when a ward maid entered his room and ordered him to go to one of the doctor's offices.* That this apparently innocuous situation was of major importance to him is indicated below. The patient's abdominal cramps and diarrhea continued throughout his stay in the hospital, becoming worse on days when he was tense and less severe when things went smoothly.

Physical examination: revealed a lightly-built, slender male who was obviously tense and apprehensive. He had a coarse generalized tremor; severe red cutaneous response to stroking the skin. He sweated profusely, and his face was flushed. The descending colon and sigmoid flexure were palpable and tender, and during palpation the patient suffered from his customary lower abdominal cramps. The tendon reflexes were grossly hyperactive.

Special data: Two urine examinations and extensive laboratory and X-ray studies were negative. A differential blood count revealed 2 per cent of eosinophiles but otherwise was entirely normal. A sigmoidoscopic examination showed changes consistent with mucous colitis.

Psychiatric observations: The patient had always gotten along particularly well with his father. On the contrary, his mother, a 65-year old, short, round-faced, domineering, unhealthily religious woman, had always been a thorn in his side. A sister, 39 years old and separated, was such a source of irritation to him that he refused to discuss her. A second sister, 35 years old and married with 2 children, lived next door.

The patient was precocious in his infancy, walking and talking at 11 months. He was afraid of the dark in early childhood but recalled no other psychopathic tendencies in his childhood. He had been subject to severe whippings administered by his mother and lived in mortal fear of her. In school he was eternally picked on by the other boys and never felt that he was one of the gang. He continued through the first year of high school. At that time he began masturbating. His father had told him that the repetition of such behavior would result in insanity, and this thought had continually preyed on his mind. In discussing his sexual life, after having had considerable psychoanalytic attention, he said "I seem to be arrested at the homosexual stage of my development". However, the clinical impression of him was not that of a homosexual. Ineffectual at his work, the patient had had numerous jobs, most of which he had been forced to leave because of the severity of his neurotic anxiety. He had gone through a severe conflict in relation to his religious life, which was unconsciously linked up with his mother's fanaticism. At one time, 5 years before admission, his married sister made some remark which questioned his virility. In response he slapped her in the face, whereupon her husband thoroughly "beat him up".

It is apparent from the above that this ineffectual boy was completely bewildered in his relation to women, particularly with his mother and two sisters, and that he resented acutely their domination of his life. In the course of his psychiatric treatment, when the emotions associated with these women were coming close to the surface, the episode with the ward maid occurred. To be ordered about by a woman in the hospital, which had become his refuge from reality, was too much for him. He burst out in uncontrollable resentment and simultaneously developed his lower abdominal symptoms.

The patient was tense and anxious and his mind was preoccupied with his anxiety over masturbation and a fear that he might be homosexual. He felt nagged to death by his mother, whom he referred to as the "main etiology". He suffered from no delusions, hallucinations or ideas of reference. His energy output was average; his sexual impulses may have been directed in a somewhat homosexual direction. He suffered from fear of the dark as a child, and in adult life he was afraid of jumping off high places, became tense and anxious in crowds and in closed rooms. He had one or two minor compulsions. His temperament was of average warmth, but there was much reactibility of mood, generally with a diurnal swing from good spirits in the morning to discouragement at night. Upon several occasions he had become despondent to the point of considering suicide. His character had developed into one of dependence and passivity and he was acutely sensitive to any remark which might threaten his security. There was no evidence of his having any particular grasping tendencies or overconscientiousness about his obligations to others.

Cases Nos. 3 and 4 illustrate *acute tension* in *less neurotic* individuals.

CASE NO. 3

This patient was a woman who had suffered from chronic tension over gradually mounting social difficulties. In addition, however, she had always noted that a "good scare" was a laxative for her. While in the hospital she was scheduled to go to the rectal clinic for a minor but painful treatment. In the wheelchair on the way to the clinic she suffered from an uncontrollable diarrhea.

Case History in Detail:

Case No. 3. A 59-year old, white, native-born housewife entered the Medical Service May 6, 1938.

Chief complaint: Indigestion, constipation and lower abdominal pain of 40 years duration.

Family history: Essentially negative.

Past history: She contracted syphilis at the age of 24 which was treated.

Present illness: At the time of the birth of the patient's first child when she was 20 years old, she developed hemorrhoids following which she began the chronic use of cathartics. At about the same time she began to have "indigestion" characterized by epigastric pain, belching, and heart burn which was unrelieved by the ingestion of food or soda. From that time on, she continued the use of almost daily cathartics and as the years progressed, developed more and more soreness throughout her abdomen but principally in the left lower quadrant. This soreness was, at times, cramp-like in character, was aggravated following meals or after taking rough foods and following enemata, although ordinary bowel movements did not seem to affect her. Throughout this time, she had occasional brief bouts of diarrhea which always arose in association with short periods of emotional tension.

Physical examination: revealed a small but well-developed and nourished woman in no obvious distress. Blood pressure was slightly elevated. The descending colon and sigmoid flexure were palpable and tender producing duplication of the chief complaint during palpation. She had no dermographia, peripheral vasoconstriction, sweating or hyperreflexia.

Laboratory data: Blood and urine studies were normal. The Hinton test was negative. Gastrointestinal X-rays showed no evidence of abnormality in the esophagus, stomach or duodenum. An anuscopic ex-

amination revealed one large external hemorrhoid and evidence of painful chronic cryptitis. A sigmoidoscopic examination revealed no constricting spasm and no gross mucosal changes.

Psychiatric observations: The daughter of a heavy-drinking, common laborer and an irritable domineering mother, who had managed to live together but in utter tension, the patient had experienced a difficult childhood. She was nagged by her mother, with whom she had enjoyed no sympathy or understanding. Her attitude toward her father was one of ambivalence. Although he had thrashed her severely on numerous occasions and was a heavy drinker, she loved him very much. She had a total of five grades of schooling toward which her attitude was one of gross indifference. She did particularly poorly in geography and was never inclined to mix with her classmates. She worked as a housemaid for several years before her marriage at the age of 19. One year later, shortly after the birth of her first child, her husband deserted her and, a year following, died in obscurity. She was alone in the world with a one year old child and no money. The following year she contracted, through extra-marital relations, a syphilitic infection for which she received such treatment as 1902 offered. At the age of 28, she married a second time and thereafter had 4 more children in rapid succession. When she was 42 years of age, she had her ovaries removed and her perineum repaired. Prior to this operation her sexual life had been active, frequent and satisfactory with both her husbands; following it, she suffered from severe dyspareunia. In 1926 at the age of 48 she and her husband borrowed money to build a commercial garage and four years later when the pinch of the depression was already sufficiently acute, some neighbors built another garage next door. Tense financial strain ensued and was aggravated in 1937 by their daughter who married an unemployed ne'er-do-well and came home to live.

The patient was a tense and rigid person who, with the exception of financial cares, appeared to have no immediate problem of major psychogenic import. She suffered from no delusions, hallucinations or ideas of reference. Her energy output was good and she was obviously normally heterosexual. She was somewhat concerned with the feeling that her family were ingrates and were tired of her because of her illness, and apparently bore some resentment against them because of this. She suffered from no phobias or compulsions. Her temperament was apparently of average warmth but her mood varied greatly from day to day, and from one part of the day to the next. She often felt gloomy on waking up in the morning, sometimes despondent for no apparent reason, and she had seriously considered suicide on numerous occasions. During her menstrual life she had always felt exceptionally strong and happy immediately before her periods. She seemed to be rather normal in character development, did not appear grossly to over or underevaluate her ego or to be abnormally dependent or independent of the opinions of others. She did seem to show a rather abnormally developed sense of financial responsibility both as regarded her obligations to other people and their obligations to her.

Course: During the 40 years of her illness before admission to the hospital, there had been a succession of increasing social sources of tension and worry and there had been gradual aggravation of her symptoms. This aggravation, however, did not show any immediate association with prolonged periods of tension, excepting at the onset when her first child was born and her husband deserted her. *She had noticed, however, that brief periods of tension did activate her bowels and said, "A real good scare is a laxative to me". While under observation in the hospital this immediate relation was demonstrated. She was scheduled to visit the rectal clinic for a minor but painful treatment. In the wheelchair on the way to the clinic, she suffered an uncontrollable diarrhea.* After discharge from the hospital, her condition was not followed.

CASE NO. 4

This woman was a timid person who, following the birth of her first child, had a large rectovaginal tear. Without sphincter control she was unable to re-

tain her bowel movements. After a series of unsuccessful surgical operations, a fairly good sphincter was formed, but even after that she found whenever she was out of reach of a toilet, that she suffered from uncontrollable peristaltic urges.

Case History in Detail:

Case No. 4. A 38-year old, white, English-born housewife entered the hospital Jan. 15, 1938.

Chief complaint: Low back pain and headache.

Family history: Not remarkable.

Past medical history: The patient suffered from "diphtheria" three times and scarlet fever once in childhood. She had early September hay fever for many years. At the birth of her first child, at 18 years of age, she suffered from a third degree rectovaginal tear which subsequently broke down repeatedly and for which, during the ensuing years, she had a total of ten plastic operations. She had had acute glomerular nephritis.

Present illness: The patient's chief complaint of low back pain was found to be due to orthopedic causes which were treated in the appropriate clinic. At the time of her medical admission, however, it was learned that she had been suffering from periodic episodes of mucoid diarrhea which began immediately after the birth of her first child and had continued thereafter. The patient's movements had been mushy, to liquid, unformed, small in calibre and had contained much stringy mucus. She had suffered with cramp-like pain which was limited to the lower abdomen. The cramp-like pain was most frequently aggravated following the ingestion of food, particularly the ingestion of rough bulky substances, and during evacuation of the bowels. The patient had also noted that emotional tension, particularly fear, had consistently precipitated her attacks.

Physical examination was essentially normal. The pupils were dilated. She had distinct dermographia, and her tendon reflexes were hyperactive. There was no tremor, peripheral vasoconstriction or sweating. There was distinct soreness in the left lower quadrant of the somewhat obese abdomen but the sigmoid flexure was not palpable.

Special data: Urine examinations had at times showed traces of red blood corpuscles and casts. Her blood examinations showed no significant anaemia and X-ray examinations of the colon were entirely negative. A sigmoidoscopic examination revealed constant occluding spasm above the level of the rectosigmoid valve. The mucosa was slightly injected, the veins and venules disappearing into the congested surroundings. There was a distinct fine wrinkling of the surface comparable to that seen after Acetyl-B-methylcholine in the normal. Allergic scratch tests to 36 antigens were negative; intradermal tests to 20 antigens revealed only slight sensitivity to goose feathers and house dust.

Psychiatric observations: The patient's father and mother were both good-natured English peasants with whom she had always lived in sympathy and understanding, coming to America at the age of 9. Aside from numerous nightmares and occasional temper tantrums, she showed no psychopathic stigmata in childhood. She went to school for three years in England and for an additional five years after coming to this country, did well both socially and academically with the single exception of geography. At the age of 18 she married because she was lonesome and wanted company. Her physical relations were very painful at first and in the course of time became frankly repulsive to her. She finally developed an attitude toward sexual intercourse where she felt guilty if she denied her husband, tense and anxious if she yielded to him. With this one exception, her marital life was congenial. She had three children who gave her and her husband great pleasure. The family lived together in a six-room flat in moderate circumstances.

The patient suffered at many times from tensional headache; pulling sensations in the back of the neck; excessive salivation; generalized tremor; weak, shaking feeling in the knees; easy fatigability and loss of appetite and vomiting, especially at times of emotional tension. She had bursts of diarrhea at any time when she was at a distance from a toilet but under no other circumstances. This inconvenience was so incapaci-

tating that it kept her almost a prisoner in her home. Aside from the somatic evidences of tension which have just been outlined, and her aversion to the sexual act, there seemed to be no striking evidence of psychoneurosis.

She spoke without clearly marked concern, although her skin was flushed at her first interview. She spoke in a restrained way, was moderately concerned about the incapacity resulting from her emotional diarrhea. Her energy output was apparently good, her sexual direction undetermined. She was given to certain frequently recurring fears such as that of slipping off a step on a street car or that of falling off a ladder. She thought that perhaps these fears were not entirely founded on an intellectual basis. She suffered from the conventional phobias of crowds and of closed doors. She had a mild form of compulsion to complete any work which she started and was given to checking over routine acts such as putting out lights, closing doors and windows, reading letters, straightening pictures, and arranging her clothes at bedtime. Temperamentally warm, she suffered from rather marked fluctuations in mood both from day to day and from hour to hour, occasionally tending to wake up too early in the morning and sometimes feeling very despondent for no apparent reason. She had on some occasions felt that life was not worth living and considered suicide. There was no fluctuation in mood associated with her menstrual periods. She recognized frankly the passivity and extreme dependence of her nature, and felt very strongly her obligations to others.

Course: The patient's mucous diarrhea apparently started at the time of her marriage, which was contracted in a state of conflict, and developed during early years when there must have been considerable tension over her sexual life and when, owing to her recalcitrant recto-vaginal tear, she was virtually without sphincter control. *As time went on, she found that she was able to withhold peristaltic urges excepting when she was not in reach of a toilet,* a situation which became a phobic one with her. She did not have abdominal cramps, however, until 2 years before admission, at which time, she moved to a new city where she was separated from her mother and friends. There was only slight manifest emotion associated with this, although she was distinctly unhappy and lonely in her new surroundings. She had learned through experience that rough foods upset her, hence she was following a good low residue diet when she came under observation. The administration of atropine derivatives relieved her cramps to a certain extent but did not relieve her involuntary peristaltic activity.

Among the patients exhibiting *chronic tension in the face of a neurotic dilemma* were Nos. 5, 6, and 7. Their histories follow:

CASE NO. 5

The patient was a neurotic person who had hysterical qualities and derived obvious secondary gain from her symptoms. Her abdominal cramps seemed irrelevant to her hysteria. They came on shortly after her marriage which presented her with an acute dilemma. Syphilophobia made her husband seem dirty and she was forced by her neurosis to douche her vagina following intercourse. Yet she wanted a husband, a home, and children. She was unable to decide whether to stay with her husband and put up with his dirtiness or to separate from him and have no home and no children. Although this was decided for her and she left her husband, she was for a long time unable to accept the decision and wanted to return to him.

Case History in Detail:

Case No. 5. A 22-year old, separated, white seamstress entered the hospital for the first time July 22, 1935.

Chief complaint: Constipation and abdominal pain of incapacitating nature for 1 year.

Family history: Essentially negative.

Past history: Essentially negative.

Present illness: The patient had been in good health until the age of 10 when she first began to be slightly constipated. At the age of 18 she began the use of occasional cathartics but it was not until she was 21

years old, 6 months after her marriage, that she developed severe attacks of right lower quadrant abdominal pain. From that time on, she had intervals of 3 to 4 weeks of extremely painful attacks of cramps followed by the passage of mucoid bowel movements. She was chronically constipated using almost daily catharsis. The pain in her abdomen was felt over all the left side and lower abdomen below the navel but was maximal over the cecum. It was generally cramplike in character, although sometimes severe enough to feel like a "knife", was usually aggravated following the ingestion of food, before evacuation of the bowels or during enemata. At first the patient did not recognize that it was associated with emotional tension, but she came readily to admit that it was. Her stools varied from small, hard segmented pellets to soft, small mucoid strings.

In addition to these gastrointestinal complaints, she was suffering from moderately severe palpitation; hyperpnea, precordial pain; weakness; dizziness and loss of appetite — neurocirculatory asthenia — somatic symptoms of anxiety.

Her first hospital admission was on the Psychiatric Service for the treatment of a psychoneurosis of mixed type. Subsequently, she enjoyed two admissions on the Surgical Service on each of which the possibility of right ovarian cyst with twisted pedicle was entertained. On both admissions the suspected mass disappeared following a soap suds enema. She was also admitted to the Medical Service because of a moderately severe respiratory infection.

Physical examination: revealed the patient to be of mixed physique. Her pupils were frequently widely dilated, her skin showed marked dermographia, and there was evidence of excessive coldness and moisture of the extremities. The reflexes were consistently hyperactive, but she showed no tremor. Both ascending and descending colons were palpable and tender.

Special data: Urine, blood and stool examinations showed no abnormalities. A sigmoidoscopic examination revealed definite spasm of the rectosigmoid junction. The mucosa was slightly granular, injected and the veins were distended. There was no excessive amount of mucus and there were no ulcerations or bleeding points. X-ray examination of the colon showed no abnormality.

Psychiatric observations: The patient's father, a 48-year old, large, athletic, irritable, drunkard, had always treated her mother badly. He had likewise been cruel to the patient and her sister, both of whom had received many severe whippings at his hand. By free associative technique, the patient's attitude of ambivalence toward him was established beyond refute. The patient's mother, on the other hand, was a short, warm, fat, passive woman toward whom she had only rather indefinite feelings. In early childhood she is reputed to have suffered from no so-called neurotic trends. In school she did well, having been awarded a double promotion on her first year there. However, toward the end of her primary education, she began to be extremely sensitive to comments by the other children in regard to her father's drunkenness, and because of this sensitivity, she did not go to high school. After quitting school she worked in a tinsel factory until she was married at the age of 20. Her husband was a big, dirty man who demanded sexual intercourse three times nightly. Marriage started off with severe dyspareunia which, in the course of a short time, developed into a feeling of gross disgust. *She then developed a phobia of venereal disease and a compulsion to follow intercourse with antiseptic douches for the purpose of preventing this possible infection. The use of these douches was consciously recognized as presenting a conflict, because the patient realized that she was also preventing conception, and she at least consciously, wanted greatly to have children for her home.* Her syphilophobia developed to the point where she was unwilling to use the toilets at her factory and hence contributed mechanically to her faulty bowel habits. It was 6 months after her marriage, which had proved neurotically incompatible, that the patient's symptoms suffered their most severe exacerbation.

The patient was a tense person, but she also had a definite suggestion of the knowing, evasive smile common to hysterics and the Mona Lisa. Her speech was not strikingly restrained or effusive. Her content of thought

was largely concerned with her symptoms, which although presumably physiologically determined, nevertheless seemed to furnish a certain degree of "secondary gain" to the patient. She was also concerned over her separation from her husband, for on the one hand, she wanted a home and children, but on the other, could not tolerate her neurotic aversion toward him. Her energy output seemed somewhat diminished. Her sexual drive was presumably heterosexually directed at the "Oedipus-genital" level. Her concerns were adhered to with obstinate rigidity, but she did not have any frank obsessions. She did have a well-marked phobia of venereal disease and conventional phobias of crowds, closed rooms, high places, darkness, etc. She also had numerous minor compulsions and was an excessively neat and spotless person. Temperamentally, she was warm. She suffered from marked swings in mood from hour to hour and from day to day. Often she had trouble getting to sleep, most frequently because of tenseness and anxiety. She seldom woke up despondent early in the mornings. She often had periods of discouragement, at times wishing she were dead but never contemplating specific methods of committing suicide. Her character development was one of ambitendence. Her evaluation of her own ego varied from utter effacement to a very exalted identification with persons of a rarefied intellectual class. She was passive rather than active, unable to make decisions, but able to follow in a more or less compulsive way a course mapped out for her. She was dependent upon others to a painful degree and felt with gnawing soreness, the most insignificant slight. Although she showed definite conflict between her grasping tendencies and her feelings of obligation to society, it was not apparent that she fell predominantly in either group.

Course: During the 3 years that the patient was under observation and treatment in the Psychiatric Clinic she received much encouragement and social help which enabled her to live in an artificially created environment. In this milieu there was distinct improvement in her gastrointestinal and her neurocirculatory symptoms; but no fundamental improvement in her relations to men was achieved. It was felt advisable for her to undergo psychoanalysis in the hope of resolving her neurosis.

CASE NO. 6

This person was a very attractive and intelligent woman of 36 who had shied away from numerous suitors because of a neurotic fear of sexual life. The fear had apparently in part been engendered by her relation to her father. She saw her mid-thirties slipping away with no marriage and no home, but was unable to bring herself to accept the advances of any suitor. As the years went by, her tension became greater and her symptoms became more recalcitrant. Intensive psychotherapy did much to thaw out her neurotic fear and to improve her intestinal symptoms.

Case History in Detail:

Case No. 6. A 36-year old, single, female American secretary entered the hospital June 3, 1937.

Chief complaint: Nervousness, insomnia and abdominal pain.

Family history: Her mother had always been nervous.

Past history: The patient had had scarlet fever and diphtheria. She had had her appendix removed at 24 and an operation for hemorrhoids at 32.

Present illness: The patient said that she was in excellent health until the age of 24, at which time she developed chronic right lower abdominal pain for which an appendectomy was performed. At that time, she became constipated and took cathartics nightly for the next 9½ years, during which time she also suffered from mild epigastric distress and occasional belching. Her lower abdominal pain was chiefly cramp-like in character; was aggravated by emotion and following the ingestion of food, particularly food of a rough and fibrous nature. The cramp-like pain was usually relieved following evacuation of the bowel. Her stools were constantly composed of small, hard pebbles. Two and one-half years before admission, at the age of 33, she was placed upon "bowel management" in another clinic:

a bland diet, tincture of belladonna, and phenobarbital. On this régime she obtained immediate but temporary relief. With inconstant exacerbations and remissions, her symptoms continued until admission.

Physical examination: revealed a well-developed, well-nourished and alert woman who looked considerably younger than her age. Her abdomen was slightly tender throughout, the descending colon and sigmoid flexure being palpable and definitely tender. She had no tremor; her pulse rate was 60, and the blood pressure 90/60. Dermagraphia was slight and her feet were cold. Reflexes were diminished.

Laboratory data: Repeated blood, urine and stool examinations were negative. Barium enema showed the colon to be normal. A sigmoidoscopic examination showed a somewhat atypical picture. There was no spasm; the mucosa was atrophic and absolutely dead-white in color, the surface being finely granular and presenting no vascular markings. Four inches within the rectum the lumen was entirely obliterated, there being an irregularly contracted ring. About this ring, the mucosa was moderately injected, the injection fading gradually to blend into the dead-white of the lower rectum. Over the surface of the injected part of the mucosa, near the ring of constriction, there was a glairy mucoid secretion with strings of easily removable mucus.

Psychiatric observations: Apparently normal in her early development, the patient was brought up in a most difficult home. Her father, a tall, building contractor of athletic physique, was an emotionally cold tyrant. Not only was he faithless to his wife sexually, but he dominated her at home and made the family decisions. Throughout the patient's childhood she recalls never having seen her mother sit at the dining table with her father because her father believed in the inferiority of women and insisted upon his wife's remaining in the kitchen to cook and serve the meals as if she were a paid servant. If any independence were shown on the part of his wife, he would beat her severely and upon numerous occasions he beat the patient as well as her brothers and sisters. The patient's mother was a passive, sympathetic woman whom the patient represented as "everything she should have been". When the patient was 19 years old and had finished high school and business college with flying social and academic colors, her mother and father separated and she and her sister and mother went to another part of the city to live. When she was 25, her mother died. Our patient had obtained a clerical job paying $30 per week as secretary to a bank official, become an active member of the Appalachian Mountain Club, and made superficially a good social adjustment. After her mother's death, she continued to live with her sister, also a secretary, with whom she got on well. She had 4 very successful brothers.

As the years advanced she became increasingly aware of the futility of her spinster life. Physically attractive, she had received the attentions of numerous suitors, whom she had discouraged before her mother's death on the basis that she was responsible for her mother's care. After her mother's death this reason disappeared, but she kept on discouraging suitors apparently for no intelligible reason. She had had an inordinate fear of marriage since childhood when her father used to beat her and her mother. She had no conscious desire for a sexual outlet of any kind and apparently had forgotten numerous sexual memories. She was preoccupied with sensitivity over her being inferior and this sense of inferiority was focussed largely upon her genital organs in the form of worry over her scant monthly periods. These had so concerned her that for two years before admission to the hospital, she had received weekly injections of theelin.

The tension caused by her mother's death; the need for someone upon whom to be dependent; the attentions of suitors and her inability to meet their advances had begun in her early twenties and had grown in severity as she had advanced through life to the middle thirties. She had entered upon a period when she knew that life was passing her by and that something had to be done.

She was a somewhat tense person who bit her nails but who spoke in a rather restrained and intellectualized way. She was preoccupied with the fear of men and at the same time with the desire for dependence upon them in the form of marriage. This fear of

marriage, in a poorly formulated way, seemed perfectly reasonable to the patient. She was afraid of rats and mice but not of snakes. She had been afraid of the dark as a child but not in adult life and had no conventional phobias or compulsions. Her temperament was of average warmth with no spontaneous mood swings, although she had considered suicide in an intellectual way. Superficially her character would impress one as being strikingly independent and certainly she was active, but it was apparent on knowing her more closely that she was a rather vain person, acutely sensitive to every slight and extremely dependent upon the opinions of those about her. It was impossible to classify her as to predominance of giving or receiving tendencies. She obviously tended to think in terms of clear-cut dichotomies and to ruminate endlessly over specific problems. It seemed that her fears in relation to the male sex were dependent upon forgotten memories of her own relation with her father and as if these neurotic fears were one horn of the dilemma about which she was stewing.

Course: In view of the obvious neurotic features associated with the patient's relation to her father, a resolution of the problem seemed desirable and she was referred to a psychiatrist for intensive treatment, during the course of which she grew noticeably less tense and less sensitive, began to associate with men to a certain extent, and felt better clinically.

CASE NO. 7

This woman was an artist with a rigid and inflexible nature. She felt that her only future in art lay in her teaching in a woman's college which would require her having the "label" of the teaching "trade guild", a Ph.D. degree. Obliged by inheritance to care for the family finances and provide for a detested stepmother, she was unable to make any other arrangements for these cares. She had three legitimate choices: 1) to get a substitute bookkeeper and study for a Ph.D., 2) to continue painting on a part time amateur basis, or 3) to give up the pretense of being an artist. Between these three she remained in a constant state of indecision. Her tendency was gradually to develop the feeling of being an unappreciated artist, to blame her stepmother for requiring her attentions, and to show signs of transition to the state of "griping" about the past.

Case History in Detail:

Case No. 7. A 34-year old, white, single, American woman entered the hospital for the first time Feb. 18, 1937.

Chief complaint: Mucous diarrhea of 10 years duration.

Family history: Father had had colitis and diverticulitis. One sister had tendency toward colitis and one brother had many gastrointestinal upsets. There was a strong family history of allergic diseases.

Past history: The patient had diphtheria at the age of 4, scarlet fever in childhood, a mild choreoretinitis at one time, and upon many occasions had suffered from urticaria. She had had an operation for acute appendicitis and had had a nodular thyroid removed. She had had many attacks of tensional headache, excessive salivation and cold hands and vomiting, which symptoms had often come on at times of emotional tension.

Present illness: Patient first suffered from constipation at 19 years of age, which was associated with occasional attacks of lower abdominal cramps. At the age of 24 she began to suffer from alternating constipation and diarrhea which became considerably worse at the time of her father's death when she was 28. Two years later she began to feel somewhat better and continued in a state of remission which lasted until 6 months before hospital entry. She suffered from repeated attacks of severe lower abdominal pain with the passage of large, mucous casts of the lower bowel. In the early stages of the illness they had been, at times, stained with blood. She had noticed a very close association between the aggravation of her symptoms and excessive exercise. She had also noted that emotional tension caused

things to clamp down and was followed by constipation, which in the course of two or three days would run into diarrhea. The fall of her mother's bonds or an address before strangers would serve as adequate stimulus.

Physical examination: revealed a red-headed woman of leptosomic physique who was lying in bed in no apparent discomfort and not obviously anxious. Her pupils measured 2 mms. in diameter. There was no evidence of tremor, dermatographia, clamminess of the hands or sweating. The reflexes were normal. The descending colon was palpable but neither hard nor tender. (The patient said, however, that it felt like an iron rod on palpation during attacks.)

Special data: Urine, blood and stool examinations were entirely negative. X-ray examinations of the chest, abdomen and entire gastrointestinal tract were negative. Visual field examination revealed slightly enlarged blind spots consistent with healed choreoretinitis.

Psychiatric observations: She was a 34-year old spinster daughter of the leading practising physician in an Allegheny mountain town. Her mother, an artist, had died when the patient was 4 years old and 2 years later her father had remarried. With her stepmother there had never been anything but wrangling and mutual misunderstanding. In the patient's adolescence she attended a fashionable boarding school. At the age of 19 in her third year of art school, she became involved in a conflict over marriage, at which time her constipation and abdominal cramps started. Thwarted at this, she threw all her energies into art which she continued to ply as a trade thereafter. When she was 25 years old, her father became ill and the following year died, leaving her burdened with the administration of his estate and the support of her step-mother, her relationship to whom was one of violent ambivalence. She felt that her stepmother was selfish, wasteful and had no concept of the difficulties of conserving and administering an estate. She was in poor health both mentally and physically and spent large parts of her time at a spa. Because of the patient's administrative obligations and consequent confinement to the Alleghenies, she felt that her career as an artist was being thwarted; incidentally, by her stepmother for whom consciously she said she had a deep sense of love. In this situation, which came on during her father's illness, her symptoms became definitely worse.

She believed in a very rigid way that her future in art lay in a teaching career and she felt in an equally rigid way that she needed a "label" because of the strength of the "trade unions in the teaching profession". To get this label, a Ph.D., would have required an additional two years of work at a university which the patient could not afford to do and which she thought her colitis prevented her from doing. Balked in this single track objective, she felt that her life was utterly sterile. She did not appear particularly tense, but on the contrary, discussed her emotional problems with a coolly calculated intellectualization. Her speech was somewhat effusive, she was greatly concerned over the financial condition of her father's estate, which was in her care, over the necessity of obtaining a "trade union" approval for her own advancement, and over her ambivalence toward her stepmother whose demands stood in her way. She suffered from no delusions, hallucinations, or ideas of reference. Her thinking was constantly logical but extremely rigid. Her energy output was good. Her instinctual life was probably not strongly heterosexual.

The patient did not discuss any frank phobias or compulsions. However, her thinking was obviously obsessive, with a tendency to the formation of dichotomies of long standing and adhered to with tenacious rigidity. She was temperamentally cold. Although her energy output seemed good in following a predetermined course, she was very passive in making decisions and extremely dependent upon opinions which might make or mar her estimate of herself. She was conscientious and felt strongly her obligations to her stepmother and to her brothers and sisters.

Neurotic patients whose principal concern dealt with past failure included Nos. 8, 9, and 10, all of whom showed rigid personalities with definite tend-

encies to project upon others the reasons for their lack of success.

CASE NO. 8

This patient was a moderately competent social worker who was descended from a long line of bigots. She bore great resentment against her mother and ambivalence toward her father and her brothers. In adult life she made a passably good professional adjustment, but in private life was happiest at those times when she had legitimate human devils against whom to vent her resentment. During her first marriage to a cruel husband and a termagant mother-in-law she was moderately happy, while during her second marriage to a considerate drug clerk, she was uneasy and restless. Her gastrointestinal symptoms developed partially as a result of unwise medication during this latter period.

Case History in Detail:

Case No. 8. A 54-year old, white, married, American social worker was referred to the Psychiatric Service April 30, 1937.

Chief complaint: Constant diarrhea of 9 months duration.

Family history: One brother had had asthma.

Past history: Patient had had pneumonia on two occasions. She had a panhysterectomy in 1925 at 43; cholecystectomy and incidental appendectomy in 1928 at 46; and a fractured pelvis in 1931 at 49, otherwise her past history had been essentially negative excepting as reported in the present illness.

Present illness: With the exception of gastrointestinal symptoms due to a gall stone in the cystic duct at the age of 43, the patient was in essentially good health until two years before admission. At that time, she had begun to be very tired and weak but had continued with her work. About one year before admission, she had been taken with a severe attack of faintness when attending a flower show, was unconscious for one to two minutes. The episode was followed by weakness and tachycardia and was repeated later the same day. A neurological examination that evening was reported to be negative. The patient grew increasingly apprehensive about her health after this episode, which was interpreted as a symptom of a delayed menopause (the uterus having been removed at the age of 43). Accordingly, in August 1936, 9 months before entry, large doses of estrogenic substance (Theelin, 40,000 I.U.) were administered. Following this dosage, she developed a continuous roaring in her ears which persisted until admission. She began to feel very "jittery" as if her insides were all stirred up and coincidentally developed a diarrhea consisting of 17 to 18 soft to liquid bowel movements containing large amounts of mucus but no blood. They were usually preceded by lower abdominal cramps occasionally associated with nausea. She was at this time also beginning to have belching after meals and at other times. For this diarrhea, countless doctors were consulted, and 57 different medicines, including bismuth and camphorated tincture of opium, were tried. She was hospitalized three times for periods of 3 weeks to 1 month and had complete clinical and laboratory investigations. However, her symptoms remained unabated.

Physical examination: revealed a slightly obese middle-aged woman who looked somewhat older than her years. Her optic fundi showed definite beading, tortuosity and embedding of the smaller arterioles. Her heart was slightly enlarged. Her liver edge was palpable, one finger below the costal margin, but was not tender. There was slight tenderness in the left lower quadrant although the descending colon was not distinctly palpable. The tendon reflexes were hyperactive and there was a generalized coarse tremor of arms, legs and shoulders during emotional tension. Stroking the skin produced a moderate red reaction but there was no excessive sweating, pupillary dilatation or clamminess of the extremities.

Special data: Repeated catheterized urine specimens revealed the presence of B. coli. Blood examinations were negative. Stools were brown in color and mushy containing small amounts of mucus but showed no evi-

dence of pus, muscle fibres, starch, fats, parasites, ova or occult blood. X-ray examination of the colon by barium enema under controlled conditions showed the sigmoid to be slightly narrower than that of the average patient, otherwise no variation from normal to the filling of the colon. Sigmoidoscopic examination showed the presence of considerable fecal matter in the rectum, diffusely injected mucosa with a wrinkled surface. No spasm was seen, but complete introduction of the instrument was limited by the presence of intestinal contents.

Psychiatric observations: The patient was descended on both sides from long lines of wilful bigots, there having been an interminable feud between the prominent families of her paternal and maternal grandparents. Her father, a ne'er-do-well son of wealthy parents, had devoted his life to drink. Her mother, a beautiful but emotionally-clammy social climber, had offered the child no sympathy. The patient and her parents had never overcome their regrets that she had been born a girl. In school where she was an academic failure, she was physically a tomboy. At the age of 12, she asserted her independence by taking a part-time job caring for children. During childhood she had shown no psychopathic traits excepting frequent temper tantrums and sulking. Throughout her childhood and early youth, her attitude toward her father was one of ambivalence. She recalls on several occasions, pulling him out of bar rooms and on one occasion secreting herself behind a trunk in his baggage car when he had descended to being a railway express employee. At 22 she entered training as a nurse, after graduation cared for her father until his death, and in 1911 at the age of 30, she obtained permanent employment as a social worker. Two years later, she was married to a cruel man with a domineering mother. She supported this pair from her salary, but received no gratitude. Her mother-in-law forbade sexual intercourse between the pair because she did not want her son to have a child and enforced her injunction with an iron hand. The patient's attitude toward her mother-in-law and husband was one of terrific resentment; yet while she carried this load, she apparently enjoyed excellent health. By 1926, when the patient was 44 years old, both her mother-in-law and her husband had died, and she was relieved of this responsibility. She soon found other cares in concern about her two brothers to whom she had lent money and whom she thought were foolish and unappreciative. In 1933 at the age of 51, she married for a second time a clerk in a drug store of which she had previously been the owner. A step down socially, this marriage was one of great sympathy and understanding, yet throughout it, the patient was restless and uneasy.

The patient was a tense person who spoke in an effusive way about her numerous complaints and apparently was thoroughly willing to misrepresent anything. Her content of thought was principally concerned with her health, weakness, dizziness, headaches, abdominal cramps, her grandparents, parents, brothers, first husband and former mother-in-law. She also mobilized with great ease, overwhelming resentment against the physicians who had cared for her before entering the hospital, nurses on the ward, doctors on the ward, and particularly her psychiatrist. She had, however, no delusions, hallucinations, ideas of reference or persecution, and her thinking showed no evidence of fragmentation. Her energy output had apparently been good in spite of her complaints, and history had shown that she had no outstanding aversion to heterosexual life. Her thinking was rigid, her fears were fixed and she suffered from mild compulsions. The fear of water was most prominent. She even said that she avoided the bathtub because the sight of water made her faint. Her dream structure was filled with terrors associated with fears of inundation. In temperament, she was icy cold yet showed very great fluctuations in mood, particularly from hour to hour, usually with great despondency in the mornings and the more cheerful mien toward night. There was also fluctuations from day to day and, at times, suicidal thoughts. Her mental concern throughout her illness was one of great discouragement, although frank retardation of thought, speech, and action were not strikingly prominent. Her character development consisted

of an overdeveloped sense of her own importance and a great dependence upon others to support this estimation. Superficially she showed no concern for others, at least, in her verbal complaints, but history showed that she had consistently given large amounts of her earnings to the brother whom she hated most, and had devoted long years of her life to the care of her mother-in-law whom she had hated bitterly. Apparently her sense of obligation was only met when she could serve someone whom she hated, and deprived of a devil, she was restless.

It was felt by numerous psychiatrists who saw her, that she had an obsessional character with a very egocentric development, and had developed a state of depression at the time of the onset of her symptoms 9 months before admission. Whether this depression was endogenous or neurotic in nature was not clear, but in view of the lack of clinical evidence of retardation, the latter view seemed more probable. The diarrhea was presumed to have been started by the administration of theelin and to have been perpetuated by emotional tension.

Course: At the time of transfer to the Psychiatric Service, the patient was extremely resentful about being on a public ward. She emphasized the severity of her symptoms at great length and refused to co-operate in any way with doctors or nurses. At this point, a policy of firm adherence to agreements was instituted. The patient was told of the physiological nature of her ailments, was advised their natural course would be slow and that she could expect no relief from any specific therapy. Her decisions thereafter were made for her and politely but relentlessly carried out. Throughout her stay in the hospital, she came to discuss readily many of the problems which she had had in the past and to reorient herself in terms of the future. Her diarrhea disappeared within four days of her arrival on the service and with the exception of two recurrences remained under control. Her abdominal pain likewise improved and the dizziness tended to go away. At the time of discharge from the hospital she still felt weak and unable to work. She was discharged to the care of a physician who understood her problem and carried on the same disciplinary régime. There was gradual improvement in the patient's condition thereafter.

CASE NO. 9

This man was a 32-year old barber who was incompetent, resentful, and suspicious. His numerous periods of employment were always terminated by quarrels. A lover of the Don Juan type, he had asserted his masculinity by continual sexual excesses with numerous women. He was sensitive about his socially unacceptable and somewhat unmanly profession. His symptoms began at the time of his marriage, when he was confronted with sexual impotence, an intellectually superior wife, and restraint from his wonted sexual behavior. Suspicion and distrust grew on his part, impatience on that of his wife. Tension increased and symptoms grew worse.

Case History in Detail:

Case No. 9. A 32-year old, married, native born barber entered the Medical Clinic for the first time Jan. 23, 1937.

Chief complaint: Constipation of 3 years duration.

Family history: Not remarkable.

Past history: The patient had for many years noticed easy fatigability and had suffered from palpitation and dyspnea in tense situations.

Present illness: All his life the patient had been tense and nervous and had a mild degree of constipation. He was otherwise well until August 1933 when he had a sudden attack of belching, heartburn, and dysphagia for which he consulted a doctor. He was told he had gall bladder trouble and immediately became very frightened. After that time he had some pain on swallowing large pieces of beeksteak. He had a feeling of fullness over the sternum and a constant desire to regurgitate. These symptoms became grossly exaggerated 6 months before admission, at which time, the patient became unemployed. His constipation had grown gradually worse and he developed a pain in the lower part

of the abdomen which seemed worse shortly following meals. The bowel movements had tended to be composed of small, hard, dark balls without mucus. There had been occasional bouts of diarrhea of 3 to 4 days duration.

Physical examination: revealed a slightly-built, dark, asthenic male whose skin flushed easily and demonstrated definite dermographia. He had a fine tremor; his reflexes were hyperactive. The cecum and ascending colon were palpable. No other physical abnormalities were noted.

Laboratory data: Urine examination was negative. The Hinton test was negative. The sigmoidoscope was readily introduced full length; no spasm was observed. The mucosa was of normal color with a slight excess of glairy mucus. The vessels were prominent. There was a very marked irritability to stimulation with hypertonic salt solution following which within 2 minutes, there developed much injection, swelling and mucous secretion. A soap suds enema had been administered 8 hours previously. Gastrointestinal X-ray showed no abnormality of the esophagus, stomach or duodenum.

Psychiatric observations: The son of an irritable, alcoholic barber and a domineering, excitable, pyknic mother, the patient spent his childhood in a small, industrial city. He did poorly in school, dropping out in the first year of high school and entering his father's business as an apprentice, where he remained until the age of 18. At that time, his mother died, his father's business failed, and the two of them moved to another city. The patient continued to eke out a living for himself by working successively for a large number of barbers. Because of friction with his father, he always lived in a different part of town. He was very sensitive about the barbering profession, and felt that it was beneath his dignity socially, unremunerative financially, and he seemed to have a poorly formulated fear that it was associated with effeminacy.

The patient had begun to masturbate at the age of 13, which he had continued for 3 years. Following this, he began to indulge in heterosexual intercourse with a vast number of women, which he continued with voracious lust until he was 28 years of age. During this time he had become engaged once for a few months. Then at the age of 28 coincident with the development of his acute gastrointestinal illness, he met and married a wife. She was a warm, motherly and intelligent person who was employed successfully as a secretary making $25 a week. His married life was a gross failure. He felt that he had become hopelessly shackled to his disliked business. He became impotent. As an explanation of this, his wife accused him openly of continuing his multifarious activities. The patient's sense of inferiority became intensified by his wife's superior intelligence and ability, by his sexual inadequacy, and by continued friction which developed in his work. These misunderstandings were accompanied by a gradual aggravation of symptoms until 3 months before admission, the patient quit work because of his severe pains in the lower abdomen. He was treated sharply by a doctor whom he consulted, and remained essentially an invalid until his arrival at the clinic.

The patient was an extremely tense individual who spoke effusively and with obvious resentment. He was preoccupied constantly with the fear of serious disease and was consciously angry with his wife, and with himself and his father that he had ever become employed in the barber profession. His impulsive life, of the Don Juan type, was presumably latently homosexual. He had no phobias, compulsions or obsessions. He was temperamentally cold with no spontaneous fluctuations in mood. Both passive and dependent in character, he was inclined to feel more strongly society's obligations to him than his obligations to society.

On dietary treatment with the administration of tincture of belladonna and some reassurance, he improved to the point where he was able to return to work. Every effort was made through co-operation with his wife to iron out some of the most acute misunderstandings between them, and some progress was made. However, the patient continued working for short periods of time with different barbers, each time his period of employment being terminated by a quarrel.

CASE NO. 10

This patient was a 35-year old Jewish spinster whose childhood ambition to become a school teacher had been thwarted by her parents. Her father had settled, ten years before her birth, in a locality which boasted no normal school, and for this omission she could not forgive him. She was sensitive about her family's moderate circumstances and felt that they were responsible for the breaking of her engagement at 28. So she drudged on as a beauty operator, disillusioned, discouraged, resentful, feeling that men had betrayed her two great ambitions, and that the betrayal had dated from a decision which was made ten years before she was born.

Case History in Detail:

Case No. 10. A 35-year old, native born Jewish spinster entered the hospital Jan. 12, 1938.

Chief complaint: Numerous tensional symptoms and constipation of 10 years duration.

Family history: Essentially negative.

Past history: The patient had had the usual childhood diseases, scarlet fever, diphtheria, influenza, Herpes Zoster, and pneumonia. She had had her appendix removed at the onset of the acute phase of her present illness. She had always suffered from easy fatigability, occasional palpitation and headaches.

Present illness: The patient was well until 10 years before her admission to the hospital at which time she began to suffer from chronic constipation for which she began the occasional use of cathartics. Her illness was not severe, however, until 1935 at the age of 33, when it became grossly severe and was accompanied by cramp-like pain in the right lower quadrant of the abdomen. This pain was aggravated following the ingestion of meals, particularly those composed of rough foods, and was noticeably increased at times of emotional upset. Her stools were hard, small and composed of pellets. In addition to the increased severity of her constipation, she was at the time developing upper abdominal symptoms including epigastric distress, belching, sour eructations, heart burn, coated tongue and bad breath about which she was also concerned. In addition, she developed almost constant nagging occipital headache accompanied by tension of the posterior muscles of the neck and aching in the right trapezius region. All these symptoms had remained unabated until her admission.

Physical examination: revealed a well-developed and nourished, neatly dressed woman whose gestures were distinctly mechanical. Her descending colon was palpable and tender. She showed excessive sweating. Her tendon reflexes were hyperactive, but she showed no tremor. Dermographia was not observed.

Special data: Urine examination was negative. X-ray examination of the chest was normal. A sigmoidoscopic examination revealed definite irritability of the rectosigmoid with some reduction in calibre. The mucosa was distinctly injected and there was much glairy mucus present. The veins were prominently distended, standing out from the mucosal background.

Psychiatric observations: The patient's father, a Kosher butcher shop proprietor, had settled in a New England mill city 10 years before the patient was born. He was a moderately competent business man who paid little attention to his children. Her mother had been the disciplinarian of the household and had throughout the patient's life been a thorn in her side. During early childhood there had been considerable misunderstanding, the patient often having been whipped severely by her mother, and having received little understanding from her parents in her problems as they developed. In early childhood the patient had suffered from no nightmares, thumb-sucking, nail-biting, bed-wetting, stuttering or stammering. In school she had done well both academically and socially and had planned to go ahead with further education in a state normal school. This had become impossible because of her father's financial state and because, living in a mill city, there was no local normal school which she could attend from home. She felt bitterly about her inability to attain this additional education and bore overwhelming resentment against her par-

ents: 1) because they could not understand her position in feeling that she needed this education, 2) because she felt that they might have been able to afford it, had they made other sacrifices and 3) because they had been so stupid as to settle in a manufacturing city when they might have settled in a city which boasted a state normal school. She, therefore, at the age of 19 moved to a sister textile center, worked in an office and lived with a brother. There she stayed in relative happiness, until she was 22 years old. At that time her mother, against whom she had borne so much resentment, became crippled by heart disease, and the patient had to return home to nurse her. She spent six years at this task in continued restlessness and anguish, feeling that she should continue her education but actually playing the martyr to an ungrateful family. She did, during this time, take a course in beauty culture evenings, so that after her mother died, she was free to seek employment in this somewhat uncertain field. She was 31 years of age when her mother died in 1933. During her mother's illness, she had saved money and hoped eventually to go on with her teaching, but owing to the financial condition of the country in 1933, it was utterly impossible; therefore, she went into a beauty shop to work.

Two years later, her most acute emotional turmoil developed. At the age of 33, she went to New York City to take a short course in hairdressing. One day while there, she stumbled and turned her ankle, sought out the nearest local doctor and consulted him. He was a young Jewish physician, barely out of school, who gave her a sympathetic ear and developed a real interest in her. She saw him on numerous occasions, felt that her marriage to him was likely and yielded to his sexual advances with enjoyment. *It developed, however, that the doctor had a brother who was a lawyer of somewhat shady reputation and with certain very pragmatic concerns. He assured the doctor that our patient's father was a no-account butcher and that he could ill afford a respectable dowry. On this ground, he connived to break up the engagement while the patient returned to hairdressing, disappointed and overwhelmed with guilt. That this experience was one of extreme difficulty for her was attested by the extreme ambivalence in her attitude toward this man for whom she had only the most hateful of epithets, yet whom obviously she still loved. Discouraged and embittered, she developed an acute exacerbation in her symptoms, had her appendix removed because of chronic abdominal pain and began to develop her vague generalized tenseness.* Having become angered at every member of her family, she fled to a regional metropolis, where, living in utter loneliness, she plied her trade as a beautician. It will be noted that her constipation originally developed during the early years which she spent in conflict with caring for her mother and that the acute exacerbation of these symptoms took place immediately following the collapse of her New York dream.

She was a tense person who spoke in a restrained and calculating way about her symptoms. She was preoccupied to a certain extent with them, but was also frankly concerned about her life problems which she recognized as unsatisfactory. She suffered from no delusions, hallucinations or ideas of reference and her thinking at all times was consistent with her affect. Her energy output was average and she was at least capable of making an enjoyable heterosexual adjustment. She was rigid in her habits of thought to the point where her problems took exactly the same shape from month to month and from year to year, but she had no unreasonable obsessions, unfounded fears, phobias or compulsions. Temperamentally, she was warm. Her mood showed great fluctuations from hour to hour and from day to day. Most often she felt gloomy in the evening, occasionally waking up too early in the mornings but seldom feeling despondent at that time. She admitted no suicidal thoughts. She was capable of a certain degree of active execution of predetermined plans, but she was grossly dependent upon other people and their judgment in determining her course of action. There did not seem to be any particular deviation in her evaluation of her own ego. Nor did she show any particular grasping tendencies or obligation to give to others.

Course: Atropine derivatives immediately relieved the patient's upper abdominal symp-

toms and reduced to a great extent her constipation and lower abdominal cramps. She soon developed a sense of greater well-being and a relatively warm relationship to her doctors. In view of her age, her rigidity of thought, and her drift toward hypochondriacal complaints it seemed wise to recommend more intensive psychotherapy and this was done.

In all three of these cases, and in many others like them, the objective social settings of the patients were not intolerable and to more resourceful people would have afforded many avenues of escape. The situations were intolerable only because they differed from those which rigid preconceived ideas had demanded. The patients, rather than facing the possible solutions to their problems, had adopted a point of view which made them feel that they were martyrs to situations from which no escape was possible, and they laid upon others the blame for the false steps which had been made in the past.

It may be emphasized at this point that no patient at any time demonstrated any delusional thought content, dissociated affect, grossly fragmented thinking or other evidence of schizophrenia.

Exemplifying *relatively normal persons who developed tension in the face of really objective dilemmas* were Nos. 11, 12 and 13. All of these men had unstable vasomotor systems. They were all more sensitive to the opinions of others than perhaps is the normal male. They all had a definitely rigid method of thinking and tended to see their problems recurring constantly in the same light.

CASE NO. 11

This patient was a brilliant, 16-year old, native-born boy, in his last year of high school. Two older sisters had gently been weaned away from his mother. He was the first boy and his mother could not accept his development into a man. His attentions to a neighbor's daughter were discouraged because of a parental feud. Should he continue on a clandestine basis, in open defiance of his parents, or give up the girl? His plans to enter college were thwarted for financial reasons, because his parents thought he was "ungrateful". Should he give up his career, borrow from a friend, or allow his sister to help? His knowledge of evolution had shattered his Old Testament religion. Should he continue in church to please mother, or should he quit at the cost of parental wrath? Tense in all these dilemmas, he was relieved to know that other boys had faced the same problems; he made his decisions; and was relieved of his constipation and abdominal cramps. A recurrence took place before mid-year examinations in technical school.

Case History in Detail:

Case No. 11. A 16-year old white, native born school boy was admitted to the hospital on Jan. 28, 1936.

Chief complaint: Recurrent generalized pain in the abdomen and loss of appetite.

Family history: Not remarkable.

Past medical history: Negative.

Present illness: At the time of the patient's first admission there was slight tenderness in the right lower quadrant but he was afebrile and no white blood corpuscle count was made. At operation for acute appendicitis a normal appendix was removed.

Ten months later, in November 1936, he appeared for the first time in the medical outpatient department complaining of continuation of the pain for which the operation had been performed. He had been constipated during the interim. His constipation was characterized by the presence of small, mushy stools, the appearance of cramp-like pains in the lower abdomen particularly in the right lower quadrant which were accom-

panied by a sense of pressure and were aggravated shortly after the ingestion of food. They were apparently not related to the act of defecation.

Physical examination: revealed a slightly-built boy in apparent good health. His pupils were widely dilated at the time of the first interview and subsequently of normal diameter. His skin tended to flush easily. The ascending and descending portions of the colon and sigmoid flexure were palpable and tender.

Special data: Repeated urine examinations were negative. Sigmoidoscopic examinations revealed the mucosa of the rectosigmoid to be slightly granular and to show a moderate degree of spasm. There was no marked injection, the vessels stood out normally. A soap suds enema had been administered 2½ hours before examination.

Psychiatric examination: The patient was brought up in moderately comfortable circumstances in a small colonial village. His parents owned considerable real estate, but the father's business had gone badly and he was at that time engaged in little more than a handicraft. The patient's mother, a 54-year old, round-faced, stocky, domineering woman, regulated the economical, social and disciplinary problems of the household. The patient had two sisters, 24 and 21 years of age, both of whom were college graduates and well-employed.

The patient stood at the top of his class in high school and was at one time the youngest boy in the country to have an amateur radio license. He possessed considerable technical skill in making and repairing electrical devices of various kinds. At the time he came under observation, he was in the throes of adolescent emancipation with three independent problems all approaching a crisis simultaneously.

Foremost of these problems was the patient's desire to further his education along technical or scientific lines and eventually to enter into the practice of medicine. This, because of family finances, seemed almost impossible and was being discouraged forcefully by his mother who felt that her son had shown no responsibility about saving money himself. The second problem was that of the patient's attention to a girl, with whom he had been closely associated. Because of a fiscal misunderstanding between the girl's father and the patient's mother there was a strong family sentiment against this association, and calumny was heaped upon the boy whenever his association with the girl was brought up. The third problem, probably less important in the boy's mind than the others, but considerably more important in the mind of his mother, was the question of religion. A regular church-goer until the previous fall, the patient had decided that religion was inconsistent with the teachings he had received in school, and he had stopped attending church or Sunday school. An independent interview with the patient's mother revealed that these issues had been extremely important in her mind and further indicated that she was totally unable to adapt herself to the problems of a boy who was about to become a man.

The patient was an obviously intelligent but tense boy who was preoccupied with his plans for the coming year, and he seemed upset by the parental attempt to thwart his every movement. He showed no evidence of obsessions, compulsions or phobias. In temperament he was normally warm, showed no particular tendency toward mood swings. In character development, he showed a better than average degree of activity and initiative although he was greatly dependent upon the opinion of others in making decisions and in being sure that they were right. He was perhaps more concerned with the world's obligations to him than he was with his obligations to others.

The patient was given a low residue diet and tincture of belladonna which gave him immediate relief from his symptoms. He was told that it was a normal thing for a boy to differ in opinion from his parents and advised to continue independently of their thoughts. Through a professional acquaintance it became possible for him to enter Massachusetts Institute of Technology and thus to continue with his education. With the young lady he continued his association, parental objection shorn of its sting. He soon became symptom-free without medication and continued so until about December 1937,

two months before his first mid-year examinations at technical school. On Jan. 20, 1938 he returned to the clinic, his pupils again widely dilated, his skin flushed, his muscles taut and his posture tense. He said that he was suffering from stabbing pains in his lower abdomen of such severity that he was almost unable to study. His remaining in school depended upon passing his examinations the following week and he had been failing in chemistry.

CASE NO. 12

This youth suffered from a similar dilemma. He had been engaged for several years to a girl whose social qualifications greatly pleased his mother, but he realized that he no longer loved the girl. With some difficulty, for fear of hurting her feelings, he broke the engagement. His mother's wrath descended upon him and broke forth with increased violence when he announced that he was planning to marry another girl of a different social background. In this setting constipation and abdominal cramps developed. Should he continue with the girl despite the tension which had been provoked? He did, his mother became reconciled, and his symptoms disappeared.

Case History in Detail:

Case No. 12. A 22-year old, native-born welder came to the Medical Clinic for the first time on Oct. 16, 1936.

Chief complaint: Constipation and epigastric pain of 10 months duration.

Family history: Essentially negative.

Past medical history: Patient had diphtheria at 4 years of age, pneumonia in childhood and repair of inguinal hernia at 9. He occasionally lost his appetite or developed a weak "all gone" feeling when emotionally tense.

Present illness: In January 1936, the patient first began suffering from constipation. He had one pebbly bowel movement every five days. He also developed epigastric pain aggravated by meals, relieved by belching. This pain showed no relation to bowel movements, was not relieved by food. It became considerably worse in June and persisted in a discommoding degree until the patient's entry. Upon questioning he said that he had definite cramp-like pain in both lower quadrants of the abdomen which were aggravated in association with defecation.

Physical examination: revealed a slightly-built asthenic boy with no gross physical abnormalities. His pulse was somewhat labile and his colon was palpable and tender.

Special observations: Urine examination was negative. Gastrointestinal X-ray revealed no abnormality of the esophagus, stomach or duodenum. A sigmoidoscopic examination showed no abnormality within the rectosigmoid.

Psychiatric observations: The patient was the son of a 55-year old Newfoundland-born carpenter with whom he was congenial. His mother was a Newfoundlander, strict, domineering, and had fixed ideas. He had a sister, 2 or 3 years his junior, who was studying in business school. The family lived in moderate circumstances in the suburbs. The patient had done well in high school and had completed one year of business school at the age of 19. After that, he had been employed for 3 years in several industries as a welder and was earning $16 per week. In 1932 when he was 18 years of age he had met a Protestant girl at a dance and had introduced her to his mother. Following that he had seen her for a few days every six months and had written her two or three times a week. It had been understood that they would be married eventually and his mother heartily approved of her. In December 1935 he decided to break this engagement for he was no longer sexually attracted to the girl. He went to her native city but lacked the courage to break the engagement verbally. In January 1936 he wrote her a long letter. His mother censured him unremittingly throughout the ensuing months. Her attitude of disapproval was thereupon greatly augmented by the fact that her son immediately began to devote his attention to a young Catholic girl. This was entirely unacceptable to her, a Methodist, and so she

continued to heap calumny upon him throughout the spring months. In June 1936 the tension grew so heated that he dropped his job and went to the country for the summer.

A recapitulation of his symptoms reveals that he was well until January 1936, the precise time at which he broke off his engagement with his Protestant girl, that his exacerbation in symptoms occurred in June, at which time his mother's nagging had become so intense that he could no longer stand it. His mother was interviewed and justified the impression that she was grossly over solicitous.

The patient appeared to be a somewhat tense and apprehensive person who was deeply concerned about his relation to the Protestant and Catholic girls and particularly about the state of tension which had developed between himself and his mother. His energy output was good and he was definitely organized on a heterosexual basis. He had no current phobias, obsessions or compulsions. His temperament was of average warmth with only slight diurnal changes in mood. In character development he was apparently normally active, although he was particularly dependent upon the opinion of his mother in his arrival upon decisions. He impressed one as feeling no abnormal sense of obligation to others.

Course: The patient's symptoms were instantly relieved by the use of atropine derivatives and a low residue diet. He was reassured to learn that his symptoms were not those of a peptic ulcer and was quick to realize the significance of the tension which had developed with his mother. He developed a policy of continuing his attention to the Catholic girl, which his mother soon found she was unable to thwart. On the contrary she developed an affection for the girl and accepted the situation gracefully. In May 1937 the pair were married. The patient obtained a $28-a-week job and was living 8 miles away from home. There was some dyspareunia in the first days of married life which soon disappeared and the patient's subsequent marital life was, both philosophically and physically, happy. Symptoms continued to remain in abatement.

The only aggravation in symptoms after the patient came under observation in November 1936 was when he became involved in an automobile accident which involved minor litigation. During the period of a few days following the accident, he had a recurrence in symptoms.

CASE NO. 13

This man was a 26-year old married insurance salesman who had inherited from his father a bad business and a large debt. To pay the debt he felt it necessary to live in his mother's house, a point of view which his cold egocentric wife could not comprehend. He was nagged by her constantly to repudiate his debts and move away. This his conscience refused to do. Tension grew and with it diarrhea developed. He worked out a solution to the problem and there followed a very real degree of clinical improvement.

Case History in Detail:

Case No. 13. A 26-year old, married, Italian-American life insurance salesman entered the hospital on Dec. 21, 1937.

Chief complaint: Recurrent diarrhea for one year.

Family history: One sibling died of miliary tuberculosis.

Past medical history: Not remarkable.

Present illness: At the age of 18 the patient had begun to suffer from chronic constipation apparently largely conditioned by the irregularity of an itinerant job. He began to employ cathartics about once a week which he continued until the age of 25. At that time, during his father's terminal illness, he began to suffer from alternating constipation and diarrhea and, within a few months, from constant mucoid diarrhea. He had considerable lower abdominal pain which he described as being sharp in character. It was worse in the left lower quadrant, usually followed about three hours after meals, and was definitely aggravated following defecation. His bowel movements were generally small, mushy, and mucoid. His diarrhea and

abdominal pain were both aggravated by conscious emotional tension.

Physical examination: revealed a well-developed and nourished but asthenic male lying in bed in no distress. His hands were cold and sweaty, and there was a fine tremor. Blood pressure was 112/68. There was vaguely localized tenderness in both lower quadrants of the abdomen although the rectosigmoid was not accurately palpated.

Special data: Urine studies were entirely negative. Differential blood counts revealed an eosinophilia of 3 per cent on one occasion and 5 per cent upon another. Repeated stool examinations were essentially normal. X-ray examination of the chest was negative. A barium enema showed only an area of mottled irregularity in the sigmoid which was not thought to represent obstruction, neoplasm or diverticulum formation. Scratch tests to 30 antigenic substances were negative.

Psychiatric observations: The son of a dictatorial, highly-strung and irritable father and a stocky, easy-going, but over-solicitous mother, the patient enjoyed a relatively happy childhood. In early childhood he was fussy about his appetite but suffered from no other generally accepted stigmata of psychopathy. As he grew older, he found it most difficult to discuss problems with his parents, particularly with his father. In school he always did well and made an astoundingly good academic and social adjustment. His last two years were spent in a private school and he planned to go through college and to become a mechanical engineer. Because of financial difficulties, this became impossible in 1930 when the patient was 19 years of age. He then went into his father's store as a clerk and worked with him until his death. During this time, his father never intelligently discussed business finances with him and he bore considerable resentment against him because of this. Shortly before his father's death, which occurred in 1936, when the patient was 24-years old, he had married a pretty, but emotionally cold and intellectually stupid wife. The cares of the business presently fell upon his shoulders, and he found that closing out the concern left him $1200 in debt. He then started selling life insurance in the hope of meeting these obligations before assuming new ones. As a measure of economy he and his wife lived with his mother in the family homestead. The income from life insurance salesmanship was not great and although he made a living, he was earning nothing toward paying off his debts. *To his wife this obligation to meet debts contracted by his father seemed utterly foolish. Tired of living in her mother-in-law's house, she wanted her husband to repudiate his obligations, move elsewhere and start afresh. Her suggestions became insistent and her insistance, nagging, which occurred whenever he entered the house. The Roosevelt recession aggravated his difficulties and he entered the hospital two months after it had become established.*

He was a tense, extremely conscientious and very intelligent man who was legitimately concerned over the social situation in which he was living; his wife's dislike for his mother (which was understandable to him); and particularly her impatience with him for feeling that he had to pay his inherited obligations. He suffered from no delusions, hallucinations or ideas of reference and his thinking was clear-cut and normally related to affect. His energy output was perhaps slightly below average. His libidinal drives were heterosexually directed and he and his wife enjoyed mutually satisfactory intercourse two or three times a week. Although his mind was grossly concerned with his insecurity and lack of independence, he suffered from no obsessional ideas, phobias or compulsions. Temperamentally warm, his spirits were subject to moderate fluctuations from hour to hour and from day to day. At times, he felt elated for no reason he could think of, although his periods of despondency were generally related to more or less immediate problems. He had suffered from a greater lability of mood during the year before admission than previously. The development of his character had been favorable. His evaluation of his ego was essentially normal and he was capable of moderately active steps to remedy his condition. He was, however, distinctly dependent upon the views of others and upon his own sense of obliga-

tion. His emotional relation to fiscal matters was certainly one in which he felt normal to exaggerated sense of obligation rather than an obviously grasping tendency.

Course: Before admission to the hospital the patient had learned for himself that rough dietary substances aggravated his trouble and knew of the rôle of emotion in precipitating his diarrhea and pain. He had, during the six months before admission, suffered from diarrhea and abdominal pain at times when his creditors came to call. Medical treatment offered him essentially no relief, but he did, after leaving the hospital make certain social adjustments which he thought would enable him to eventually reopen his father's store and abandon life insurance. His wife, who had been given some insight into the situation by the Psychiatric Department, had thereafter prodded him with her thorns somewhat less frequently. Two months after admission there had been a slight improvement in the diarrhea and the patient felt physically better but he did not have his difficulties completely worked out. It will be noted that the onset of the patient's diarrhea corresponded in time exactly with his father's death and his assumption of responsibility about which he had not been forewarned and which was distinctly foreign to the comprehension of his wife.

The first two of these three cases illustrate in pure culture the simple theme of adolescent emancipation; *i.e.*, parental opinion forming one horn of the conflict. This same situation pertained in the case of the nurse (whose case is briefly cited in the foreword) and in numerous other cases. The question may well be raised whether a sufficiently strong susceptibility to parental opinion to produce prolonged tension is consistent with normal adolescence. The subjects have appeared to be well adjusted. Those about whom data are available have been normally heterosexual. There have been, however, anxiety, tension, discouragement or despondency, some loss of energy output, an element of indecision and understandably justified resentment.

The less neurotic patients who had suffered from overwhelming social catastrophies included Nos. 14, 15 and 16.

CASE NO. 14

This patient was a 46-year old Irish-American housewife whose brothers and sisters had made comfortable social and economic adjustments. She, however, had married a dishonest husband who, 6 months later, fled from home and from justice after stealing funds from his former employer. The patient's conscience, unable to accept the fact that she had married a dishonest man, drove her to his hideout 300 miles away, from which she brought him back to court. He was released on parole, but for years afterwards she had to appear before the probation officer for him and gradually pay off his debt. She dressed her family in her sister's cast-off clothes. Her husband was utterly irresponsible financially yet freely shared her bed. Pluck, conscience and resentment kept her in a whirl of tension over a period of many years.

Case History in Detail:

Case No. 14. A 46-year old, married, Irish-American housewife entered the hospital for the first time June 22, 1937.

Chief complaint: Pain after eating.

Family history: One daughter had urticaria; otherwise essentially negative.

Past history: The patient had been given to suffering from mild attacks of palpitation with precordial discomfort and cold, clammy hands during tense periods throughout her life. Her menstrual periods became irregular in 1935 and stopped in June, 1937.

Present illness: The patient was well in every respect until 1918, when she was 28 years of age. At that time, she became con-

stipated and remained so until admission, using cathartics daily throughout the intervening period. Beginning in 1935, at the age of 45, she began to suffer from lower abdominal pain of an aching character which occurred primarily in the left lower quadrant, was aggravated in association with meals, particularly following the ingestion of rough foods and during and after evacuation. Her stools throughout the 20-year period had been consistently hard, small and segmented. During this period of exacerbation the patient also had occasional indigestion relieved by the ingestion of food and for 8 months before admission had had occasional attacks of mid-epigastric pain which came on at odd intervals during the day.

Physical examination: revealed a small, emaciated women lying in bed in no apparent distress. Subsequent examinations revealed that she was of asthenic build, that her descending colon and sigmoid flexure were palpable and tender, and that she had generalized hyperreflexia. She showed no peripheral vasoconstriction, demographia or excessive sweating.

Special data: Blood and urine studies were negative. Stools varied from a soft-formed consistency to the appearance of hard, small, white and black lumps. The guaiac test was constantly negative. Gastric analysis showed 50 units of free acid following stimulation with histamine. Gastrointestinal X-ray showed that there was a 1 cm. ulcer crater on the posterior wall of the stomach just below the cardia with surrounding swelling. The remainder of the stomach and duodenal cap appeared normal. Sigmoidoscopic examination at a later date, showed changes characteristic of mucous colitis.

Psychiatric observations: The patient's childhood had been spent with singularly good relations between herself and her parents, particularly her mother, who was stout, warm, frank and consoling. Throughout her life the patient had looked to her for comfort and understanding. The patient had 7 brothers and sisters all of whom had made good social adjustments and were much more successful financially than she. Two of them had become moderately prominent. The patient enjoyed school, where she always stood well in her classes and was popular socially. She was married at 26 and soon thereafter had her first child. When her child was 6-months old, *a singularly unfortunate episode occurred which coincided with the onset of her constipation. Her husband who had been employed for a number of years in a tobacco firm, had been unjustly discharged and had been too weak to tell his wife about the situation. Through a mistake in the Cashier's Department, he had continued drawing his salary checks. This irregularity had been discovered and a warrant was out for his arrest as an embezzler. He had fled to New York to escape the arm of the law from where he had sent his wife a telegram.* The patient was unable to accept the fact that her supposedly honest husband had turned out to be a thief, and she was still more unable to accept his flight from justice. Whereupon she immediately took the train to New York, met her husband in a hotel, and told him that he would either surrender himself to the law, or she would divorce him. She brought him back home herself, and he was tried. No penal sentence was imposed but he was required to pay back the money which he had irregularly obtained from the tobacco firm and to report to a probation officer at regular intervals. From that time on, he continued to prove himself irresponsible and unable to care for financial matters. The patient almost invariably had to report to the probation officer for him and had to raise the money with which the obligation was to be paid off. As years went on the burden became greater and there was insufficient money to meet the obligation, whereupon the patient made an agreement with the cigar company, and a settlement was accepted. Her husband obtained a job as an automobile accessory salesman which brought him a very small income. The patient was forced to dress herself and her children with the cast-off clothing of her wealthy sisters. She became extremely sensitive about the poverty in which she was living and resentful against the man whose inadequacy was responsible. She felt repeatedly the strain of increasing obligations in the form of back rent and other debts. In 1933 the patient was evicted and engaged a mover

who took her to a new apartment, but he had to take the furniture back again and leave it on the street in front of the old one because the new landlord had heard of her reputation before she had arrived. She broke down in tears in telling of this episode. In 1934 her eldest son quit school much to her displeasure, and in 1935 her mother, who had been the only person in whom she could confide, had died. At the same time, her monthly periods had become irregular and she had begun to suffer from hot flashes. It was at this time that her chronic constipation ripened into a severe illness with almost incapacitating lower abdominal cramps which continued thereafter. Financial difficulties became worse and her son, whom she had wished to see educated, was carrying the burden of the family.

She was a tense woman who spoke in a restrained way but was grossly concerned with her resentment against her husband, with whom there had been no concord physically or mentally since marriage. She was sensitive about her obligations which had been piling up and particularly toward the landlord who had evicted her. Against him, she felt no resentment but had conscientiously tried to find him new tenants after he had thrown her out. She had no delusions, hallucinations, or ideas of reference. Her sexual drives were essentially heterosexually directed. She had no obsessions or phobias and only mild compulsive desires such as that to straighten a picture on the wall or to readjust bouquets of flowers. She was temperamentally of average warmth, showed very little fluctuation in mood. Superficially she was extremely active and independent in her character development, yet it was readily apparent that she was sensitive to an unbearable degree about any criticisms, from within or without, which might be levelled against her accomplishments, and that she had a most striking sense of obligation to repay ten-fold those against whom she might have been guilty of transgression.

Course: In the hospital, the patient's symptoms rapidly disappeared and her peptic ulcer was considered to be inactive. She was discharged home and remained well until October 1937 at which time she was evicted for a second time. She again felt herself at the end of her rope and developed a great deal of tension which consisted of mixed anxiety, resentment, discouragement, and remorse. At this time her lower abdominal pains again became worse. These difficulties continued throughout the entire year until February 1937 at which time she was readmitted to the Medical Service of the hospital because of reactivation of her peptic ulcer and of symptoms which indicated that her mocous colitis was very severe.

CASE NO. 15

This patient was a 42-year old married Italian woman, the widow of a successful but unbusinesslike building contractor. After his death she was hounded by bill collectors, some of whom were dishonest, and against whom she could not defend herself because of her husband's poor bookkeeping. A plumber received a judgment against her for a bill which was already paid, which was sufficient to cause her home to be attached. She subsequently lost it and everything else, too. Her symptoms coincided with the time that this litigation was pending.

Case History in Detail:

Case No. 15. A 42-year old, married, Italian woman was admitted on the Medical Service.

Chief complaint: Vague abdominal pains of 2 years duration.

Family history: Entirely negative.

Past history: Operation for appendicitis 15 years previously.

Present illness: Four years before admission the patient suffered from constipation which was characterized by the absence of an urge to defecate and by the passage of small, mushy mucoid stools. Two years before admission, the constipation gave way to an intermittent diarrhea which had persisted until her admission. It was accompanied by lower abdominal cramps and suggestive sensations of flatus. It was aggravated by the ingestion of rough foods and was particularly

painful during or following evacuation. The patient noticed that the abdominal discomfort was worse at times of emotional tension.

Physical examination: revealed a well-developed and nourished middle-aged woman who appeared somewhat tense; whose skin flushed easily, and who showed a marked red reaction to stroking of the skin. There was definite tenderness in both lower quadrants of the abdomen and the sigmoid flexure was definitely palpable. The blood and urine studies were normal. Stools were mushy, light-brown in color and contained shreds of mucus. A proctoscope was introduced with some difficulty owing to a spastic sphincter ani. The rectosigmoidal mucosa was diffusely injected, finely granular, and there was definite spasm in the lower sigmoid which prevented further introduction of the sigmoidoscope. There was dried, tenuous mucus adherent to the mucosa. The veins and venules were not prominent. A routine barium enema showed no evidence of pathology in the colon.

Psychiatric examination: So far as is known the patient was understood by her parents surprisingly well and spent a normal childhood in her Italian peasant household. During her childhood she suffered from occasional night terrors but demonstrated no other psychopathic manifestations. She was married at the age of 14, came to this country shortly thereafter, and became the mother of 4 children before she was 28. Her married life was congenial in all respects. She derived real enjoyment from sexual intercourse during certain periods in the menstrual cycle and at other times felt no particular aversion to it. When she was 32 her husband died.

Her husband had been a building contracter and had, so far as she knew, remained out of debt and had paid his bills. However, upon her husband's death, she found that there were many obligations to be met and she was reduced to penury. In 1930 a plumber tried to collect $940 from the patient on a contract which had been made by her husband. The patient said that the job had been paid for by her husband and that the attempt at double collection was distinctly a fraud. She refused to meet the demand, but in view of her husband's lost records, she had no evidence with which to protect herself. In court, a judgment against the patient was rendered. Her house was attached and subsequently taken over for taxes. *The plumber had died; his estate was still attempting to force a collection of the $940 bill, and it was to be settled within the following few weeks. The patient was in a state of acute suspense about this financial matter and behaved like a hunted deer at every word or motion which suggested her impending doom.* It will be noted that the onset of the patient's constipation coincided precisely with the time at which this unjust bill was originally rendered.

The patient was an extremely tense and anxious person who had continued to have her night terrors into adult life. She had numerous anxiety dreams largely centering about her husband's death. She had a slight fear of high places but no well-marked phobias. She was, however, rather meticulous about her obligations, had a feeling of uneasiness if her work was not completed, and was given to many minor compulsions such as checking the presence or absence of money in her pocketbook, the state of lights, doors, clothing, etc. Temperamentally warm, she was given to very definite mood swings, both diurnally and from day to day, often tending to wake up too early in the morning; to have gloomy spells for no apparent reason, or to enjoy a period of unwarranted elation or severe despondency before her menstrual periods. Her characterological development showed an apparent independence of action with a very marked sensitivity and a highly developed sense of obligation, particularly in regard to financial matters.

The patient was immediately relieved to learn that her condition was not serious and that it was a common experience for people to have symptoms such as hers in association with emotion or strain. She was placed on a low residue diet and given adequate doses of tincture of belladonna. On this régime, during the ensuing months, there was some amelioration of the pain, although it still continued to a certain extent afterward.

CASE NO. 16

This woman was a 52-year old, native born lady, the wife of a former state senator who had fled from justice after misappropriating state funds for the payment of blackmail. During his period of hiding she had worked in a factory and exhausted herself making a living for her son. After her husband's apprehension and commitment to the penitentiary she and her son were disgraced and alone in the world, and they both lived on what he could make as a clerk in an office. In this setting her symptoms of mucous colitis developed.

Case History in Detail:

Case No. 16. A 52-year old, white, native born, American woman who entered the hospital for the first time April 28, 1937.

Chief complaint: Weakness and severe constipation of 7 years duration.

Family history: Essentially negative.

Past history: Patient had the usual childhood diseases, scarlet fever at the age of 6, influenza and pneumonia in 1918 and numerous attacks of urticaria.

Present illness: Since the age of 25 the patient had suffered from mild constipation for which she had used cathartics two to three times a week. Seven years before admission her constipation began to be so obstinate that she began the daily use of cathartics, which she continued until the time of admission. She had lower abdominal pain which varied in intensity from a dull ache to acute cramps. Her constipation and lower abdominal pain which became worse following the ingestion of rough foods, was definitely associated with defecation and with peristaltic unrest following meals. Her bowel movements were constantly mushy, small, stringy and mucoid. In addition to these lower abdominal symptoms, the patient also suffered from epigastric distress, belching, sour eruptions, heartburn, dysphagia and occasional palpitation.

Physical examination: revealed a slightly-built, undernourished woman predominately asthenic in habitus. She showed considerable lability of pulse and blood pressure as evidenced by Schneider and Turner tests. The heart showed an occasional premature systole.

Laboratory data: Urine examination, negative. Sigmoidoscopic examination revealed the presence of slight reddening of the mucosa, the presence of excess mucus and spasm which prevented the introduction of the sigmoidoscope beyond one-half length. It was considered consistent with a low-grade colitis. Barium enema showed no definite abnormality of the colon. Allergic skin tests to 32 antigens were flatly negative.

Psychiatric observations: The patient's father and mother separated when she was 5 years old. She doesn't recall her father at all although he had a second wife who through coincidence, has become a friend. The patient herself was brought up by an aunt despite the fact that her mother was living. She did not discuss this situation readily and presumably there was some affect associated with it. Despite her irregular background, she lived a physically normal life until her marriage at the age of 23 to a lawyer who subsequently became a state senator. At the time of her marriage, her constipation began. There was severe dyspareunia, and the patient cannot recall ever having enjoyed sexual intercourse. She had a child within the first year of her marriage, apparently without severe complication.

She and her husband lived in the state capital in comparative luxury until, when the patient was 38 years old, her husband disappeared and it was revealed that he had embezzled funds for the payment of blackmail. The patient was left essentially destitute but rallied to this occasion by obtaining a job in a nationally known organization. She held this job until she was 43 years of age and throughout these 5 years, felt as if she were being hunted continually. Every time she saw a policeman on the corner she felt palpitation and anxiety, and every time she saw a person who was familiar with the politics of her native state suffered from acute embarrassment. When she was 43,

she was so tense, nervous and physically underweight, that she was advised to leave her job for purely physical reasons, although she had proved a very valuable executive. Two years later, at 45, her husband appeared from a lumber camp where he had been hiding in seclusion. He said he could stand it no longer and turned himself over to the authorities, as a result of which, he was sentenced to a term in jail. It was at this time, that the patient began to feel the most severe impact of her plight. That her husband was in jail was promptly known. Her son, then 21 years of age, was ostracized socially and the patient was without income except for the few dollars which her son was able to earn in the financial world of 1930. Since that time she and her son had been living in a two-room flat. Her son had been supporting her on a wage of between $20 and $30 per week, while he was attending night law school in an attempt to get on his own feet.

One year before admission, her husband was allowed out on parole and began plaguing her to raise money for him and to come and live with him again. The situation was replete with occasions for the development of tension and anxiety. It will be noted that the development of the patient's most severe constipation and the onset of her abdominal cramps corresponded in time exactly with the apprehension and sentencing of her husband.

Aside from a mild degree of tenseness and timidity, she seemed to be a woman with rather normal personality development. She was much worried over finances and over her son's future. Her impulse life was apparently normally heterosexually developed, her dyspareunia having been due to physical causes. She had no obsessions or compulsions and only a mild sensation of anxiety in the presence of crowds or closed rooms. Her temperament was normally warm. She had rather frequent fluctuations in mood varying from day to day rather than diurnally. Although she had had difficulty in getting to sleep, she had never felt gloomy on waking up in the morning and she did not feel that she had ever suffered from elation or depression without adequate reason. She had at times, felt that her life was not worth living and had contemplated suicide. During her menstrual life, she had often noticed a real feeling of discouragement preceding her periods. No griper, her character development was normally active, but she was predominantly a very dependent and sensitive person. She felt strongly her obligations to others.

Course: With optimal doses of tincture of belladonna and a bland diet, her constipation and abdominal pain almost entirely disappeared, but she continued for some time to have palpitation and asthenia. She was very grateful for the opportunity of unloading a part of the burden of her cares and gradually became somewhat less tense.

Major social calamities such as those described in the histories of these three unfortunate people might impinge upon certain personalities without producing lasting tension. These persons, however, were strongly conscientious. They were unforgiving of themselves and expected perfection in others. Hence these mishaps were not only unpleasant but were sources of resentment. In each case the mishap occurred because of a failing on the part of some one else which was intolerable to accept. None of these women could be dishonest or irresponsible, and they could not tolerate dishonesty or irresponsibility in others. Hence, despite lack of evidence of a formal neurosis, they showed very definite tension, anxiety, overconscientiousness, and a moderate degree of rigidity in adhering to their tenets. Their resentment was justified but they were none the less resentful.

The atypical cases differed from those presented in that tension and resentment either were present to a less noticeable degree or were overshadowed by other characteristics of the personality or the illness from which the patient was suffering.

Rôle of Personality Factors

In the previous chapters the concept was advanced that mucous colitis was the result of secretory and motor changes brought about through the autonomic nervous system, and apparently through overstimulation of cholinergic nerve endings. Changes similar to those seen in mucous colitis were produced by the administration of drugs which mimicked the action of the parasympathetic sacral outflow, and interesting subjective experiences were noted by the medical students to whom the drugs were given. The objective changes in the colon were observed through the sigmoidoscope.

If the changes noted in this symptom complex can be produced through stimulating the nerve endings of the parasympathetic system, can they also be produced by stimulation of the nerve trunks? Because of the filamentous nature of the sacral outflow this question as it concerns the colon remains unanswered. Manning, Hall and Banting have shown, however, that changes in the stomach and duodenum, which were originally produced in dogs by the daily intravenous administration of acetylcholine could also be produced by prolonged faradic stimulation of the vagus nerves. Ulceration throughout the gastrointestinal tract was also produced by Light, Bishop and Kendall after injecting small amounts of pilocarpine into the lateral ventricles of rabbits. The site of the pharmacological activity of the pilocarpine so injected is open to question but the most likely probability is that through its use a central stimulation of the parasympathetic system took place.

The effect of emotional tension on the gastrointestinal tract in general, and the colon in particular, is difficult to explain excepting in the light of conduction along nerve pathways which are known to exist. Although the evidence is only circumstantial in nature, it seems most reasonable to suppose that somatic manifestations of tension, as observed in the colon, are mediated through the parasympathetic fibers of the autonomic nervous system. Certain concomitant physiological changes seem to support this view. These are discussed in a previous chapter (p. 7).

To what extent do the observed personality characteristics of mucous colitis patients lend support to such an hypothesis? It will be noted that tension, a state characterized in most instances by inappropriate and overaccentuated responses of the autonomic nervous system, was a predominating clinical feature of almost all the patients in the psychogenic group.

Tension is not, however, always associated with mucous colitis. For this there are doubtless physiological as well as psychogenic reasons. The former are discussed elsewhere.

Another problem is to ascertain whether the tension observed in these patients can be differentiated from tension as constantly observed in normal and psychopathic persons without mucous colitis. This is probably too much to ask. There are apparently, however, certain characteristics which modify the tension in such a way as to render it more damaging. The nature of these modifications is both qualitative and quantitative.

It is perhaps an oversimplification to speak of a qualitative modification of tension. Yet if the feeling associated with it is in some way special, it is perhaps fair to say that the tension has taken on a special coloring. This indeed appears to be the case. Whereas the normal response to an insult is retaliation, the response characteristic of patients with mucous colitis is sup-

pression. Retaliation, in the class of mammals, is abetted by the activity of the sympathetic nervous system. Epinephrine is liberated, the blood sugar is elevated, the heart rate is increased, the vascular bed of the muscles is dilated, and the spleen squeezes reserve red corpuscles into the circulating blood. The subjective experience which follows the delivery of a good "sock-in-the-jaw" is one of gratification and well-being in which the pre-existing tension is dissipated. On the contrary when for any mental or physical reason retaliation is not possible, there develops a feeling of entirely different character, restlessness colored by any emotion appropriate to the stimulus which inhibited the desired retaliation. Such emotions are most frequently resentment, guilt, or anxiety, or a mixture of any of them. In the series under observation resentment seemed most characteristic of the group. This concept of parasympathetic response to suppressed resentment was suggested to the authors by Flynn (*97*). It appeared in 92 per cent of the cases. In some instances it was well justified by the external facts of life, in others purely neurotic in its development. The tension may be said to have been modified by an inhibiting influence so as to have taken on a quality tinged by restlessness, resentment, guilt or anxiety.

The quantitative modifications of tension are, first, alterations in intensity and, second, alterations in duration. Both of these seem to be outgrowths of a similar realm of the personality, although perhaps in slightly different ways. The qualities from which they apparently derive are overconscientiousness and rigidity of thought. It is a common clinical observation that overly conscientious persons are most easily moved to anxiety if any parts of their personalities be exposed to criticism, either from within or without. To avoid such cause for anxiety, through the artifice of reaction formation [Freud (*74*)], these persons keep their figurative houses meticulously clean. Such persons are, however, unwilling to accept in others the blemishes which they do not allow to appear at home. Hence, if they observe such a fault in another, the fault engenders resentment against the person in whom it is seen. This phenomenon is illustrated in Case No. 14. That woman felt most excruciating resentment against her dishonest husband. She was so meticulous herself that she tried to find her landlord a new tenant after his having evicted her. Such meticulous persons were very commonly encountered in the series, and it is fair to say that their own conscientiousness went far to reduce their toleration of others and to intensify the degree of their resentment.

A personality trait commonly observed in association with overconscientiousness is that of rigidity of thought, the "obsessive thinking" of Barrett (*72*). Persons suffering from this characteristic have great difficulty in making decisions, eternally see the arguments line up on both sides of the fence and with equal weight. If they become concerned over an injustice they adhere to it indefinitely, and if they become resentful they bear the resentment for a long time. Hence where a phobic person may become tense for a few minutes in an elevator, a rigid person may dwell for months on an impending law suit, or devaluation of the currency, and his concern may consume his mind for the greater part of the time. Through rigidity of thought the duration of tension may be indefinitely extended. Prolonged

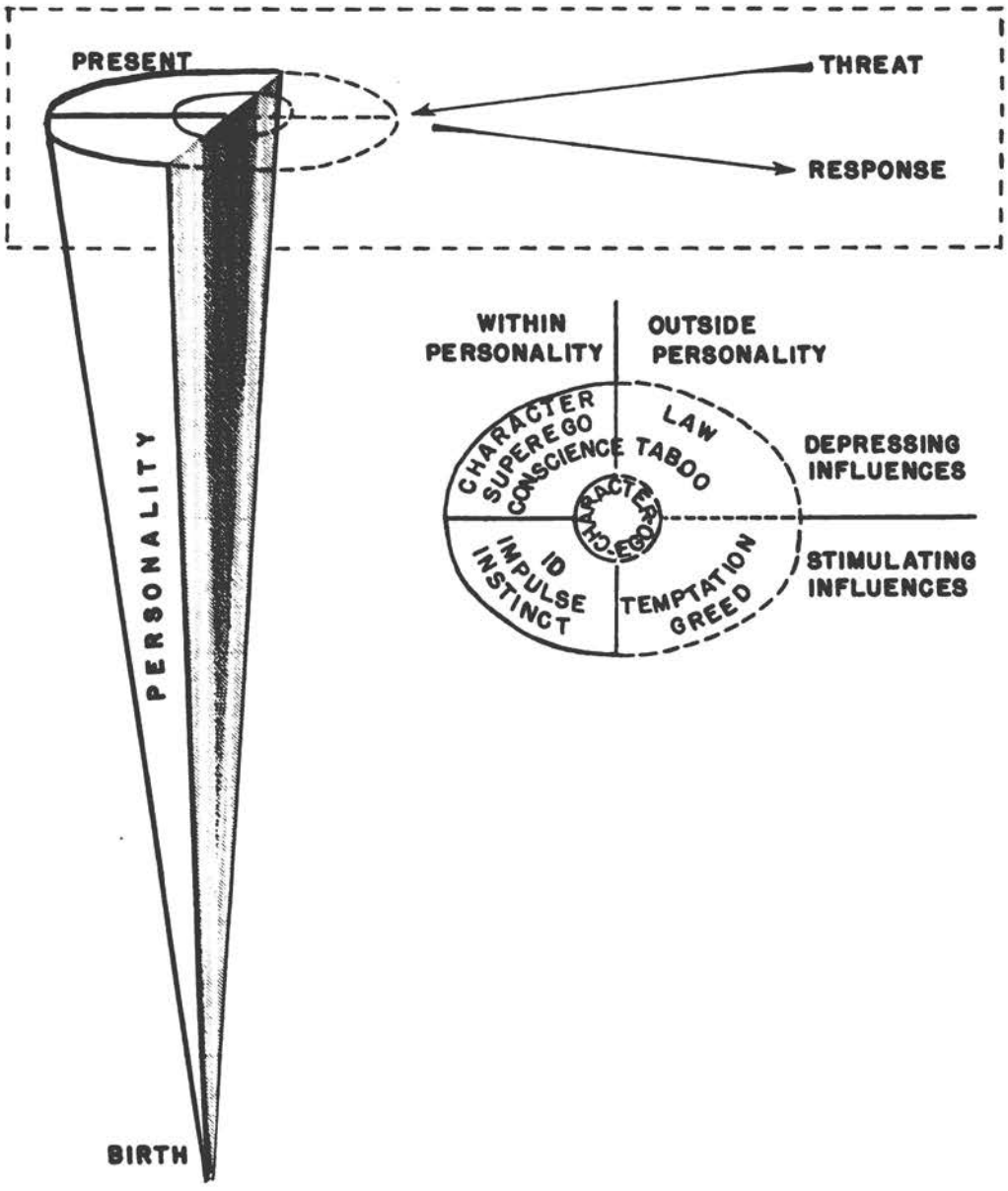

FIG. 26. Schematic diagram showing the sphere of this study. The inverted semi-cone at the left represents the development of the personality from birth to the time of observation. The present study deals only with the reactions between the developed personality and its environment.

The cross section at the right represents the rational self or ego surrounded by conflicting forces; those at the left from within the personality; those at the right from without. Tension may arise when the ego is unable to keep peace among these forces.

vagal stimulation was required to produce the gastrointestinal lesions noted by Banting, Ettinger and Hall. It is reasonable to assume that protracted psychic stimulation is more effective than brief stimulation in producing somatic changes in the gut.

The absence of hysterical tendencies is not without significance. Persons of the type observed in this series are most remote from those who can dissemble their tension into dissociative and dysmnesic symptoms which leave them free of concern and worry.

Interpretation of These Observations in the Light of the Several Schools of Psychiatric Thought

It is commonly thought that the teachings of the different psychiatric schools are mutually exclusive. To a certain extent this is true, in that the respective teachers have tended to emphasize different features of personality development and different aspects of clinical study. An attempt at correlation has been made at the risk of producing confusion. Still it is necessary because of the peculiar nature of the problem in hand and the difficulty of exposition.

During the past thirty years the vogue in psychiatric thought has been to disregard the niceties of clinical classification and to lay stress upon factors influential in the development of psychiatric illnesses. The psychobiological school has made major contributions to the field of personality development and its relation to mental disorder (*75*). This may also be said of the Freudian psychoanalytic group. Although the two schools have employed different techniques, their approach has been similar in that both have emphasized etiological data; they have paid less attention to the clinical study of the formed personality, as such. Individual Psychologists (*76*) have also studied etiology but from a more sociological standpoint. In the schematic diagram (*Fig. 26*) the inverted semi-cone may be said to represent all those factors which influence the development of personality and mental disorder. Because the presentation of 50 odd cases of mucous colitis could not be made in terms of the developmental axis alone, some other form of presentation had to be sought. The solution which was adopted consisted of attempting to describe the personality of each subject in such terms that the significance of his experiences in life would be intelligible. Hence, a clinical description of the personality and character traits of each patient had to be made. The limitations of the descriptive psychologies of Janet and of Charcot were immediately apparent. The patients did not fit the common classifications of neuroses. This is obvious from Fig. 11 in which each patient was given the clinical "label" most nearly justified by his symptoms. In most cases the label failed to present the epitome of the problem. The probability has been emphasized by all the dynamic schools that the different types of neurosis do not represent disease entities but rather psychological reaction patterns. Hence many neurotic symptoms of different patterns are often seen in the same patient. This is why the clinical "labels" failed to indicate the personalities of these patients. It may also explain why the proponents of the dynamic schools have tended to cast out personality description along with minute psychiatric semiology. Perhaps a pearl has been thrown out with the shells.

For a psychosomatic study like that presented here the work of Kahn is most helpful. He makes a working personality description in the light of which the daily happenings of life take on a peculiar specificity. Individual experience is made more understandable; symptom formation such as anxiety, hysteria, or compulsive behavior becomes intelligible. Kahn thus agrees in minimizing the importance of symptom description, but he stresses the objective presentation of certain components of the personality of the patient in whom the abnormal psychological mechanism takes place. A simplified schema, after Kahn, is outlined at the beginning of this chapter. His primary interest is in studying the personality in such a way that the patient's experiences become intelligible. Kahn's method was useful to us because time and technic limited the amount of satisfactory etiological work which could be done. Our problems in this study of mucous colitis were to determine how often emotional factors were of importance, what types of emotional problem incited the disorder, and what types of persons seemed to be afflicted. Our method of approach indicates the need for further etiological studies of personality development, both from the medical point of view (as in this study) and by psychoanalysis. This study may be said to deal with the immediate interaction of personality and environment. It does not attempt to deal with the "total personality", the sum of all components, but rather with a cross section, the psychological configuration and its reaction with the outside world. In the schematic diagram the scope of this study is enclosed within the dotted line (*Fig. 26*). For convenience this cross section has been represented as consisting of involuntary stimuli (impulse, or id), involuntary inhibitions (character, conscience, or superego) and a rational self (character, or ego) which intermediates between these forces. The rational self (character, ego)[1] is also in contact with the stimulative and inhibiting forces of the outside world (desires, temptations, taboos, laws, etc.); it must at all times maintain a balance between these forces and sail a course between Scylla and Charybdis. The general thesis is that when indecision in plotting the course arises, or when an unsatisfactory course which is headed for the whirlpool or the rocks, has been plotted, generalized tension develops. The tension as such may persist only for a short time until the correct course is charted or it may last long as a *chronic tensional state.*

The tension may be expressed in various psychological artifices or even entirely dissipated through them. Such artifices make psychoneurotic symptoms: hysteria in which a "belle indifference" to an apparently incapacitating symptom relieves the patient of his obligations to society; phobias, in which anxiety and tension are released only by very specific situations which may readily be avoided; compulsions, which when carried out meticulously, relieve the sufferer from fear. All these artifices have been observed in patients with mucous colitis. The artifice of hysteria has been observed most rarely, phobias with comparative frequency. Full blown obsessions or cumpulsions have been rare, but "obsessive thinking" (Barrett), rigidity of thought and unsparing con-

[1] From the definitions recorded in the glossary it is apparent that the authors do not employ Kahn's terms and Freud's terms as synonymous. They do, however, attempt to show their overlapping meanings to a certain extent.

scientiousness, have been characteristic of the group. The artifices seem not to play a rôle in prolonging or increasing tension but rather in *diminishing* its intensity and duration. Thus the chronic tension of patients with mucous colitis appears not to be the concommitant of any one conventional neurosis.

Correlation with Psychoanalytic Observations on Patients with Gastrointestinal Disease

Alexander has hypothesized, and supported with a certain amount of evidence the idea that patients with disorders of the upper gastrointestinal tract have fundamentally different personalities from those with lower gastrointestinal disease. With this conception our experience has been in accord. Alexander has further attempted to differentiate the personalities of constipated patients from those suffering from diarrhea. This difference was not obvious in our series; possible reasons are discussed below.

Gastric Type

Five persons with cardiospasm were examined psychiatrically, and there were three patients in the mucous colitis series who also suffered from peptic ulcer. Without exception these patients presented to the medical observer a much greater degree of *activity, independence, and efficiency* than did those with uncomplicated mucous colitis. These three criteria of Alexander's gastric type were therefore superficially confirmed by our experience. The alleged underlying mechanism, repressed oral receptive and aggressive tendencies, could not be satisfactorily investigated by the conversational method, but the behavior of one of our patients with cardiospasm suggests the validity of this psychoanalytic hypothesis.

Case No. 17

This patient was a 25-year old, white woman, who had been suffering from cardiospasm for a year. She had given up her friends, social position, and financial ease to marry a Portuguese laborer, and had been utterly oblivious of the social stigma directed against her. This apparent independence was presumably gained through a forceful attachment to the local Catholic parish and to the person of the priest himself. The use of a long, limp mercury bougie was a pleasure to the patient and, combined with her enjoyment of the communion service, suggests that she may have suffered from repressed oral receptive and aggressive tendencies.

Case History in Detail:

Case No. 17. A 31-year old married, white woman came to the hospital for the first time at the age of 25.

Chief complaint: Difficulty in swallowing for one year's duration.

Family history: Not remarkable.

Past medical history: No significant illnesses.

Present illness: The patient had been entirely well until she was 24 years old at which time she noticed the gradual development of a feeling of fullness in the epigastrium and frequent vomiting following her meals. She suffered a burning pain in the epigastrium which was relieved by soda but was otherwise not particularly uncomfortable.

Laboratory data: None of the observations were contributory excepting for an X-ray examination characteristic of cardiospasm.

Psychiatric history: The patient was an intelligent girl of leptosomic physique who was not obviously neurotic. Her father, a 50-year old, native New Englander was satisfactorily occupied in a gainful business. The patient had had no particular friction with her mother. She had four siblings all younger than herself, three of whom were of higher than average intelligence, and were

graduates of high school. She had been brought up in moderate comfort by her conventional parents in a community where racial caste was rigidly observed. She married at the age of 26, two years after the onset of her cardiospasm, a Portuguese garage man. This marriage entailed her leaving her parents, her friends and her social position when she moved to a semi-colored community in the shadow of the Portuguese Roman Catholic Church. She lived there with her husband and one child apparently entirely insensitive to the criticisms of her former social equals. She apparently entered into this marriage because of a burning desire to do missionary work among the poor and martyr herself for the good of society. Deeply religious, she was securely attached to the church and to her particular parish priest in whom she confided everything. She regarded her husband as an object of charity. With him she never enjoyed sexual relations at all and indeed, apparently never thought of her sexual life with emotion.

At the time of the patient's admission to the hospital she was given a Hurst mercury bougie, a long, limp, semi-solid object, 5/8 of an inch in diameter, which she swallowed several times a day as needed to relieve the obstruction in her esophagus. She did not resent having her husband feed her the bougie. Apparently the celebration of Holy Communion gave her a deep sense of gratification.

There was no correlation in time between the change in the patient's external social life and the development of her cardiospasm. There was no feeling of conscious resentment or discouragement (or depression) associated with this change which the patient looked upon as an opportunity for the fulfillment of her divine calling. Her life was characterized by great activity and independence, if not efficiency.

The patient showed very little evidence of tension, spoke in a frank, pleasant, if somewhat reserved manner. Her energy output was more than adequate. She suffered from no obsessions, compulsions or phobias. She had only mild mood swings of brief duration which were never present in the early morning and were never related to her menstrual periods. She represented clearly the active autist of Kahn and the gastric type of Alexander.

Course: The physician in charge of her at the hospital realized that a thorough psychological understanding would be practically impossible for her to attain. Moreover an abortive attempt at psychological treatment would almost certainly disrupt her social adjustment. She was, therefore, sent home with encouragement to go on using her bougie and to keep up her religious work.

CASE NO. 18

The patient was a 36-year old native born American spinster who was brought up in a French Canadian convent. During vacations she was exposed to a brutal stepfather. After graduation from the convent and from business school she worked actively, independently, and efficiently for a business concern and for a social agency. When at the age of 25 she was first exposed to case histories involving sexual matters she experienced an uneasy sense of anxiety and she consciously learned of sexual life for the first time in her life. Whether she repressed memories of an "oral" nature can only be arrived at by conjecture. The development of cardiospasm was not correlated with any outstanding social event.

Case History in Detail:

Case No. 18. A 36-year old, native born American who came to the hospital for the first time at the age of 36.

Chief complaint: Difficulty in swallowing of 5 years duration.

Family history: Not remarkable excepting for numerous evidences of instability of the autonomic nervous system.

Past medical history: No significant medical illnesses.

Physical examination: The time of admission showed a marked degree of malnutrition which, however, responded to hospital treatment.

Laboratory observations: Were essentially negative.

Psychiatric history: The patient's father, a French Canadian pharmacist, died when she was 8 years old. She saw little of her stepfather who died when she was seventeen. The patient suffered no friction with her own father or her mother, but she disliked her stepfather's surly and irritable nature. A sister nine years older than the patient was always friendly and agreeable. The patient lived with her 60-year old mother, her sister and her sister's husband in a two family house in a small industrial city. She earned a modest living as a social worker and contributed to her sister a certain amount for her living expenses.

The development of her symptoms coincided with no obvious change in social orientation nor with any period of conscious emotional tension. The patient's education had been particularly difficult from the second through the eighth grades. She had been confined in a French Canadian Convent wherein the iniquities of sexual life had been emphasized and she had become abnormally religious and dependent upon the church. After this experience she worked in a commercial school for a number of years and finally at the age of 25 became associated with a charitable organization. In connection with case histories she found that she learned for the first time the significance of the sexual act and upon every occasion when sexual difficulty entered into the problems of her clients, she suffered from a very disconcerting sensation of anxiety. This anxiety occurred on every occasion when sexual matters were discussed during the ensuing 11 years. She got out dictionaries and looked up various sexual words, each time being impressed with the disgust which she felt for the whole matter. It is to be emphasized that she had no memory of any significant sexual fact from the time of her education in the convent until her exposure to it as a social worker. Aside from this one incapacity, she continued to work actively and efficiently and she was independent of friends, masculine or feminine.

The patient became extremely tense when discussing sexual matters but at other times did not appear to be particularly so. At times, she also demonstrated the evasive smile often seen in hysterical patients. Her content of thought showed some concern over the insecurity of her life but no conscious recognition of the deeply-lying sexual conflicts which must have been present. Her energy output was average. Her sexual direction was uncertain but there was obvious abnormality in her recognition of its force. She suffered from very severe problems particularly claustrophobia and she was extremely meticulous about her work. She was fussy about her clothing and tended to check minor activities repeatedly. Her mood was not constant and she suffered from repeated brief mood swings, often waking up discouraged in the morning, feeling gloomy for no apparent reason, thinking life was not worth living, and being particularly "blue" just before her menstrual periods. Her character development could not be said to be abnormally independent, but rather to show a mixture of dependence and independence. She tended rather to underevaluate her ego than to overevaluate it. There is reason to think that she showed a greater degree of independence than the average patient in the mucous colitis series, that she had a great deal of obviously "repressed" material, that there probably was an hysterical element in the development of her symptoms and that an oral fixation of her sexual drives may have been present.

Course: Hospital treatment included the use of bougies and drugs which yielded a certain degree of relief, following which social reorganization and insight were attempted. During the 6 months following hospital admission the patient gained 50 lbs. in weight and was greatly relieved.

Three other patients with cardiospasm were also studied psychiatrically and they all showed a far greater degree of independence, activity, and efficiency than did patients with mucous colitis as a group. The greater number of mucous colitis patients fitted into either the Colon (diarrhea) Type or into the Constipation Type.

COLON (DIARRHEA) TYPE

The colon type is alleged to be characterized by generosity, which is dependent on a feeling of guilt and an obligation to give. The underlying psychodynamic mechanism is supposedly that of repressed oral receptive and aggressive tendencies for which restitution is made through anal, or rather, intestinal values. These values supposedly maintain the balance between receiving and eliminating tendencies. The patient is thus relieved of guilt for oral aggressions through this intestinal output.

CONSTIPATION TYPE

The constipation type is characterized by stinginess, the lack of guilt and the lack of need for giving. In this type of person supposedly the rejection of the obligation to give takes place because of fear of loss (castration fear) and the anal sadistic impulses to give spitefully are inhibited. Constipation is alleged to result.

In our experience, as the psychoanalyst would be the first to admit, these types did not fundamentally differ. There was, throughout the patients in our series a tendency to make decisions involving the need for giving or receiving only with great difficulty. In many instances the sense of obligation was greatly overdeveloped; in others there was a tendency to demand much of society. In still others, patients would be inconsistently demanding in one situation, and generous in another. *The attitude seemed generally to be one of ambivalance in which one or the other tendency might appear to predominate.* In Fig. 19 the patients with predominant receiving tendencies and those with predominant giving tendencies are plotted against the symptom from which they were suffering *at the time.* It is apparent that no conclusive differentiation between symptomatology of the colon and constipation types was found in our series.

From the developmental history of the disease syndrome of mucous colitis it is apparent that the stage of diarrhea is a later development which occurs in people already suffering from constipation. It is possible that because the type of constipation seen in these persons is really produced by the changes within the colon, it is a different type of constipation from that due to simple anal retention. It is reasonable to assume, therefore, that all the patients in this series should have personalities of Alexander's Colon Type, while his "constipation type" should be seen in people with an utterly different type of disorder. If one grants this to be true, the persons of the "constipation type" in this series are misplaced. Inasmuch as Alexander's original formulation of the "constipation type" was based on the study of only three cases, the lack of correlation is not surprising. It must be emphasized again, however, that his differentiation between persons with upper versus lower gastrointestinal symptoms has been confirmed to a certain extent.

Referring back to the personalities of patients with the mucous colitis syndrome, and viewing them at the Character[2] level, the most striking feature was absence of independence, and in most instances frank dependence upon others. Associated with this were tension, guilt, anxiety, and resentment and extreme sensitivity.

If, then, our observations substantiate those of Alexander that persons with functional disorders of the colon are much more dependent than those

[2] See Glossary.

in which the illness is located in the stomach, is the psychoanalytic explanation of this greater dependence tenable? Alexander says that both types of person have the same underlying etiological mechanism: repressed oral receptive and aggressive tendencies. The patient of the gastric type repudiates his dependent tendencies by becoming overly active and independent. In the colon and constipation type, however, the unacceptable oral receptive and aggressive tendencies are dealt with in a different manner. Is this not tantamount to saying that patients with fundamentally different personality structures deal with unacceptable "oral receptive and aggressive tendencies" in fundamentally different ways, just as some persons react to repressed libido fixation at the "Oedipus-genital level" by the development of hysteria, others by the formation of phobias, and still others by the failure to develop any symptoms at all? One may expect, then, of the trauma leading to repressed "oral receptive and aggressive tendencies" that it plays only a small rôle in shaping the personality of the sufferer, but merely serves as a problem for the personality to meet in its own peculiar manner. There may be nothing specific about it.

One can say with Adler that the dependent ego is the result of a "will to power" thwarted in childhood. The result of this thwarted ambition may be: 1) Repudiation and overcompensation for the "inferiority complex" (gastric type); 2) a continued dependent attitude with the belief that the world is responsible for his failure and hence owes him something (constipation type); or 3) the belief that his insufficiency is his own responsibility for which he must atone (colon type).

Does the inferiority complex of Adler represent the "repressed oral receptive and aggressive tendencies" about which Alexander speaks?

Kahn presents four common types of response to inadequacy of the ego; ("repressed oral receptive and aggressive tendencies"?). One may respond by overevaluating the ego and becoming abnormally independent ("gastric type"?, overcompensation for the "inferiority complex"?). One may overevaluate the ego but remain dependent upon the opinion of others ("constipation type"? egocentric, seekers after "prestige"?). One may underevaluate

TABLE IV

COMPARATIVE SCHEMA SHOWING THE DIFFERENCES BETWEEN THE CONVENTIONAL DESCRIPTIVE CONCEPTS AND THE DYNAMIC CONCEPT OF FREUD

Note that the Freudian concept lacks an adequate description of temperament. In the other ideologies, however, there is no adequate counterpart of the superego.

FREUD	KAHN	KRETSCHMER	ADLER
	Physique	Physique	—
Id	Impulse	Instinct	Instinct
—*	Temperament	Temperament	Temperament
Ego	Character	Character	Character
Superego	Character	Character	Character

* Psychoanalysts employ the expression *Character Neurosis* which largely describes Personality disorders in the sphere of temperament, has nothing to do with *character* as used by the descriptive writers.

TABLE V

DESCRIPTIVE IDEOLOGY OF ALEXANDER COMPARED WITH THOSE OF OTHER WRITERS

Our impression is that persons with upper gastrointestinal symptoms appear to be more independent, active, and efficient than those with lower intestinal symptoms. The differentiation between the lower abdominal types on the basis of symptomatology is less clear. The passive autist of Kahn apparently finds no place in this schema.

Predominant Symptom	Alexander	Kahn	Adler
Upper Gastrointestinal Tract: Cardiopasm Peptic Ulcer	Gastric Type: Active, independent, efficient	Normal or Active Autist: Ego overevaluation Independence	Overcompensation for inferiority
Lower Gastrointestinal symptoms: Constipation or Diarrhea	Colon Type: Giving Guilt Need for giving	Ego Searcher: Ego underevaluation Dependent Self effacing	Inferiority complex
Lower Gastrointestinal symptoms: Constipation or Diarrhea	Constipation Type Receiving No guilt No need for giving	Egocentric: Ego overevaluation Dependence upon prestige	Vanity

the ego, yet be independent of others by withdrawing from society; for which there is apparently no counterpart in Alexander's patients suffering from gastrointestinal neuroses; one may underevaluate the ego, and yet efface oneself in a dependent obligation to another person. [Inferiority Complex (?), Colon Type (?).]

If this comparison of the terminologies of Alexander, Adler, and Kahn is fair, then Table V should express in three psychiatric languages the types of personality represented by the Gastric, Colon, and Constipation types. If it can be proved that all these types

TABLE VI

AVERAGE NUMBER OF RESPONSES TO THE RORSCHACH TEST

Note in "mucous colitis" the relative and absolute decrease in the number of whole responses and the absolute decrease in the number of movement responses.

Total Responses	Whole Responses	All Types Detail Responses	Ratio of Whole to Detail Responses	Movement Responses	All Types of Color Responses	Chiaroscuro Responses	Author
22.65	7.19	15.46	0.46	1.22	1.46	1.28	Gardner control series 100 cases
34.0	9.0	27.0	0.33	1.63	1.96	1.12	Guirdham control series 100 cases
23.6	*4.6*	19.0	*0.24*	*0.87**	2.15	1.2	Molholm "Mucous Colitis" 23 cases

* Two patients with "mucous colitis" complicated by peptic ulcer showed a relatively high number of movement responses. If they are removed from the series, the average number of movement responses becomes 0.67 instead of 0.87.

are responses to a traumatic weaning, then psychoanalysis may well claim to have established an important step in the development of a large percentage of disorders of the ego or character. Until that step is established one can only describe the inadequacy of the ego, the types of adjustment which are made to it, and the clinical correlation of the symptoms.

Objective Data from the Rorschach Test

Molholm[8] performed Rorschach tests upon 23 patients who were selected in approximately equal numbers from the more neurotic and less neurotic groups. The tests were all performed by him personally, at approximately the same time of day, and in the same room in most instances. The standard Rorschach ink blot cards were used, and in each case the patient was asked to say what the ink blot might be. Subsequent questions about procedure were always answered by the standard phrase: "Whatever you see, whatever comes into your mind". An almost verbatim account of everything that was said was recorded. The responses were classified first as to whether they were based upon the whole ink blot or only a part of it, and secondly as to whether the response was based on movement seen in the blot or upon the form, color, or shading of the blot. In Table VI, the average number of responses of each type per patient are compared with those observed in two control series (Form responses were omitted.)

Certain conclusions are apparent: 1) Most patients with mucous colitis give a small number of whole responses and the ratio of whole responses to detail responses is low. 2) Movement responses are seldom noted, while there is a slight, but inconsistent, increase in the number of color responses. Two patients with mucous colitis complicated by peptic ulcer showed a relatively high number of movement responses. If they are removed from the series, the average number of movement responses becomes 0.67 instead of 0.87.

These apparent and obvious observations are consistent with the type of personality encountered in mucous colitis. However, certain features less apparent in graphic representation were prominent. One of these was the "effort after meaning" which the patients exerted. They would look at the pictures for minutes at a time and say, "I don't see anything, Doctor", or "A bat, that's all I see", or "It just doesn't make sense". Finally with great difficulty they would proceed to seize upon some small detail of the ink blot. This is an example of the rigidity of thought and the lack of imagination demonstrated by the patients.

Another similar observation which does not appear upon graphic representation is the tendency for patients with mucous colitis to adopt one form of response, whole or detail, color or form, whatever it may be, and to stick rigidly to this one form in describing all the cards. This again is a manifestation of the patient's rigidity of thought.

Molholm compared the figures with those obtained from patients with other medical and psychiatric illnesses in addition to the two series or normal controls. The difference from the latter was extremely marked, and seems most reasonably to fit in with the observed characteristics of the personalities.

[8] We are indebted to Dr. Hans B. Molholm for performing and interpreting these tests.

V. RÔLE OF THE AUTONOMIC NERVOUS SYSTEM

FROM THE CLINICAL, experimental and psychological observations so far reviewed it is apparent that the autonomic nervous system plays an important mediating rôle in the syndrome of mucous colitis. A diagrammatic representation of the anatomy of the autonomic system is illustrated in Fig. 27 [after Kuntz and Cobb (77)]. In general it may be said that stimulation of the parasympathetic system produces increased tone and peristalsis with relaxation of the sphincters, while stimulation of the sympathetic produces relaxation of muscular tone, diminished peristalsis and spasm of the sphincters. In clinical application these phenomena are not consistently observed. The coincidence of the expected symptoms with those which are clinically seen is most clear near the two ends of the gastrointestinal tract, and poorest in the central regions. Heartburn was shown by Jones to be due, in certain instances to spasm of the esophagus. It is relieved in many cases by atropine derivatives, which in turn relax the musculature by paralyzing the parasympathetic innervation. Cardiospasm, likewise, was carefully studied by Knight (*78*). Knight showed experimentally that the closure of the sphincter and the relaxation of the body of the esophagus were due to sympathetic overstimulation and that an operation devised by him for removing the periarterial sympathetic nerve supply to the cardia would relieve the condition. The fibers in question run from the coeliac plexus along the course of the left gastric artery. The observations of Jones and of Knight are entirely consistent with predicted expectancy, the one being due to parasympathetic over stimulation, the other to an over balance of the sympathetic. The fact that Lendrum (*79*) showed that there was a reduction in the number of the nerve cells in the myenteric plexus of the cardia in cardiospasm, does not alter the dynamic relations in the two conditions. It is worthy of note that in the mucous colitis series there were many patients who suffered from "heartburn" and none with cardiospasm.

In the musculature of the stomach according to Cannon, Alvarez, and others, the general interrelationship of the parasympathetic and sympathetic divisions of the autonomic system appears to hold true. Stimulation of the sympathetic produces stasis and relaxation, while stimulation of the parasympathetic produces increased tonus and peristalsis. But the pyloric valve is inconsistently paradoxical. Benzedrine, a sympatheticomimetic substance, was shown by Ritvo (*80*) frequently to produce relaxation of the pylorus, while the same author (*81*), demonstrated that physostigmine, with directly antithetical action, produced the same effect. Clinically it is recognized that atrophine and belladonna, substances which paralyze the parasympathetic and should aggravate pylorospasm, are often of great value in treating patients with obstructing duodenal ulcers. A partial explanation of this contradictory evidence lies in the fact that the obstruction seen in peptic ulcers often involves not the actual pyloric valve, but the antral portion of the stomach. During the fluoroscopic examination of such subjects it is often difficult to locate accurately the anatomical pyloric valve. The motility of the small intestine of humans was first

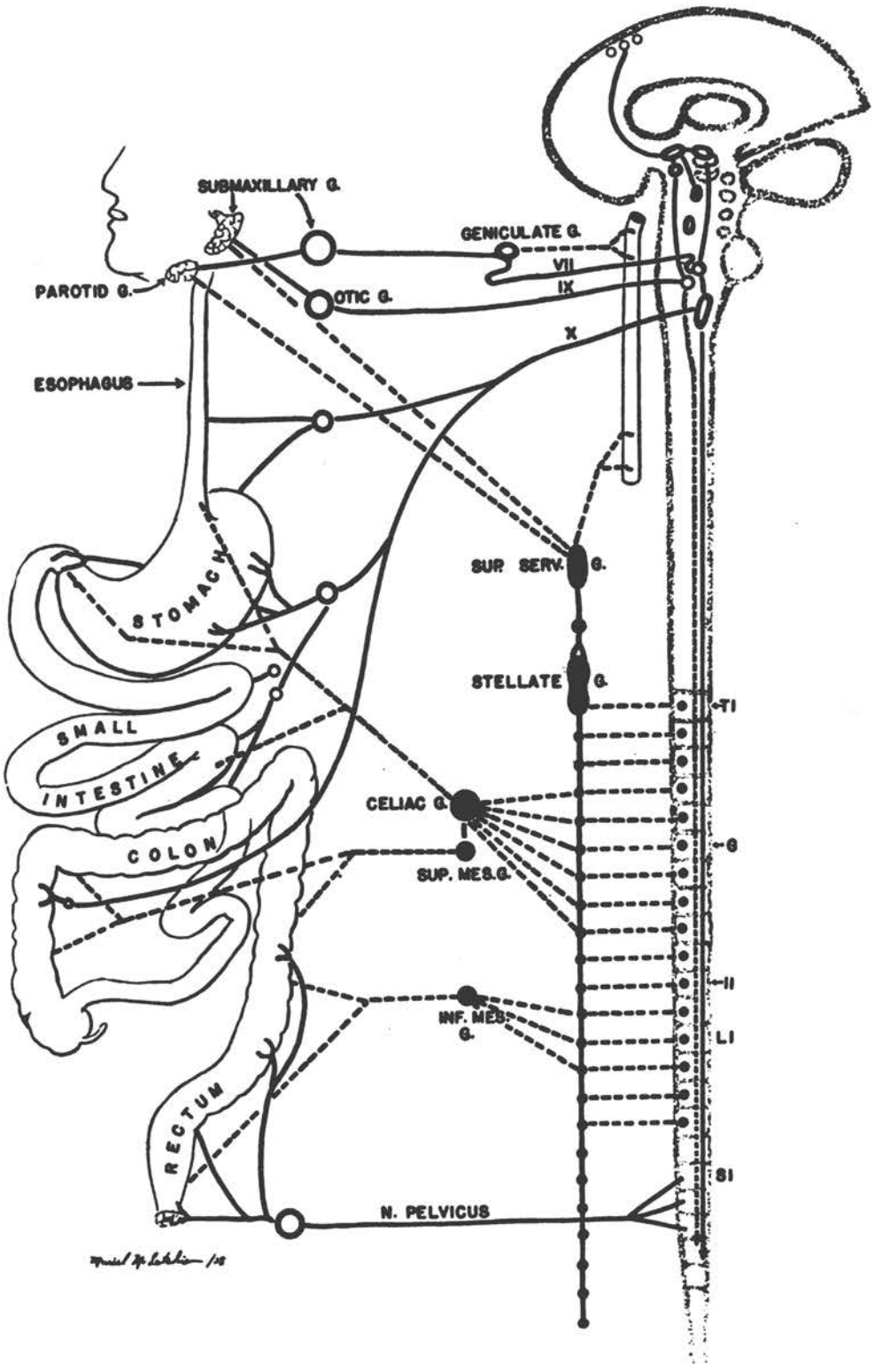

FIG. 27. Autonomic System

Automatic nerve supply of the gastrointestinal tract. [A composite diagram, after Kuntz and Cobb (77)]. Parasympathetic fibers are represented by solid lines, sympathetic fibers by broken lines. The parasympathetic innervation of the proximal portion of the colon is controversial.

accurately studied by Miller and Abbott (*82*). In general it follows the general principle of reciprocal autonomic innervation, although this relation is somewhat upset by the spontaneous activity of the smooth muscle.

The motions of the large intestine, partially autonomous, and partially under the domination of the sympathetic and parasympathetic nervous systems are composed of the following factors. Some of them are limited to the large intestine, while others occur throughout the gastrointestinal tract. Those which are merely local representations of the several gastrointestinal activities consist of: 1) Progressive constricting bands passing along the gut, *peristalsis.* 2) Progressive constricting bands passing cephalad, or *antiperistalsis.* 3) Alternating constricting and relaxing movements remaining essentially in one place or *segmentation.* Peristalsis and segmentation occur normally both in the small and large intestines. Antiperistalsis occurs in the small intestine when a focus of hyperirritability develops below it. It is the mechanism which returns intestinal contents to the stomach in vomiting. Hence it is an emergency mechanism. In the proximal half of the colon, however, antiperistalsis is the rule. It is a normal phenomenon whose function is to keep large intestinal contents in the cecum, and it is because of this normal antiperistalsis in the colon that the ileocecal valve is of importance.

The motor functions which are limited to the colon are *antiperistalsis* (*83*) as a normal phenomenon and intestinal *mass movement,* the original description of which is generally attributed to Holzknecht (*84*). It consists of sudden relaxation of a physiological sphincter near the hepatic end of the transverse colon, and a simultaneous contraction of the musculature of the cecum and ascending colon. This mass movement transfers in the course of a minute or less, a large part of the cecal contents to the descending colon. It is a movement which normally occurs only one or two times daily and generally precedes defecation by a short time. Failure of mass movement to occur results in constipation of the type characterized by cecal retention. If the propulsive force in the musculature of the cecum and ascending colon is lacking, one may speak of the constipation as of the *atonic* type. If the effect of the mass movement is blocked by spasm in the descending or transverse colon, one may speak of the constipation as of the *spastic* type. There is evidence that this type is the one principally seen in the mucous colitis syndrome and the one to which Stierlin gave the name *constipation of the ascending type.* There is apparently a mixture of these types in persons who, with good musculature and no evidence of spasm of the descending colon, still suffer from constipation with a full cecum. In such persons there is probably a failure of coordinated colonic movements, perhaps those of the mass peristalsis itself. Such a type of constipation might be called *dystonic.* Some of the patients with mucous colitis may fall into this ill-defined, hypothetical group.

A fourth type of constipation, described by Hurst as *dyschezia* is due to simple rectal retention. In *dyschezia* the colonic movements are apparently normal, but when the fecal matter is discharged into the rectum, the normal urge to defecate is lacking. Patients with mucous colitis can be sigmoidoscoped without any preparatory enemata. Their rectums are essentially empty. They do not suffer from *dyschezia* but rather from one of the types of constipation due to colonic dysfunction (although dyschezia may occasionally also be present).

At what points can the autonomic

innervation of the bowel bring about the changes necessary to produce this kind of disorder? The rectosigmoid and descending colons are well supplied with autonomic fibers from the parasympathetic sacral outflow. Stimulation of the nerve endings in this region with cholinergic substances in many instances produces frank spasm. Locally applied, pilocarpine and physostigmine consistently produce it. Administered by mouth acetyl-b-methylcholine yields some reduction in calibre. Some patients with mucous colitis have frank occluding spasm on sigmoidoscopic examination, others do not. It is probable that parasympathetic impulses too weak to produce complete occluding spasm, may nevertheless be strong enough to inhibit the intestinal mass movement. Evidence for this statement, however, is purely circumstantial. The parasympathetic innervation of the proximal end of the bowel is in doubt. If there are any fibers at all they are transmitted by the vagus and are not a part of the sacral autonomic. In careful X-ray studies by barium enema after administration of cholinergic drugs, von Bergmann and Katsch were able to demonstrate little change in the contour of the proximal end of the colon. Bochen (*85*), however, furnished evidence from direct stimulation that the vagus does supply the colon.

One clinical finding which conflicts with that expected on the basis of autonomic innervation is spasm of the anal sphincter. A moderate degree of anal spasm occurs in a certain percentage of persons with mucous colitis. This should not be expected inasmuch as sympathetic overstimulation should produce spasm of the sphincter, while parasympathetic dominence should allow the sphincter to relax.

Aside from failing to explain cecal retention in the absence of frank spasm of the descending colon, the concept of parasympathetic overstimulation is an adequate explanation of all the major signs and symptoms of mucous colitis. It was shown by von Bergmann and Katsch that overstimulation of this subdivision of the autonomic nervous system produced consistent spasm of the colon. Their observations were made after the barium had been allowed to remain in the colon for three hours and were hence more accurately controlled than subsequent routine observations. White and Jones produced mucosal changes in the rectosigmoid by means of administering cholinergic drugs and these changes consisted of injection, spasm, and mucous secretion, the very findings characteristic of mucous colitis. These observations are reviewed elsewhere in this paper. The sources of constipation or diarrhea, abdominal cramps, the palpable spastic sigmoid, stools of small calibre, and mucosal changes in the rectosigmoid are all explicable on the basis of parasympathetic overdomination.

Cardiovascular Instability in Patients with Mucous Colitis

It is of importance to furnish evidence that there is active instability of the autonomic nervous system in persons with mucous colitis. There are few simple and readily available methods of quantitating the degree of instability which is present. In this study use was made of the physical efficiency tests of Schneider and Turner.

The first of the simple tests based on pulse and blood pressure readings was the Crampton (*86*) test which was composed simply of one recumbent and one erect pulse and blood pressure reading, from which figure an index of physical fitness was prepared. The Schneider (*87*) test is slightly more

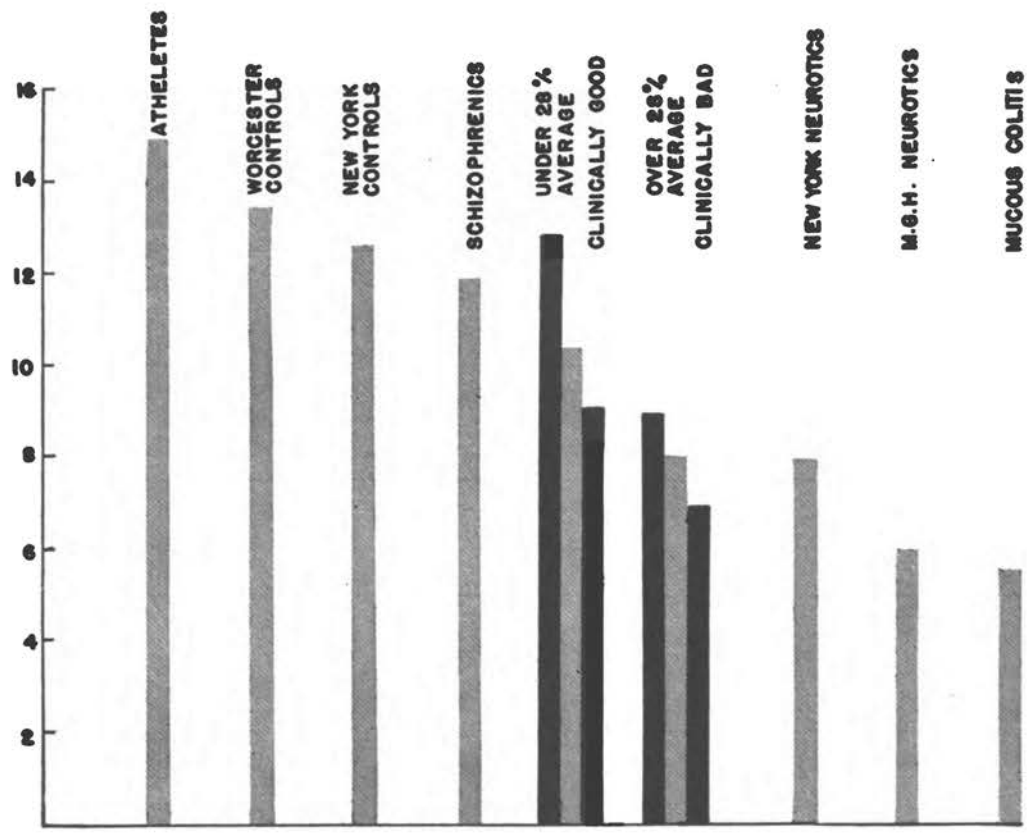

FIG. 28. Schneider test of physical efficiency. Average scores. The athletic and New York control groups are from the work of McFarland and Huddleston; the schizophrenic and Worcester control groups are from the work of Linton, Hamelink and Hoskins. The mean figures for clinically good and clinically bad college women are taken from the work of Turner. One of her series was divided on the basis of a fall of less than 28 per cent in the cardiac output when the subjects were placed in the standing position. The other was divided purely clinically. The purely clinical group was studied under adverse weather conditions in midsummer, which may account for the somewhat lower scores. The M.G.H. neurotic and "mucous colitis" groups were studied personally.

elaborate, in that in addition to recumbent and erect readings, an additional reading after a standardized amount of exercise is made. The exercise consists of stepping up onto an 18 inch chair five times in 15 seconds. The score is composed of six factors: 1) the initial pulse rate; 2) the increase in pulse rate on standing; 3) the standing pulse rate; 4) the pulse rate after exercise; 5) the rate of return to the standing pulse level; and 6) the change in systolic blood pressure on changing from the recumbent to the erect position. The exact technique for carrying out the test is described in Schneider's original report. The score varies from plus 18 to minus 18. The test has the advantage that it is quickly and easily done, that it is scored easily, and that there are large numbers of control figures available. In this series, Schneider tests were done on 34 patients. The scores were compared with those published by McFarland and Huddleston (*88*) on a series of psychoneurotic patients, Columbia athletes, and staff doctors. They were also compared with scores which were obtained by Linton, Hamelink and Hoskins (*89*) on schizo-

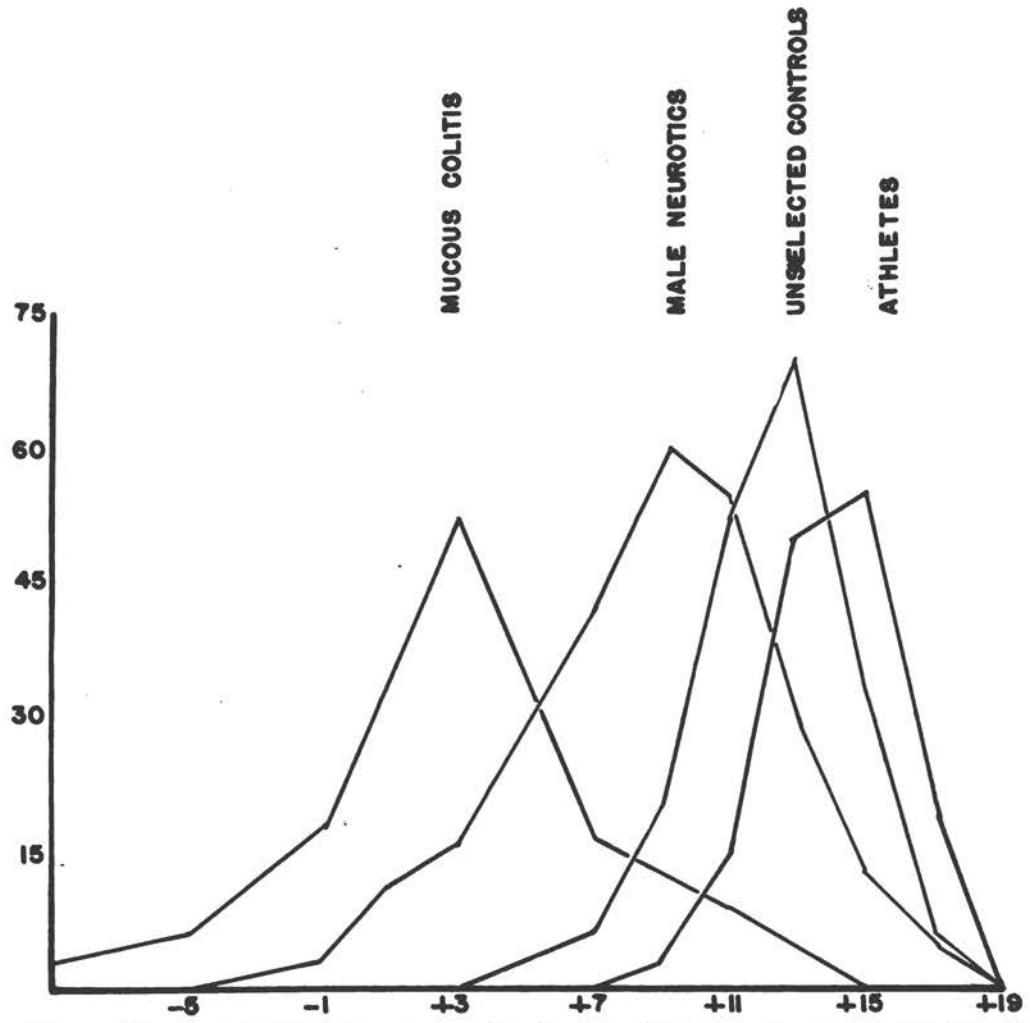

FIG. 29. Schneider test. Distribution of scores. The "mucous colitis" group is compared with the male neurotics, unselected controls, and athletes in McFarland and Huddleston's series. The low score represents vascular instability.

phrenic patients and on staff doctors at the Worcester State Hospital, and with a small series of patients with mixed psychoneuroses at the Massachusetts General Hospital. A few Schneider scores were also available from the work of Abby Turner which is described below. These are included and show to a certain extent the differences between the two tests.

The Schneider test scores for the various published groups and for the two Massachusetts General Hospital groups are shown in Fig. 28. These figures show that the scores are to some extent comparable from worker to worker and that by and large the higher scores seem to fit groups which may be expected to have relatively stable cardiovascular systems. The neurotic patients have low scores particularly those suffering from anxiety states (which compose most of the Massachusetts General Hospital group). Patients with mucous colitis have the lowest scores recorded.

McFarland and Huddleston published distribution curves of scores ob-

tained in athletes, hospital doctors, and male neurotics. To these curves were added the distribution curve of scores obtained in patients with mucous colitis. This again shows clearly the different orders of magnitude of the scores obtained (*see Fig. 29*). Unfortunately the distribution curve of mixed male and female neurotics was not available, but the mean figures for the two groups did not vary greatly. The mean score for male neurotics was 8.6. That for mixed male and female neurotics was 7.9.

Despite its ease of administration and scoring the Schneider test has certain disadvantages. In the first place it deals only with systolic blood pressure, and only one of its six scoring points deals with blood pressure. Hence it is almost entirely a test based upon pulse rate. In the second place the exercise test is really of almost no account from the point of view of placing a strain upon the vasomotor apparatus. What changes do take place are so transient that one has no concept as to what one is measuring.

The Turner (*90*) test was better thought out, and while it is more laborious to execute, it yields far more significant data. The Turner test was devised as a means of differentiating simply between two groups of college girls, one group in "good training" the other in "bad training". Turner had previously demonstrated by the method of Field, Bock, Lothrop and Gildea (*91*) that the cardiac output of girls in training varied very little from the recumbent to the erect posture. On the other hand, she found that in girls in "poor training" the cardiac output fell very greatly during a period of prolonged standing. She arbitrarily divided the girls into two groups in accordance with the degree of fall in cardiac output. Those in whom the cardiac output fell less than 28 per cent were classed as "good" and those in whom it fell more than 28 per cent were classified as "bad." The Turner test represented an attempt to draw this same line of demarcation by a simpler method.

The test consisted of a prolonged standing period (15 minutes) during which systolic and diastolic blood pressure readings and pulse readings were taken at regular intervals. They were compared with basal readings which had previously been made. Scoring was based upon changes in pulse and blood pressure readings from the lying to standing positions and on changes occurring during the period of prolonged standing. The systolic, diastolic and pulse pressures were scored separately. The total score plus 18 to minus 18, was composed of pulse variations and blood pressure variations, to each of which was accorded equal weight.

The general tendency in persons with labile autonomic nervous systems is to show moderately great fluctuations in all the readings. But more striking is the fact that during the standing period they show a gradual fall in systolic blood pressure with a rise in the diastolic and a fall in pulse pressure. This becomes more striking as the period progresses. It is accompanied by a weak, stringy pulse in many instances and on some occasions by fainting. The presumable explanation for these changes, as well as the cardiac output changes originally noted, is the gradual accumulation of blood in the lower extremities and splanchnic area. This leads to a reduced effective blood volume and to attempts on the part of the vasomotor and cardio-regularity systems to maintain an adequate circulation.

The Turner score, then, is something more than an index of lability of the

pulse. It records in a semi-quantitative way changes which are known to occur in persons with labile autonomic nervous systems. The technique of the test and the details of scoring are to be found in Turner's original report.

Turner tests were done on 34 patients with mucous colitis. The patients were selected only by convenience. In

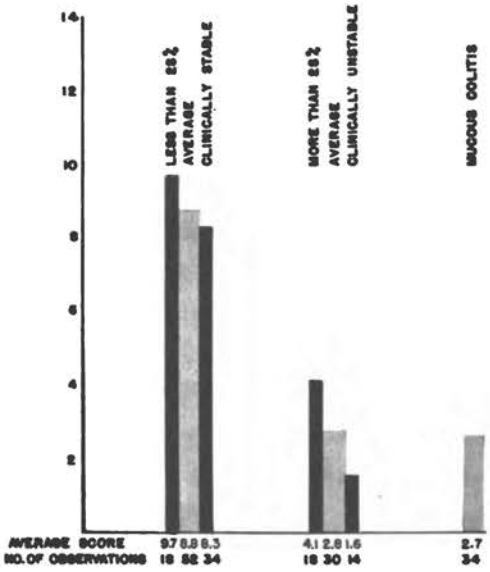

FIG. 30. Turner test in which pulse and blood pressure curves were made throughout a period of prolonged standing. The ordinate represents average scores. This test has been shown to show a close correlation with fall in the cardiac output during the period of standing. Note that the average score of patients with "mucous colitis" is almost the same as that of clinically unstable college women.

Fig. 30 the mean score in patients with mucous colitis is compared with those of Turner's original two groups. In addition to her original group, figures are also available on two more groups who were classified on the basis of clinical knowledge alone without cardiac output determinations. The groups, divided on the basis of cardiac output, were studied in winter at college, while the groups divided on a purely clinical basis were studied in hot summer weather. The scores differ somewhat. The same Massachusetts general hospital neurotics on whom Schneider tests were performed had an average Turner score of 2.87, slightly above the score of 2.70 for the mucous colitis group. It is apparent that patients with mucous colitis have the lowest mean score on the basis of this test as well as on the basis of the Schneider test.

It is generally recognized that patients with anxiety states have labile cardiovascular systems. In the case of conventional anxiety states, in which the symptoms are largely referrable to the cardiorespiratory system, palpitation, hyperpnea, fullness in chest, coldness of the hands, etc., this is not unexpected. White and Gildea showed that such patients, when subjected to a minimal emotional threat, suffered from a striking beat-to-beat variability in the heart rate. McFarland and Huddleston showed that such persons had low scores on the Schneider test, and Cohen (*92*) has proved that their circulation time is decreased. In mucous colitis one is dealing with a disorder, mediated through the autonomic nervous system, in which the principal symptoms are referrable to the gastrointestinal tract. It is worth noting that even in these patients a great degree of lability of the cardiovascular system is present. Clinically this is also true to a certain extent. Mucous colitis in most instances may be considered as a form of anxiety or tensional neurosis which develops in persons with a certain rather specific personality structure.

THE PERSONALITIES OF PATIENTS WITH MUCOUS COLITIS COMPARED WITH THOSE OF PATIENTS WITH BRONCHIAL ASTHMA

The question is asked whether the personalities of patients with mucous colitis and with bronchial asthma are similar. The pathological physiology

of the two diseases is similar. The association of the two syndromes is reported as being frequent. In this series there were two patients who had asthma and mucous colitis. Both were very neurotic and neither had any specific protein sensitivity which could be demonstrated by skin test. There is reason to believe that the asthma in both these cases was emotional in nature. Both were studied psychiatrically in meticulous detail over a prolonged period of time and both of them showed changes in their asthma as the relations to their psychiatrists changed. It is apparent that emotional asthma does occur, that at times it occurs in patients who are also subject to mucous colitis. The personalities of these two persons with asthma were strikingly characteristic of the mucous colitis group as a whole.

One of us has had experience in treating allergic asthma. He has consistently questioned patients with this disorder and has found few instances of gastrointestinal disorders, and rare ones meriting the title mucous colitis. Rackemann and he have not been impressed by a high incidence of manifest neurosis in patients with outspoken allergic asthma. In a series of asthma patients McDermott and Cobb (*92a*) found that the "neurotic patients" often showed exacerbations in association with emotional stress. The normal ones seldom did. In mucous colitis the situation is exactly reversed. While the "more neurotic" victims of this syndrome recognized an emotional tie-up in only 50 per cent of the cases, the "less neurotic" ones almost invariably did.

These observations lead to the conclusion that asthma and mucous colitis are both disorders mediated by the cholinergic end organs in the smooth muscle and mucous glands of the bronchi and of the colon respectively. Both may be precipitated by foreign protein sensitivity: in mucous colitis 4 per cent of the cases, in asthma a large percentage of the cases. Both may be precipitated by emotional factors; in asthma, a relatively small percentage of the cases; in mucous colitis 90 per cent of the cases. In a limited number of emotionally conditioned cases of bronchial asthma, the personality characteristics were very similar to those seen in mucous colitis.

No conclusive evidence is available as to the reason for the rarity of allergy as an etiological agent in mucous colitis. Most outspokenly allergic bronchial asthma is produced by inhalants, pollens and animal danders. These substances reach the lining membranes of the bronchi readily in an unchanged state. An ingested protein to reach the mucous membrane of the colon must either escape the action of the proteolytic enzymes, or else be absorbed into the blood stream as proteins, and reach the colon by the hematogenous route. Absorption of unchanged protein does occur in infancy but apparently more rarely in adults.[1] The mucous membrane of the colon, then, is much better guarded than is the bronchial tree. Emotional factors may be brought into play on either organ with equal ease.

[1] Gray, I. and Waltzer, M. (Studies in Mucous Membrane Sensitivity, III The Allergic Reaction of the Passively Sensitized Rectal Mucous Membrane, Am. J. Digestive Diseases, 5:707-711, 1938) have recently demonstrated by the production of passive transfer sites in the mucosa of the rectum that the absorption of certain allergens from the upper gastrointestinal tract in adults may occur with somewhat greater frequency. Serum from a patient known to be sensitive to peanut oil was inoculated into the rectal mucosa of a number of persons. When peanut meal was subsequently administered by mouth within six to thirty minutes, congestion, edema, and mucous secretion could be observed at the passive transfer sites. These changes disappeared within thirty minutes to one hour.

VI. THERAPY

THE TREATMENT OF MUCOUS COLITIS is necessarily difficult. It involves no one specific drug, but rather entails a broad understanding of the whole make-up of the patient, physical, nervous and mental. Inasmuch as so much is written about the importance of emotional factors and so little is written about the technique for approaching them, the present account is perhaps unnecessarily detailed. It is simplest to discuss the various problems in order.

Physical Hygiene

Inasmuch as persons with mucous colitis have labile autonomic nervous systems, much vasomotor instability, neurocirculatory asthenia, and other evidences of poor *athletic training*, it is important to attempt to "harden them up." This process is difficult because overexertion invariably produces an exacerbation of symptoms and the physician is confronted with the charge that his advice aggravates the disease. Hence the prescription of exercise must be graduated, but it is important in the course of time to accustom the victims of the disease to a moderate amount of systematic exercise. They can be assured that persons doing hard physical work almost never suffer from mucous colitis.

Almost as important as regular exercise is adequate sleep. Most of the mucous colitis patients have a lower energy output than normal people. Whether this is due to neurocirculatory changes, to emotional causes, or to hypothetical "endogenous" factors is not known. In any case, they need more sleep than the average person, and often they gain a great deal of renewed energy and relaxation from a short rest in the afternoon. There is no psychiatric reason why a person of this type should not face the fact that his energy output is below that of the average member of society and budget his energy accordingly. There are hysterical patients and malingerers in whom such advice might lead to great exploitation of other members of the family. The more normal persons with mucous colitis are not interested in exploiting others; a few of the more neurotic cases—such as Nos. 5, 8 and 9—may be.

The formation of regular eating habits is probably of importance, particularly in regulating the motility of the colon through the gastrocolic reflex. It is also important because of the upper abdominal symptoms, fullness in the stomach after meals, belching, heartburn, sour eructations, etc., from which the patients often suffer. These symptoms are presumably due to disturbed motility of the stomach and esophagus, for mucous colitis is not an isolated disease of the colon. These upper abdominal symptoms usually disturb patients less if they eat fairly consistent amounts of food at regular intervals.

The type of food eaten is of importance. In spite of the opinion of Von Noorden that a high residue diet is most effective, most workers find that a bland, low residue diet most quickly overcomes constipation and cramps in their patients, and that aggravation almost always follows the ingestion of rough, coarse foods. No other criteria need affect the diet except that it contain the requisite amounts of the essential ingredients. In most instances the simplest plan is to give the patient a printed diet of moderately low residue

with the added instructions that he grind the meat and purée the vegetables. After definite improvement has set in, one is then free to withdraw the grinding and straining. One is invariably asked how long the patient must follow the diet. Inasmuch as the symptoms have a great tendency to recur, it is wise to make that point clear to the patient and that at best he will have to follow the diet for approximately one year. One can back track without losing face. The following of a good low residue diet is probably the most important one item in the treatment of mucous colitis.

The importance of regular bowel habits should not be emphasized to these patients. Most of them are only too well aware of this gospel and one of the physician's hardest task is to reassure them that a little irregularity does no harm. It requires police tactics to do this in most instances. Such tactics are reviewed below.

Mental Hygiene

Before attempting to enumerate the various techniques of psychotherapy, it is well to review again the most consistent personality characteristics seen in patients with mucous colitis. They generally are suffering from a state of chronic emotional tension which is engendered by their rigid attitudes toward certain problems. The problems may be very real and objective, or they may be very subjective and neurotic. Most of the patients are conspicuously dependent on other people or on their opinions. Hence the doctor's opinion is very important to them. In most instances they are suffering from an overbearing sense of resentment about which they find it difficult to talk. Occasionally there is a specific phobic anxiety rather than resentment. The direct approach to such patients is usually the best one. They are quick to appreciate a sympathetic ear and they give a working skeleton of their histories relatively easily. On the other hand their rigidity makes it hard for them to give up repressed and forgotten experiences excepting under the most intensive treatment. One can probably resolve few psychological mechanisms by a conversational technique. The applicability of some of the general approaches to the problem of management will be reviewed.

1) *Insight:* Patients with the type of personality usually seen in mucous colitis readily gain a certain amount of insight. They can be taught how to live with their rigid personalities. They can be taught that their aggressive tendencies are not necessarily directed in the direction in which they superficially suppose them to be. They can often learn, when symptoms of anxiety arise, to realize their unconscious nature and to dispel them. With this much help, they can be taught to recognize some of their limitations and the means of avoiding certain snares. Thus their conflicts may be reduced and they may become free of symptoms although much neurosis may remain. The giving of insight is one of the tools used in many psychotherapeutic approaches.

2) *Assistance in solving conflicts:* One of the commonest problems facing patients with mucous colitis is the need for decision in the face of an important conscious dilemma. It is of great temptation for the doctor to make a decision for the patient. While there are doubtless occasions upon which for lack of time, or for some equally cogent reason, a doctor must make a decision for a patient, the practice is generally an unwise one. There are at least two reasons for this. The first is that it spares the patient from facing reality and thus

weakens his "deciding power". The second is that if any unfortunate circumstance follows the decision, the patient will brood over it and bear resentment against the person who forced him into it. Such a situation is undesirable for the doctor's relation to the patient; it is also undesirable for the patient in that he relieves him of responsibility for his own fate. Generally it is better policy to listen to both sides of the conflict, and by persistent questions to show the patient the really important factors in the problem and thus help him to a certain extent, but to let him make up his own mind. It must be remembered that forgotten events with their unconscious urges and restraints play a large part in the patient's attitude toward his problems. These cannot be accurately evaluated by the physician whose only approach is intellectual. The good doctor must feel his patient's problem and often act on intuition.

3) *Social adjustment* often alleviates but seldom cures a neurosis, for example, when an intolerable mother-in-law problem can be relieved by shifting the patient's address. A conscientious employee who has been placed in a compromising position by his boss, may be relieved of his emotional tension if his place of employment can be changed. There are hundreds of ways in which social service adjustments can relieve the physical and emotional burdens which patients have to carry. Social reorganization is one of the ready weapons which the practicing physician has at his disposal, and it is one which should be used freely. One must realize, however, that when a neurotic person changes his address he takes his personality along to the new home. He may adjust to the new environment better or worse, but he is still neurotic.

Some psychiatrists overemphasize the value of social reorganization and expect the impossible from social service workers. This produces a misunderstanding which could be avoided if the underlying problems were understood.

4) *Disciplinary management* enters to a certain extent into all relations between doctors and patients. When dealing with phlegmatic persons, one's attitude is least important. When dealing with highly-strung nervous individuals, it is most important, and when dealing with suggestible, hysterical patients it is paramount. A small percentage of patients with mucous colitis have somewhat hysterical personalities. These persons not only have abdominal cramps but they exploit them, and if the cramps are relieved, they may develop hiccoughing, pain in the back, or other attention-seeking symptoms. In dealing with such persons it is necessary to develop an attitude of tolerance (which for most people is extremely difficult), and to realize that psychiatrists believe such symptoms are usually unconscious in their motivation. It is then necessary to discuss such symptoms lightly and to convey to the patient by thought, word, and deed that they have not aroused the physician to sympathy or alarm. Often such hysterical patients report hemoptysis or other truly alarming symptoms, and place him in an extremely awkward position. Hence, the advisability of a very thorough physical check-over before becoming mixed-up in a psychotherapeutic relationship. While it is necessary to turn an essentially deaf ear to the symptomatology of such patients, it is equally necessary to be sympathetic and cooperative about discussing the underlying personal problems. With patients who are suffering from depressive tendencies or anxiety there is no need to fear exploitation by the patient, but on the other hand, one must be on guard lest one

aggravate his fears. Hence one's manner should convey little or no alarm over symptoms that are recounted, and one should aim rather to convey reassurance and encouragement. Most of the mucous colitis sufferers fall in this latter group, so that watchful disciplinary treatment is hardly necessary.

5) *Reassurance—Transference therapy:* Many of the mucous colitis patients are very dependent upon others. They need a confidant who can "bolster" up their egos and enable them to carry on their work. If they have discussed their personal problems with a physician, he rapidly becomes the only person toward whom they can look for approval or disapproval of their plans. If he plays this rôle carefully he may help the patient and keep him a relatively useful member of society. This form of treatment is a valuable adjunct to conversational psychotherapy and is a potent weapon constantly employed by practising doctors.

6) *Suggestion* is a form of treatment which has great limitations but also certain valuable uses. In the form of *hypnosis* it will remove almost any hysterical symptoms (*see Glossary*). However, it does not cure the hysterical patient, whose symptom either soon recurs or is replaced by another. The underlying psychopathology of hysteria is not altered by hypnosis. Inasmuch as the abdominal cramps of mucous colitis are not hysterical symptoms, hypnosis is not the treatment of choice in mucous colitis. In fact persons with mucous colitis are among the least suggestible of people, so that suggestion as a straight form of treatment, is hardly ever indicated.

There are times when it is hard to evaluate the amount of suggestion in a given treatment situation. Persons who receive weekly injections of vaccine subcutaneously, and who report each time on the exact size of the reaction, certainly derive much confidence from the interest of the therapist. Yet there is an element of suggestion in the ritual associated with it. Suggestion certainly plays a great rôle, in the effectiveness of colored medicines. Among persons of low intellect it is about the only form of psychotherapy which is available, so its judicious use should not be eschewed. Yet it is probably less effective in mucous colitis than in some of the other neuroses.

7) *Resolution of the neurosis:* The methods of treatment so far outlined deal with the handling of neurotic (or psychopathic) patients, their rehabilitation, their readjustment in society, etc. They do not deal with specific dynamic etiological mechanisms. They do not offer cure. There is evidence, largely arising from the Freudian psychoanalytic school, that many of the behavior patterns in neurotic persons are predetermined by forgotten experiences, often emotionally traumatic situations of childhood. To what extent these underlying patterns are based upon inherited characteristics and to what extent upon previous life experiences remains unsettled. Certainly Freud (*74*) recognizes both factors and even emphasizes the former. Phobias and hysteria have similar psychological mechanisms but very different clinical pictures. The fact that under similar circumstances one person reacts with phobias and another with hysteria may be explained by the congenital attributes of the person. Compulsions and obsessions according to Freud are reactions to an *inherently overdeveloped* sense of obligation or "conscience" (super ego).

The psychological structure of symptom formation may often be worked out by psychoanalysis. In certain neuroses, notably hysteria, thera-

peutic results are very satisfactory but in other neuroses, such as obsessions and hypochondriasis, treatment is more difficult. In some mucous colitis patients, where hysterical symptoms are present (about 5 per cent) psychoanalysis should be a very valuable form of treatment, and the only form offering a real personality cure, but the majority of the patients have personality characteristics of a type not so readily altered by the psychoanalytic technique.

There are some psychiatrists with psychoanalytic experience who can quickly recognize certain well known unconscious mechanisms. By the use of their experience and hypotheses they can elucidate the psychodynamics of a symptom much more quickly than it can be done in psychoanalysis. Unfortunately such men are few in number and usually have had little experience with mucous colitis. The little work that has been done suggests that psychiatrists well trained in this line have much to offer to gastroenterology. Most patients with mucous colitis, however, are so rigid that they do not readily accept this form of treatment. We must conclude that no one psychotherapeutic approach is universally applicable and that the prescription must generally be based on a compatible mixture.

Medication

1) *Drugs:* the judicious use of drugs is one of the valuable aids in treating mucous colitis. Those most frequently of value are sedatives, drugs which stimulate or inhibit the autonomic nervous system, and various substances for bowel regulation.

The use of sedatives in this study was limited to two indications a) the relief of severe colic, and b) the relief of tension in acutely ill, hospitalized patients with mucous colitis.

For the first indication, the severe rending pains which accompany "colica mucosa" attacks, the use of deodorated tincture of opium is sometimes necessary. These attacks usually do not occur with great frequency but when they do they are excruciatingly painful. The usual analgesics and mild sedatives should be tried first, but if they do not work, no hesitation should be felt in using opium.

There occasionally arises a situation where for administrative reasons psychotherapy cannot be instituted at once. In some of these cases especially when there is a great deal of apprehension and tension in addition to a mucoid or watery diarrhea, the use of small amounts of phenobarbital will result in greater comfort and regular bowel movements. With this added improvement the doctor is then able to go ahead with diagnostic and therapeutic plans.

Generally in the course of outpatient or private visits these patients do not need sedation in any form.

The drugs which stimulate or inhibit the actions of the autonomic nervous system are extremely important. Despite the observations that atropine is less effective upon parasympathetic nerve impulses than upon free acetyl choline (*93*) (because the nerve fibers end within the muscle cells, and supposedly outside the reach of atropine), still atropine is of great clinical value in relieving intestinal cramps and in establishing normal bowel movements in patients with constipation. Novatropine has been introduced as a less toxic substitute for atropine. Its toxicity according to the manufacturer is 0.6 that of atropine. Quigley (*94*) reports that its activity on the dog's stomach is 0.6 that of atropine and on the colon is far less than that so that there is little to commend its use. Tincture of bella-

donna is the most convenient antispasmodic inasmuch as it can be given in gradually increasing doses to tolerance. In this series tincture of belladonna was used in almost every case. The usual starting dose was ten drops three times a day. This dose was gradually increased until the patient complained of dry mouth or blurring of vision. In most instances it afforded a measure of relief from abdominal cramps and from constipation. It afforded no relief from diarrhea in any case.

Benzedrine, a sympathecticomimetic substance, was tried in a few instances and in one case was dramatic in its immediate effect upon constipation and cramps. In other cases it was without effect. Persons who have taken benzedrine say that it is almost impossible to experience the emotion of resentment under its influence. It produces an elevation of mood, often dispelling symptoms of neurotic depression and guilt feelings. Patients taking it often lose their sense of fatigue. Because of its effect upon the emotions and energy output, patients readily come to depend upon it and it is difficult to wean them away later. Another, sympathicomimetic substance, epinephrin, is reported to give immediate relief to persons suffering from some types of abdominal cramps, notably those associated with food allergy. The patients in this series were not seen at home during their most severe seizures and so the subcutaneous injection of epinephrin was not tried. Ephedrine theoretically should be of value, but was not tried.

2) *Bland substances* are sometimes of value particularly if the stools are extremely hard. Such substances as liquid petrolatum and agar-agar are of value in such instances. Liquid patrolatum was used in a number of patients of this series. None of the other substances was investigated.

The clinical histories of many of the patients indicated that they had been victims of the cathartic habit. In most cases the use of cathartics followed rather than preceded the onset of symptoms, and to cathartics alone cannot be attributed the etiology of the disorder. However, their prolonged use was usually associated with moderately severe abdominal discomfort and generalized tenderness. Cathartics are certainly a secondary etiological factor which tend to aggravate the symptoms of mucous colitis. Their use should be vigorously avoided, and total abstinence is the only method of accomplishing this end. It is particularly difficult to induce patients with mucous colitis to give them up. This is due partly to the feeling of "gas" or fullness (possibly due to spasm) which they feel in their abdomens. There may be additional unconscious psychological mechanisms.

The work of Morris and Dorst suggests the use of *bacterial vaccines*. Vaccines were not used in this study. One patient had previously had specific vaccine therapy without relief, but it must be admitted that systematic skin testing with vaccines from all the intestinal flora had not been done.

The use of *sodium ricinoleate* is also an outgrowth of Dorst's work. He found that the vaccines prepared from intestinal organisms could be "detoxified" so that they produced less striking skin reactions if they were treated with a solution of sodium ricinoleate. Dorst felt that this did not in any way affect the antigenic properties of the vaccines. If sodium ricinoleate would detoxify vaccines in vitro, Dorst reasoned theoretically it might also detoxify the flora of the intestinal tract. Hence he studied the effect of therapeutic doses of sodium ricinoleate in mucous colitis, with some degree of success. Castor oil is also reported to be

of value in this condition. Neither castor oil nor sodium ricinoleate was regularly used in this study, and no first hand experiences are available.

The relation of calcium metabolism to smooth muscle irritability is one which has received much inconclusive attention. In clinical tentany, there is unquestionable irritability of the smooth muscle, and this condition is specifically remedied by various forms of treatment which elevate the available calcium in blood serum. Collip (*95*) introduced the use of parathyroid hormone ("parathormone") as a specific substitution therapy in parathyroid tetany, and found that it would elevate the blood calcium level in other conditions as well. Barker (*96*) administered parathormone 15 units every 3 to 4 days, and calcium salts to patients with mucous colitis. The results of this treatment appeared to be beneficial in some instances, but the form of treatment has dropped out of common use. The Chvostek sign was not found in patients in the Massachusetts General Hospital series, and hence the patients were not treated from the point of view of deficient serum calcium.

Therapeutic enemata and colonic irrigation were not employed in this series. The histories of the patients often indicated that high colonic irrigations had previously been given over periods of weeks and months, usually without lasting relief. Such repeated lavages with physiological saline are probably contraindicated because of their tendency to disturb the normal muscular activity of the bowel. The use of soap suds enemata however, is to be condemned on the basis of the high degree of irritation which it entails.

Effectiveness of Therapy

The relative efficacy of the different components entering into the treatment of patients with mucous colitis could not be determined. A psychic element was introduced from the first, and this unquestionably modified the effects of drugs, diet and general hygiene. Even the changes of symptomatology were difficult to evaluate particularly in the more neurotic patients because of their personality difficulty. In general, however, certain conclusions can be drawn:

1) The life histories of the patients and their courses under observation indicate that the illness is chronic and that they are subject to exacerbations and remissions. In some instances the remissions amount to permanent cure. In others, the exacerbations grow into permanent invalidism. Yet the disease does not seem to progress into idiopathic ulcerative colitis. There is some evidence that chronic spasm of the sigmoid may serve as the basis for the formation of diverticuli but this point is not settled beyond dispute.

In general constipation is an earlier symptom than diarrhea. It often occurs at first without abdominal pain, and in the early stages no sigmoidoscopic changes are noted. This symptom is usually easy to relieve, and apparently the one most important feature in its relief is the use of atropine derivatives. The social constellation of the patient and the adaptability of his personality are factors which determine the subsequent course of the illness.

2) *The upper abdominal symptoms;* such as heartburn, fullness in the epigastrium after meals, belching, and sour eructations, are often dramatically helped by regular small feedings and by atropine derivatives, which presumably relax the tonus of the esophageal and ventricular walls. The disappearance of nervous tension also often relieves them to a great extent. Of the tetrad, belching is the hardest to relieve because, in most instances, the swallowing of air and its subsequent

regurgitation becomes a sort of behavior pattern which is hard to break. Most patients are very unreasonable about accepting the fact that their "gas" is really ingested air. Occasionally they may be publicly shamed before the audience of their families by having their mouths held open with a cork. This homely practice prevents their swallowing and hence their belching. In general, however, the upper abdominal symptoms yield moderately well to the treatment which is intended for the colon.

3) *Abdominal cramps* and other forms of abdominal discomfort yield less readily to treatment than do upper abdominal symptoms and constipation. In most instances they persist for many weeks or months after treatment is started. The situation in which the cramps develop to a certain extent influences their prognosis. Cramps occurring in constipated subjects only at times of dietary indiscretion yield moderately quickly to the low residue diet. On the other hand, the severe cramps which attend attacks of mucous colitis are extremely resistant to treatment, and although the intervals between such attacks are often lengthened, the actual suffering is seldom greatly relieved.

4) *Diarrhea* is a far more recalcitrant symptom than constipation. By the term "diarrhea" a patient may refer to one of two things. a) He may refer to the passage of one or more soft to mushy stools daily. Such stools of small calibre are often seen in patients who complain of "constipation". The term used is a purely relative matter, "diarrhea" being employed by some because of the soft character of the movements, "constipation" being used by others because of the "inadequacy" of their size. This form of diarrhea is easily treated. b) He may refer to a true diarrhea characterized by the passage of many soft to watery movements in the course of 24 hours. Patients with such true diarrhea usually have more marked mucosal changes in their rectosigmoids, and their symptoms respond only with difficulty to treatment. Atropine does not help appreciably. A low residue diet is a strict necessity. In some instances one must resort to such drugs as bismuth, kaolin, or tincture of opium. On the other hand there are a few such patients who respond immediately to the release of emotional and physical tension. One of our patients (Case No. 8) who had suffered from an intractable diarrhea for 9 months, was restored to normal bowel habits within three days after admission to the hospital. She received no medicine.

Suggested Program of Treatment

No standardized program of treatment applies to all patients with mucous colitis. Inasmuch as there are some rather commonly observed personality characteristics in the group, however, one can formulate an approach which is helpful in the majority of instances. It must of course be modified to fit the exigencies of the situation. Perhaps in some instances an entirely different approach would be desirable. In general the first task confronting the doctor is the establishment of rapport. In no group of patients is this more important. By taking a meticulously careful history and paying careful attention to all the patient's concerns the doctor places himself in a position where his subsequent reassurance carries great weight. The following steps to a certain extent overlap, but they afford the guiding principle which was followed in this study.

1) Establish the diagnosis beyond doubt. In some instances this may be done at the first visit. In others, where the history is slightly atypical, the use of one or more diagnostic tests such

as the X-ray and sigmoidoscope may be of value. It is important, however, to do all diagnostic procedures before finally formulating the illness to the patient. A subsequent diagnostic test to reassure one's self is very disconcerting to the relation between doctor and patient.

2) Explain to the patient that his symptoms are due to over-excitability rather than the torpor of the bowel. Simultaneously ingrain the idea that cathartics (irritants) are good for torpid bowels, not for hyperirritable ones. Drive this point home and subsequently never let the patient take a cathartic no matter what story he brings in.

3) Make clear that there are a number of factors which increase the irritabilty, spasm and mucous secretion of the bowel. Among these are physical "condition," rough foods, in some instances specific foods, cathartics, and tension. Work out a daily program of activities which will minimize the undesirable factors. This will include in many instances, a) added rest; b) graduated exercise; c) low residue diet; d) an atropine derivative; and e) efforts to reduce tension. Instruct the patient to expect no bowel movement for several days but if he does not have one in a week to return for advice. No patient, who was so directed, returned for advice. If, however, a patient does return after a long period, he may be advised to employ a small saline enema. The importance of regularity in bowel movements must be minimized.

4) The rôle of tension in aggravating the disorder must be emphasized. Since so many patients have their tension in the face of a conscious dilemma, often it is well to ask whether the patient is having trouble in making a decision. If he does not respond, sometimes quoting briefly the case of a person with mucous colitis in an obvious dilemma will evince his interest, and he will note the similarity to his own problem. (It must be pointed out that this approach was not used in studying the cases in this series. It is merely advanced as a short cut to obtaining relevant psychiatric material.) If he still does not recognize the problem it is well to go through his entire development noting episodes of undue anxiety or resentment and questioning him more fully about them. Usually something comes out in relation to childhood development, occupation or sexual relations, and usually forcefully. Occasionally one obtains no relevant "material" and is forced to conclude after several interviews that a) there is no conscious emotional problem, or b) the patient has an emotional problem which he successfully conceals. A knowledge of the patient's type of personality guides the physician when confronted with this problem.

5) Having unearthed the cause of the patient's tension, one may proceed with any of the psychotherapeutic techniques already discussed. Generally one obtains the most satisfaction—a) from the giving of insight; b) social service adjustments; and c) "reassurance and transference psychology". Suggestion and disciplinary management are seldom important components of the therapeutic approach. In selected cases the underlying neurosis may be treated by intensive psychotherapy such as psychoanalysis. This was not tried in the Massachusetts General Hospital series.

VII. SUMMARY

DISCUSSIONS OF THE CLINICAL, experimental, psychiatric, and therapeutic aspects of mucous colitis are included in appropriate sections of the text. The authors have developed the (not original) thesis that mucous colitis is a physiological disorder of the colon brought about through the action of the parasympathetic nervous system. They believe that they have demonstrated that the objective changes in the colon in mucous colitis are all represented by the systemic effect of cholinergic drugs. They frankly recognize that the production of such lesions through the direct stimulation of the sacral outflow of the parasympathetic nervous system has not been accomplished. They believe that certain physiological and pathological states predispose the human organism to develop the localized changes observed in mucous colitis. Such conditions as anthropological habitus, physical training, the presence or absence of infectious disease, allergy, fatigue, and other factors play an important rôle in the development of susceptibility to these changes.

The authors believe that the commonest source of parasympathetic overstimulation in patients with mucous colitis is emotional tension. Emotional tension was obviously present in 92 per cent of the psychogenic cases in the series.

There are certain specific characteristics of the personality which appear to predispose to the development of tension. These characteristics are overconscientiousness, dependence upon the opinions of others and sensitivity. Persons with these characteristics readily become anxious when they experience any threat to their egos and particularly in situations where they feel that their actions may be subject to criticism. In this circumstance they often experience the feeling of guilt. In situations when an injustice is performed by another, such people readily develop extreme degrees of resentment. The injustice so performed, may be immoral only to the morbid eye of the overconscientious patients; yet still resentment results. The three emotions, anxiety, guilt and resentment are those most commonly associated with tension in patients with mucous colitis.

The duration of the tension depends to a certain extent upon the amount of time that the patient spends dwelling upon the problems which evoke the tense emotion. Patients with mucous colitis in many instances are cursed with a rigid, obsessive method of thinking which tends to encourage their constant preoccupation with their problems. This constant preoccupation is presumably responsible for the prolongation of tension and hence for the prolonged action of the parasympathetic system upon the colon. A short period of embarrassment (tension) has been observed to produce a blush within the rectum (*69*). Prolonged tension tends to produce the changes observed in mucous colitis. Leuders (*97*) points out that whereas fear ordinarily excites the activity of the sympathetic system, anger (resentment) more frequently excites the parasympathetic. Although both anxiety and resentment were present in many of the cases, resentment was the form of tension most often encountered, and when both were present, resentment seemed to be more striking.

The personality characteristics of

tension, anxiety, resentment, guilt, sensitivity and rigidity of thought occurred with almost equal frequency in the more and less neurotic groups of patients. The more neurotic patients were not typical of any standard psychiatric diagnostic type, but represented features from the anxious, obsessional and phobic groups. Hysteria was almost never of importance. There was a close association between conscious and emotional tension and the exacerbations of symptoms in the less neurotic patients but this was less striking among the more neurotic ones.

The personality characteristics just reviewed are consistent with tensional states of long duration. It is our thesis that such tensional states lead to chronic stimulation of the autonomic centers and in certain instances to the liberation of acetylcholine in the parasympathetic endings in the colon. Symptoms arise when an unfortunate combination of psychological and physiological events cause morbid functions.

GLOSSARY

ACTIVE AUTIST: A pathological type of character described by Kahn which is characterized by abnormal independence and overevaluation of the ego.

AMBITENDENT: A pathological type of character described by Kahn in which there is an inconsistent mingling of independent and dependent traits or of overevaluation and underevaluation of the ego.

ANXIETY STATE: A state of acute or chronic pathological apprehension accompanied by somatic symptoms.

CHARACTER: In Kahn's structural analysis, that part of the personality which is concerned with evaluation of the ego and with evaluation of forces and obligations outside the personality. It is supposedly that part of the personality which is most greatly influenced by environmental influences.

COLON TYPE: A type of personality described by Alexander and often observed by him in patients with mucous diarrhea. It is superficially characterized by abnormal generosity which is motivated by guilt and an obligation to give.

COMPULSION: An act carried out repeatedly for no conscious reason yet which in its completion relieves a sense of restlessness.

CONSTIPATION TYPE: A type of personality observed by Alexander in persons with constipation. It is characterized by a tendency to receive favors and gifts readily, by the absence of guilt and the absence of a sense of need for giving.

DISSOCIATIVE AND DYSMNESIC STATE: Synonymous with "Hysteria." A psychoneurotic state characterized by immaturity, suggestibility, and the development of gainful symptoms, the motivation of which is presumably unconscious. Hysterical symptoms are usually mediated through the voluntary nervous system.

EGO: The epitome of *self* as opposed to *environment*. In Freud's ideology the rational part of the personality which attempts to reckon with the forces arising in the *id* and the *superego*.

EGOCENTRIC: A pathological character type described by Kahn in which the ego is overevaluated and this overevaluation maintained by dependence upon adulation and prestige.

EGO SEARCHER: A pathological character type described by Kahn in which the ego is underevaluated and so weak that it clings to that of another person for "moral support". It is the extreme of passivity and dependence.

EXPERIENCE: The subjective attitude toward that which the personality encounters.

FRIGIDITY: Consistent absence of orgasm in the female.

GASTRIC TYPE: A personality type described by Alexander in persons with upper gastrointestinal neuroses and peptic ulcers. It is characterized superficially by activity, independence, and efficiency, which are not necessarily of abnormal degree.

GUILT: Remorse.

HYSTERIA: *See dissociative and dysmnesic state.*

ID: In Freud's ideology that part of the personality which has to do with instinctual impulses.

IMPOTENCE: Inability on the part of the male to carry out the normal heterosexual love act.

IMPULSE: In Kahn's ideology that part of the personality which has to do with energy output and instinctual impulses.

INFERIORITY COMPLEX: In Adler's terminology, a chronic sense of inferiority supposedly arising out of a thwarted will-to-power.

JUSTIFIED RESENTMENT: A sense of resentment arising from the normal response to an antagonistic environment.

MUCOUS COLITIS: A term conventionally applied to the group of symptoms arising from an irritated and irritable colon.

OBSESSION: A thought persisting in the mind of a subject, with his full realization that it is abnormal and in spite of his efforts to rid himself of it.

OBSESSIVE THINKING: Synonymous with *obsession* (Henderson and Gillespie). Rigidity of thought, which may or may not be abnormal, and the inflexible nature of which may or may not be recognized by the sufferer (Barrett). In this communication it is used in Barrett's sense.

PHOBIA: A sense of abnormal fear arising in some specific environmental situation not objectively terrifying in itself.

PREOCCUPATION: Continual reflection upon one topic or group of topics, to the exclusion of environmental interests, and to the detriment of useful activity.

PROJECTION: The psychological process of placing at the door of another the responsibility for one's own inadequacies.

PSYCHOPATHIC DEPRESSION: (Neurotic Depression.) Depressive tendencies arising within the personality, as the result of certain inadequacies therein, not justified by major environmental catastrophe, and not related to the manic-depressive psychosis.

REACTIVE DEPRESSION: Depression arising in normal or psychopathic individuals as the direct result of a major environmental misfortune.

RUMINATION: The process of dwelling upon and redigesting past experiences.

SECONDARY GAIN: The objective profit derived from neurotic symptoms.

TEMPERAMENT: In Kahn's structural analysis, that part of the personality which deals primarily with affect.

SUPEREGO: Conscience. In Freud's ideology that part of the personality, conscious and unconscious, which encompasses inhibitory or repressive impulses.

UNJUSTIFIED RESENTMENT: Resentment of a neurotic nature, not fully justified on the basis of objective experience.

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