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Contributors

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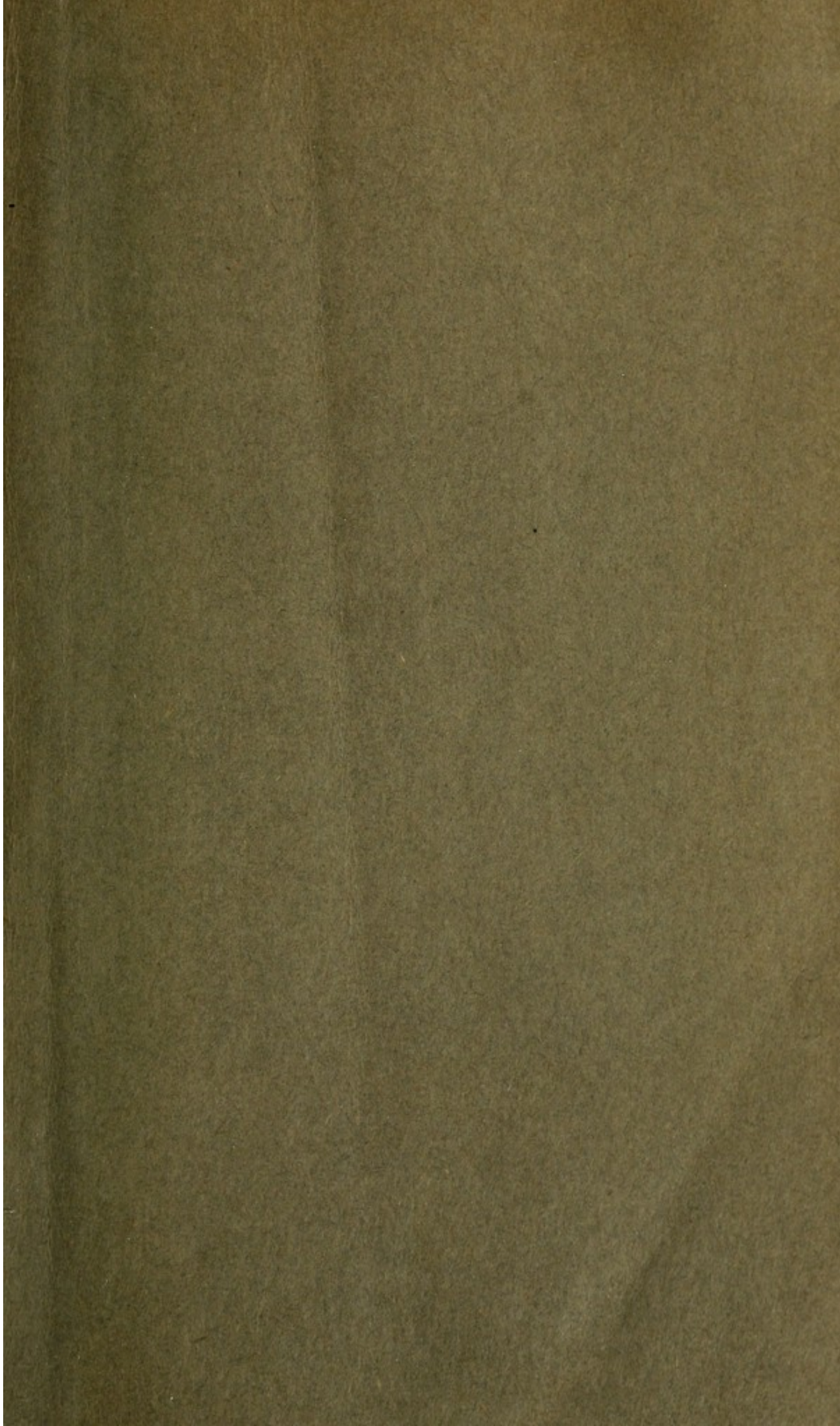
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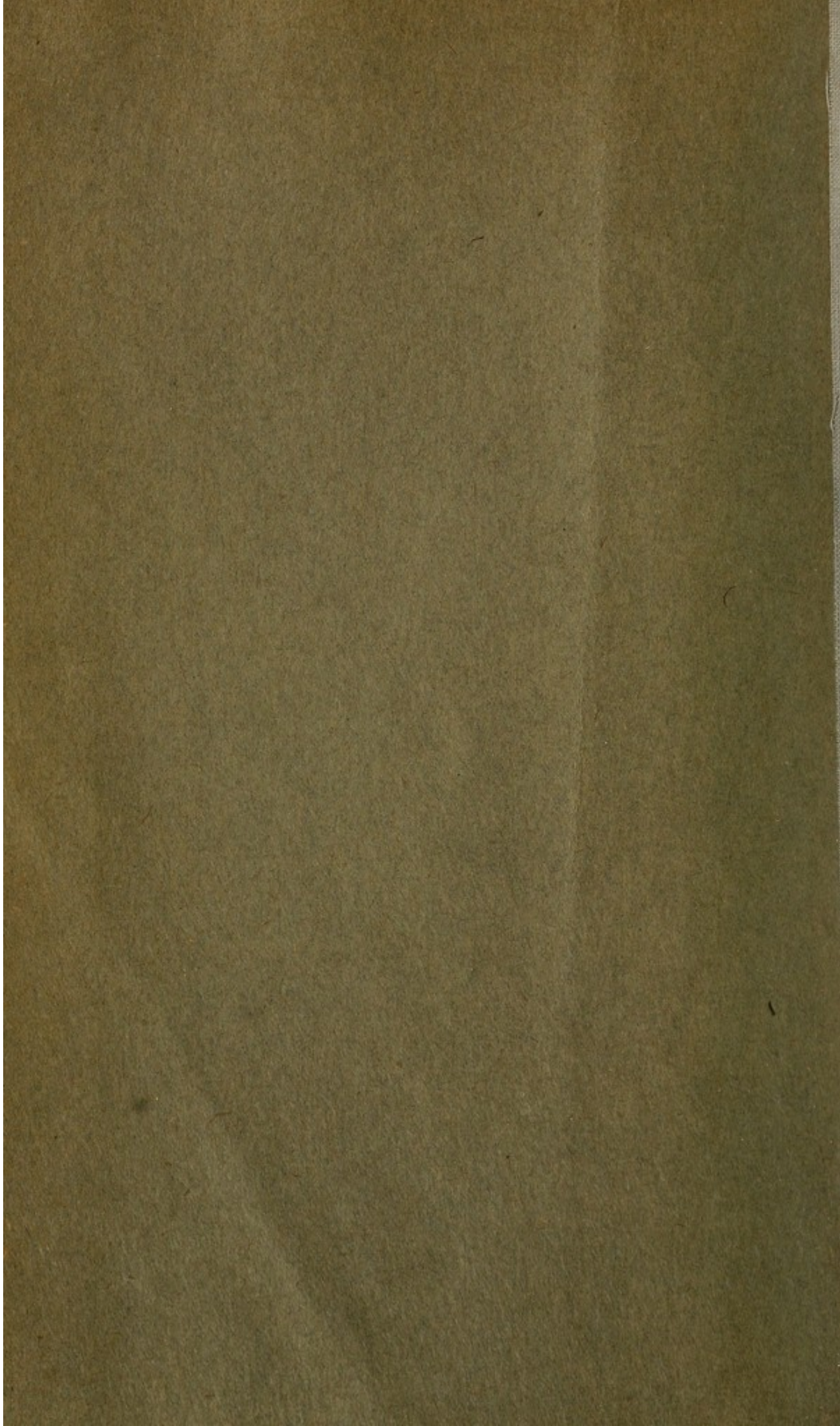
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CASE HISTORIES

IN

MEDICINE

ILLUSTRATING THE DIAGNOSIS, PROGNOSIS AND
TREATMENT OF DISEASE

BY
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Assistant Professor of Clinical Medicine,
Harvard Medical School

Second Edition, Revised and Enlarged



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PREFACE.

ALTHOUGH the first edition of this book, printed without answers to the questions, was for undergraduate use only, the accompanying teachers' edition, which contained answers and discussion, proved of interest and use to practitioners. I have therefore planned the present edition with practitioners primarily in mind.

To present medicine in terms that will *make the reader work* — to present puzzles like those which confront us at the bedside, and then to offer at the end of each case my own solution of these puzzles — is the plan pursued in this as in the last edition. We learn, I believe, only by that which makes us work, not by any attempt to present a truth as a free gift.


In the present edition I am less limited as to space and have therefore gone into the details of *prognosis and treatment* — what the patient and his family want — more thoroughly.

I have changed the order of the cases, collecting in one group those dealing with the heart, in another those concerning the lungs, etc. I have also added a number of cases, bringing the total number up to one hundred.

Medical teachers are often charged with nihilism in therapeutics. To refute this accusation I have added in this edition a list of the drugs which actually are used by the internists (most of them teachers) attached to the Massachusetts General Hospital — a list very similar, I think, to that used by most others who are popularly supposed to scorn drugs altogether.

I hope that in this edition, as in the last, I shall be aided by the frank criticism of those who differ from my diagnoses, my prognoses, or my therapeutics.

190 MARLBOROUGH STREET, November, 1911.



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TABLE OF CONTENTS.

CHAPTER I.

INFECTIOUS DISEASES.

CASE No.		PAGE
1.	Typhoid Fever	11
2.	Pneumonia	15
3.	Tuberculous Peritonitis	18
4.	Typhoid Fever	19
5.	Phthisis; Typhoid; Tuberculous Enteritis.	21
6.	Phthisis; Perforated Gastric Ulcer	27
7.	Streptococcus Sepsis	34
8.	Urinary Sepsis	36
9.	General Miliary Tuberculosis	39
10.	Syphilitic Aortitis	41
11.	Tuberculous Meningitis; Generalized Tuberculosis	43
12.	Amœbic Abscess of Liver	46
13.	Tuberculous Meningitis	48
14.	Cerebral Syphilis	51
15.	Phthisis	54
16.	Cerebral Syphilis	56
17.	Alcoholism; Syphilis	58
18.	Malignant Endocarditis	63
19.	Empyema	66
20.	Malignant Endocarditis	68
21.	Left Femoral Phlebitis; Pulmonary Embolism	70
22.	Appendicitis; General Peritonitis	72
23.	General Peritonitis	76
24.	Ludwig's Angina (Deep Cervical Abscess)	78
25.	Suppuration in a Uterine Fibroid	81
26.	Empyema — Rupturing into a Bronchus	83
27.	Epidemic Cerebrospinal Meningitis	86
28.	Chicken-pox	89
29.	Trichiniasis	91
30.	Tertian Malaria	94

CHAPTER II.

DISEASES OF GASTRO-INTESTINAL AND BILIARY TRACT.

31.	Hepatic Cancer; Gastric Cancer	97
32.	Gastric Cancer	100
33.	Gastric Cancer	102
34.	Acute Gastro-enteritis; Fear of Appendicitis	104
35.	Cancer of the Hepatic Flexure of the Colon	106

CASE NO.	PAGE
36. Cancer of the Splenic Flexure of the Colon	109
37. Cancer of the Duodenal Papilla	111
38. Cirrhotic Liver; Hæmorrhage from Œsophageal Varices	113
39. Gall-stones	116
40. Fatty Cirrhotic Liver	119
41. Perforative Cholecystitis	121
42. Cancer of the Pancreas	123
43. Catarrhal Jaundice	125
44. Duodenal Ulcer	127
45. Gastric Ulcer, Perforation	129
46. Overeating	131
47. Gastric Ulcer, Perforation	133
48. Gastric Ulcer, Contracted Stomach	135
49. Fecal Impaction	137
50. Apprehension, Constipation	139

CHAPTER III.

DISEASES OF THE URINARY TRACT.

51. Irritable Prostate	143
52. Uræmia, Chronic Glomerulo-Nephritis	145
53. Chronic Interstitial Nephritis; Cardiac Hypertrophy and Dilatation	149
54. Hypernephroma	151
55. Amyloid Kidney	153
56. Congenital Cystic Kidney; Arteriosclerosis	156
57. Hypernephroma	158

CHAPTER IV.

DISEASES OF THE CIRCULATION.

58. Functional Heart, after Typhoid	160
59. Myocarditis; Weakness; Acute Dilatation of Heart; Pulmonary Œdema	163
60. Myocardial Weakness; Arteriosclerosis	165
61. Mitral Stenosis; Cerebral Embolism	169
62. Arteriosclerosis, Cerebral Hæmorrhage	171
63. Athlete's Heart	174
64. Stokes-Adams Syndrome; Coronary Sclerosis	177
65. Angina Pectoris; Coronary Sclerosis; General Arteriosclerosis	180
66. Aortic Aneurism	183

CHAPTER V.

RESPIRATORY SYSTEM.

67. Pneumohydrothorax	185
68. Malignant Disease of the Lung	187
69. Cancer of the Lung	189
70. Tracheitis; Bronchial Asthma	191

CHAPTER VI.

THE NERVOUS SYSTEM.

CASE No.	PAGE
71. Cerebral Arteriosclerosis	193
72. Tabes Dorsalis; Gastric Crisis	196
73. Lead Neuritis	199
74. Tabes Dorsalis; Gastric Crisis	202
75. Alcoholism; Alcoholic Mania and Neuritis	204
76. Neuritis	207
77. Starvation; Neurotic Vomiting	209
78. Dynamic Aorta	212
79. Traumatic Neurosis	214
80. Functional Tachycardia	217
81. Arteriosclerosis (Shock)	221
82. Hysteria	223
83. Brain Tumor	227
84. Apprehension	230
85. Eyestrain; Maternal Anxiety; Urinal-Hyperacidity	232
86. Neurasthenia	234

CHAPTER VII.

DISEASES OF LYMPHATIC AND DUCTLESS GLANDS.

87. Myxœdema	236
88. Myxœdema	238
89. Sarcoma of the Prævertebral Glands.	240
90. Grave's Disease	242
91. Diabetes Mellitus	246
92. Inguinal Neoplasm	251
93. Malignant Disease of the Thymus Gland	253
94. Atrophic Arthritis	255

CHAPTER VIII.

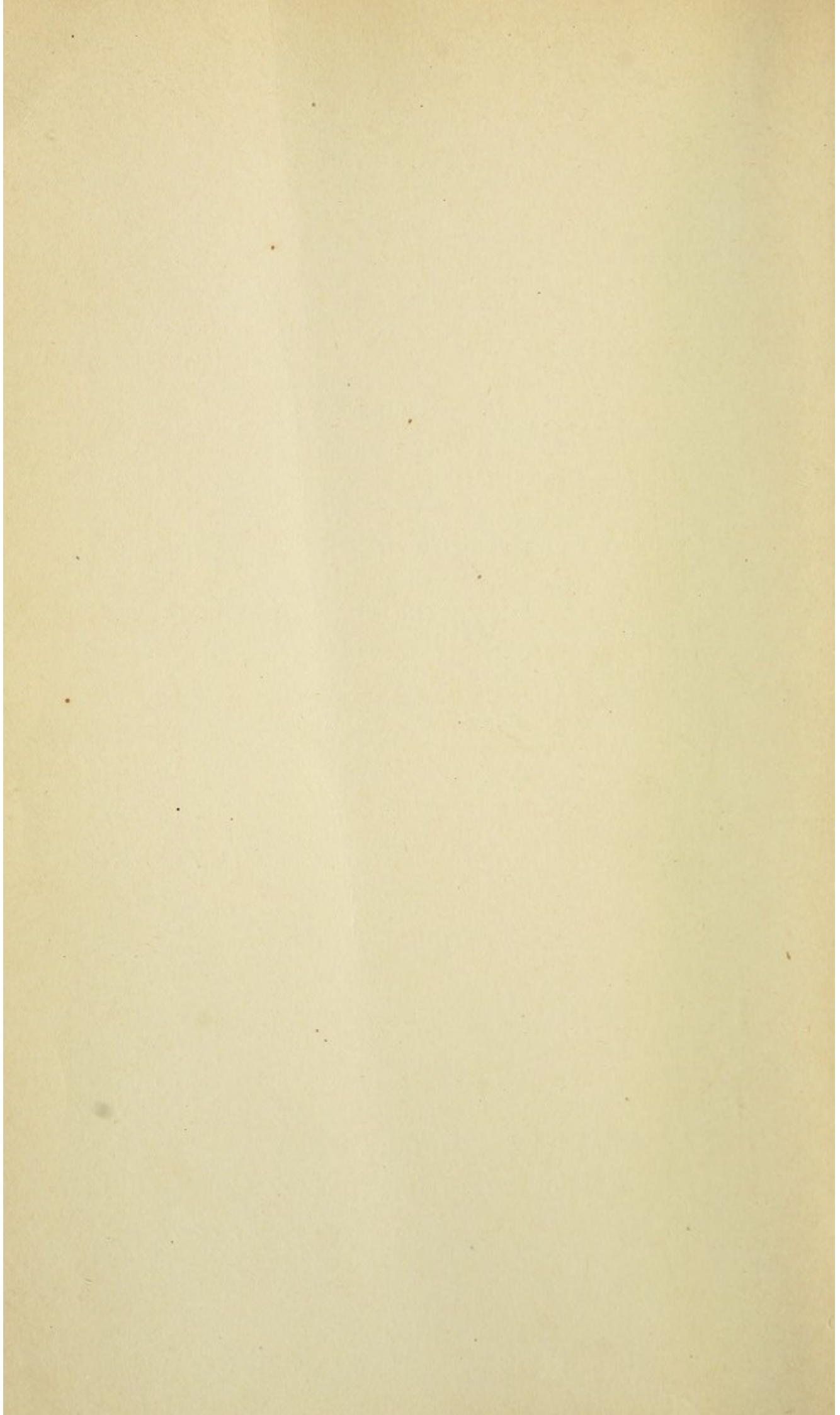
DISEASES OF UNKNOWN ORIGIN.

95. Secondary Anæmia; Cachectic Purpura	257
96. Pernicious Anæmia	261
97. Albuminuria of Adolescence	265
98. Aplastic Anæmia	267
99. Pernicious Anæmia	269
100. Lymphoid Leucæmia	271

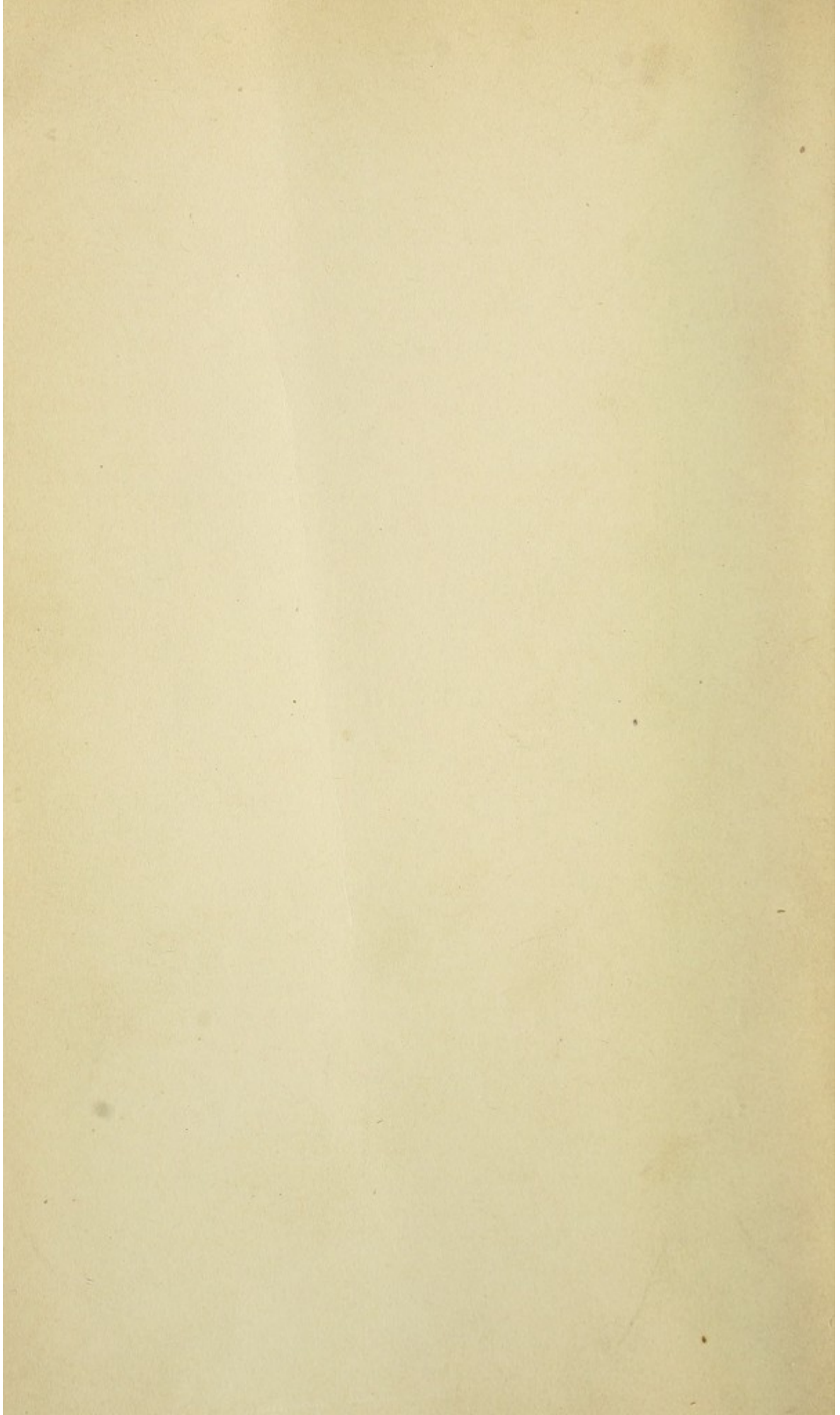
CHAPTER IX.

NOTES ON DRUG THERAPY.

.	274
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CASE HISTORIES
IN
MEDICINE.



CHAPTER I.

INFECTIOUS DISEASES.

Case 1. A broker of twenty-six, moderately alcoholic, but with no venereal history. Has always been well. Been under a surgeon's care for last three days for "grippe" and taken whiskey and ammonol. On the third day, Saturday, he took two whiskies and went to ride. The horse shied and threw him. His head struck on a rock, just above and in front of the right parietal eminence. Coma for ten minutes; after being carried home he vomited and complained of pain in the occiput and numbness of the right hand. Temperature 104° , the pulse 90. Next morning it was 103° ; next evening, 103.8° . Monday it was 102° , pulse 85. The bowels have not moved. Patient has regained consciousness, but is still dazed. There is no evidence of fracture or suppuration anywhere, but there is numbness along the ulnar side of the right hand.

Seen Tuesday; very bright, sat up strongly in bed to shake hands. Laughed and talked, wanted to get up, but temperature still 102° .

1. What are the objections to giving ammonol in this case?
It is a nostrum.
2. What should you expect to find in this patient's urine?
High color and specific gravity, small amount, albumen a trace, a few hyaline and granular casts.
3. What facts justify the statement: "There is no evidence of suppuration anywhere"? That the classical signs of inflammation (redness, heat, swelling, tenderness and pain) are absent; that leucocytosis is absent.

Diagnosis: The coma, the occipital pain later on, the vomiting, and numbness along the ulnar side of the right hand, suggest intracranial trauma; but we note that the peripheral numbness is on the same side as the (supposed) brain injury. By *contrecoup* it is possible to injure the left side of the brain, but hardly possible to injure the cortical area corresponding

to the small patch of peripheral anesthesia. The absence of lasting coma, paralysis, or obvious injury to the skull make brain injury unlikely; but injury to the exposed ulnar nerve is natural in such an accident. Fever due to the "shaking up" of the accident would be unlikely to reach 102° four days after. "Grippe" should show local lesions (of the respiratory tract or elsewhere), and rarely causes a fever reaching 102° on the seventh day. This continued fever, without obvious local lesions, should naturally suggest (as it did here) a Widal test. This proved positive, and the patient went through an attack of typhoid typical except for the absence of cerebral symptoms or marked prostration.

Prognosis: The younger the patient the better the prognosis in typhoid, other things being equal. Children, for example, almost never die of it. At the age of this patient, the general mortality under first-rate conditions of treatment is about six per cent; in hospital cases, including all ages, the mortality averages about ten per cent. The favorable influences in the present case are as follows:

1. He has been put to bed and treatment instituted early in the course of the disease. He has not used up his strength by performing as a "walking typhoid."
2. There is no evidence of any complication such as kidney trouble, obesity, arteriosclerosis, or any of the influences which make people unusually vulnerable. So far also we see none of the acute inflammatory complications such as otitis media, parotitis, or phlebitis, but these may make their appearance later on.
3. The patient is quite free from the evidences of intense toxemia such as are often seen at this period of the disease. There is no mental dullness, no twitching of muscles or tendons, no special rapidity or dicrotism of the pulse, no abdominal distention, no delirium.
4. The only untoward element in the prognosis, then, is his addiction to alcohol. If this is a chronic and serious habit, it may prove a genuine handicap in his struggle against infection.

Treatment: Of course the patient must be kept in bed despite his desire to get up. Except for a few enthusiasts in Philadelphia, it seems to be universally agreed that confinement to bed during the febrile period is best in cases of

typhoid fever. It seems to be unnecessary, however, to insist that the patient shall never raise his head. There is no harm in his sitting up now and then for examination or for other purposes, provided no strenuous muscular exercise is involved.

The diet in typhoid is now rarely as disagreeable for the patient as it used to be fifteen years ago. Very few physicians adhere rigorously to the old-fashioned milk diet which undoubtedly produced bulky stools and might well be supposed to cause as much local irritation in the intestine as any diet that could be selected. The important principle in the diet of typhoid, as of any long-continued fever, is to avoid substances that call for hard work in mastication, and also to keep clear of anything which is specially difficult of digestion. In other words, we feed the patient according to his digestive power, avoiding anything that is difficult to chew. This plan has now been successfully followed in the wards of the Massachusetts General Hospital since it was put in operation, more than ten years ago, by Dr. Frederick C. Shattuck. Patients are allowed soft toast, soft boiled eggs, any form of soup or broth, finely chopped meat, the soft part of baked apple, ice cream, custard, blanc mange, and other foods of similar consistency. They are fed six times a day and once or twice in the night, depending upon the amount of sleep.

High
put
diet

Bathing in typhoid is also far less uncomfortable and rigorous in the hands of most clinicians to-day than it used to be, for we have got over the delusion that reduction of temperature is our chief goal. A bath may do a world of good to a patient without reducing his temperature at all, because it may and often does allay his nervous restlessness, procure quiet sleep, improve his appetite, and help to get his skin in good condition. The best rule, it seems to me, is to give a bath at about 85° F. once in four hours whenever the temperature is above 102.5. Such a bath should be accompanied by a constant friction of the skin and should last from ten to twenty minutes, depending upon the quality of the patient's reaction to it. If he gets blue and cold at any time, the bath should be stopped. It can be given in bed if a large rubber sheet is put under the patient and then its four free edges raised so as to make a shallow cup into which water can be poured.

The prevention of bedsores is best accomplished by absolute cleanliness of the skin, a smooth, tight under sheet, frequently changed, and especially by seeing to it that the patient never remains for more than two hours in any single position such as brings pressure upon the sacrum, the shoulder blades, the hip bones, ankles, or heels.

I believe that something can be done to prevent otitis media and parotitis, as well as to increase the patient's comfort, by washing out the mouth and pharynx with any simple spray such as diluted Dobell's solution. The use of strong antiseptics is unnecessary. Such a cleansing spray should be used at least once in four hours, and the accumulations of sordes about the teeth can at the same time be removed with a cotton stick.

In the great majority of cases the bowels have to be moved artificially. An enema of suds every second day is the best way to accomplish this. Even with this we sometimes have a troublesome impaction of the rectum in the latter weeks of the disease. Cathartics are quite unnecessary and sometimes harmful.

Abdominal distention is to be combated by the use of the rectal tube and by hot carminative applications such as turpentine stupes.

Personally, I have never seen any good come of the use of alcohol in typhoid fever, except in patients who were unable to take other food in any considerable quantity. To make up such a deficiency of nutrition, alcohol may have considerable value. For the circulatory weakness it is, I believe, useless. The most valuable drug for sustaining the circulation is, I believe, strychnia given subcutaneously in doses of about 1-40 gr. every four to eight hours in an adult.

Case 2. A clerk, married, twenty-four, is seen Jan. 5. His family and previous history and habits are good. He went to bed the night of the 3d in his usual health and slept well. On rising in the morning he had a severe chill, but went to business. After an hour or two he was obliged to return home, feeling very weak and aching all over. He took to his bed, raised some bloody sputum, had some nosebleed, and passed urine freely without pain, but containing much fresh blood.

When seen he did not look very ill; pulse 100, respiration 24, temperature 103.6°. He complained of no pain. Physical examination was negative, except for slight dullness with feeble respiration and fine râles over the left posterior base of the chest.

There were several discrete, viscid, tawny sputa in a cup. The urine was smoky, 1014, with a very large trace of albumen, urea 1.64%.

The sediment contained considerable normal and abnormal blood, rather numerous epithelial casts of large diameter, one disintegrated blood cast; one or two large, fine granular casts.

1. What diseases are apt to have such an onset? Meningitis, influenza, septicemia, tonsillitis and pneumonia.
2. What diagnostic data are wanting? The twenty-four-hour amount of urine, microscopic examination of the sputum and of the blood.
3. What conclusions can be drawn from the percentage of urea? No conclusions of any importance, unless the quantity and quality of the patient's diet is known and controlled, unless we know the twenty-four-hour amount of urine, and unless we can exclude such influences as vomiting and diarrhea. Obviously, these conditions are not often possible.

Diagnosis: The clinical picture is that of an infectious fever with signs pointing especially to the left lung and to the kidneys. Tuberculosis and pneumonia are especially to be considered. As the hemoptysis preceded the nosebleed, it is not likely that all the blood came from the nose. The position of the pulmonary signs and the suddenness of onset, with chill and general pains, are much more characteristic of pneumonia than of tuberculosis. The absence of pain on the second day is unusual in pneumonia, but by no means unknown. The

physical signs are not those of solidification, but are, nevertheless, just such as are often seen in the early stages of pneumonia. They are also consistent, however, with tuberculosis, and only by the course of the case and by repeated examinations of the sputum can tuberculosis be excluded. If leucocytosis were present it would favor the diagnosis of pneumonia as against tuberculous hemoptysis, but in tuberculosis pneumonia leucocytosis also occurs.

Hematuria without pain and with so large a number of casts points to acute nephritis. Such an urine is decidedly characteristic of pneumococcus infections and tends to support the diagnosis of pneumonia as against tuberculosis.

Prognosis: To our shame we must admit that the mortality from pneumonia is about the same as it was half a century ago, namely from 15 to 25% in healthy young people, and from 25 to 90% in the alcoholic or the aged. I will mention here some influences which make the prognosis worse in any given case.

1. The presence of any complication such as nephritis, acute or chronic, delirium tremens, arteriosclerosis, diabetes or the post-operative state.
2. Any evidence of extreme toxemia, such as abdominal extension, delirium or stupor, unusual acceleration of the pulse or respiration, grave disturbance of digestion.
3. The occurrence of thoracic pain so severe as to require morphia.
4. The involvement of more than two lobes. This latter condition is serious not because of the diminution of respiratory area, but because it usually indicates an unusually severe general infection of the whole body by the invading organism.
5. As has already been suggested, the presence of alcoholism or old age is a serious handicap to any patient in pneumonia.

Treatment: 1. Many, perhaps most, patients are more comfortable in the upright or semi-upright position, and it is important to arrange a bed-rest and a foot-brace or other support so that the patient will not perpetually be sliding down from his bed-rest and suffering from the resulting position and from his attempts to raise himself.

2. As in typhoid fever, the diet should be planned according to the patient's digestive power, avoiding such substances as need much chewing. Some patients will eat almost everything that they are accustomed to take in health, and be the better for it. Others will refuse everything but liquids, and take but little of these. In any case, food should be offered to the patient at least once in three hours, and an abundance of water should be given him with the least possible exertion on his part. The exercise necessary to procure a movement of the bowels is sometimes precarious for a patient suffering from pneumonia. All that we can do is to diminish such exertion by every means in our power. In some patients the objection to the use of a bedpan is so strong that it is actually easier for them if they are allowed to get out of bed and use a commode placed close at hand. By laxatives, such as artificial Carlsbad salts or sodium phosphate perhaps supplemented by a small enema, we may prevent the patient from having to strain at stool.

3. Pain in the chest is often relieved and sometimes altogether abolished by the use of a tight chest swathe, which should reach from the armpit to the waist line, and should be put on so tight that at first the patient complains of it. It should be loosened in case he still finds it uncomfortable in fifteen minutes.

4. Fresh cold air, such as can be obtained by putting the patient close to an open window or actually out of doors, is of great benefit. We must be careful, of course, that the surface of the body is not chilled, but with good nursing this is easily arranged. I have never seen any benefit from oxygen given from a can. The only drugs that I have seen of benefit are strychnia and morphia. Strychnia is most useful when reserved until the pulse rises above 120, or until it becomes irregular. It is far more effective given subcutaneously, beginning with the fortieth of a grain every four hours, and increasing to a thirtieth or even a twentieth. Morphia is to be used only when pain is such as to render it imperative. It is best given subcutaneously in $\frac{1}{4}$ gr. doses, and accompanied by 1-120 of atropia.

Case 3. Young salesman, always well till present illness. Family history good. Worked hard last winter and worried. Frequent headaches, indigestion, insomnia. Feeling poorly for several weeks, especially at end of day, but has worked until week ago; since then, on sofa and in bed. Chief complaints, weakness and pain in left chest. Two chills this week; slight, dry cough; no nosebleed. Bowels constipated and appetite poor.

Physical examination: Fairly nourished, tongue coated, expression bright, no enlarged glands. Heart shows musical systolic murmur at apex, heard in axilla and back; action slightly irregular; no enlargement. Pulmonic second sound normal. Lungs negative, except over seat of pain in side, where was heard a harsh sound synchronous with respiration for a few breaths and then not heard again. Abdomen shows dullness in both flanks, which, however, shows but little shift with change of position. Liver dullness from sixth rib to rib-margin. The spleen is not palpable, splenic area tympanitic, knee jerks lively. Temperature, 99-102°, swinging up in the afternoon. Pulse, 100-110. No sputa. Urine negative.

Blood examination: Reds, 3,200,000; whites, 4,000; Hb., 40%.

1. When a patient's chief complaint is weakness, what diagnoses should be considered? Anemia, bad hygiene, typhoid, nephritis, endocarditis, myxedema, tuberculosis.
2. Name five common causes of pain in the left axilla. Dyspepsia, pleurisy ("simple," pneumonic, tuberculous), intercostal neuralgia, muscular pain, hypertrophic spondylitis.
3. How should the cardiac murmur be interpreted in this case? Musical murmurs, widely transmitted, usually mean endocarditis (acute or chronic), but in the absence of any demonstrable cardiac enlargement or accentuation of the pulmonic second sound, the murmur may possibly be "functional." Suspend judgment.
4. What adventitious thoracic sounds are most likely to be fugitive, as in this case? Râles, especially musical râles, friction sounds, pleural or pericardial.
5. Significance of the leucocyte count in this case? It makes

septic endocarditis or any other form of sepsis very unlikely.

6. General significance of normal or subnormal leucocyte counts? Their presence in typhoid and malaria makes them very valuable in cases where either of these diagnoses is being balanced against a possible pneumonia, meningitis, or septicæmia. Primary anæmias have normal or subnormal leucocyte counts; *some* secondary anæmias show leucocytosis. Most cases of abscess (appendix, liver, etc.) raise the leucocyte count. Most cases of cancer and uncomplicated tuberculosis do not.

Diagnosis: Continued fever with chills, anæmia, signs suggesting endocarditis and dry pleurisy, possibly fluid in the peritoneum, and a low leucocyte count are the essentials of this case. Typhoid, malignant endocarditis (with or without a primary focus elsewhere), malaria, and tuberculosis (pleural, peritoneal) are especially to be considered. The question of malaria can be settled by blood examination. Neither malaria nor typhoid will account for the physical signs in the chest or abdomen. The Widal reaction should be tried. Against septic endocarditis is the leucocyte count and the absence of embolic phenomena. Blood cultures should be made. In favor of tuberculosis are the physical signs (apparently) of dry pleurisy and of fluid in the belly (perhaps prevented by adhesions from shifting). This diagnosis was further supported by the negative blood cultures, the absence of a Widal reaction, and of malarial parasites. Operation showed it to be correct.

Prognosis: About half of the *recognized* cases recover, some with, some without operation. A large number of others probably recover without ever being diagnosed. Such, at any rate, is the suggestion of many post mortem examinations.

Features which make the prognosis worse than the average are as follows:

- (1) Steady fever not improved by a rest in bed.
- (2) Marked emaciation and lack of appetite.
- (3) Intractable diarrhœa.
- (4) Marked anæmia.
- (5) The demonstrable presence of tuberculosis elsewhere.

Treatment: No one is wise enough to-day to decide whether medical or surgical treatment gives the patient the better chance. Many cases have recovered under either method. As a rule the worst cases receive surgical treatment while the milder ones receive only hygienic and tonic treatment. This makes all comparison and statistics unreliable.

Hygienic measures should be tried first. Under rest in bed and forced feeding, the fever and other constitutional symptoms may abate and the fluid disappear. The latter change is favored, however, in some cases by tapping.

The measures just suggested are more effective if the patient can be put outdoors and treated exactly like a case of phthisis. Drugs and local applications have, in my creed, no value if we leave out of account such appetizers as gentian and nux vomica.

I think that in all cases the abdomen should be tapped when fluid is known to be present.

If, after five or six weeks of this kind of treatment, no improvement is noted, laparotomy may be advised, but this, too, should be followed up by outdoor life and all the hygienic measures ordinarily associated with the care of consumption.

Case 4. February 16 a lady of thirty, married eight years, is seen in consultation. She has had four children, the youngest four months old. After her second confinement had puerperal septicæmia. The catheter was used and cystitis apparently followed, as the bladder was irrigated. Vesical symptoms were troublesome after this, and five separate times she underwent prolonged treatment under an eminent gynecologist. Finally, discouraged by the persistence of her symptoms, she resorted to "mind cure," with marked relief. Her last confinement was easy, but was followed by a return of vesical symptoms. For the last six weeks she has suffered from indigestion and has had frequent watery stools, preceded by abdominal pain. January 23 she came to Boston, and, acting on the advice of her "mind cure" friend, shopped, went to the theater, and was generally very active. During this treatment she ate scarcely anything, and at the end of five days returned home. The next day vomiting appeared, and by February 1 the stomach retained nothing. The vomiting ceased within two days and has not since recurred. The bowels have continued loose, moving two to five times daily without notable pain. For two weeks there has been some cough, with little or no expectoration. Since February 1, pyrexia has been constant, — as a rule, higher at night, though sometimes higher in the morning, ranging between 101° and 104° . The pulse has ranged between 110 and 140. No delirium.

The hands are clammy, the color of the face good, the eye bright, the mind clear, the knee-jerks lively. The chest and abdomen are negative, except for medium râles at both bases and moderate tenderness along the colon. The urine is said to be negative. It is stated that she is a very reticent person and has never been known to be hysterical.

Diagnosis: The patient has been well for four years. Hence there is no reason for connecting the puerperal sepsis or cystitis with the present symptoms. She suffers now from continued fever (which has lasted certainly sixteen days and probably more), diarrhœa, with slight general abdominal tenderness and dry cough (with râles at both bases). The condition of the blood is unknown. In New England there are

three common causes of long-continued fever: general sepsis (including septic endocarditis), tuberculosis, and typhoid; less common are syphilis and æstivo-autumnal malaria. The month and the place make malaria unlikely. (Blood examination ruled it out.) Syphilis should show some lesions, with or without a history of its origin. Such lesions and history were absent here. There were no local signs of tuberculosis or of a septic focus, but as either of these diseases may exist without local signs the most important evidence in this case should be sought in the blood. This showed a Widal reaction and no leucocytosis. The subsequent course was that of typhoid, without the classical mental dulness.

Prognosis and Treatment (see above, Case I.)

Case 5. A manufacturer, thirty-five years old, is seen May 28. His father and sister died of phthisis, otherwise the family history is negative. While never strong he has been able successfully to attend to a large and exacting business. Three years ago he suffered from æstivo-autumnal malaria. Since then he has been treated several times for malaria. Last December he began to feel run down, but kept at work until the latter part of March, when he went South to recuperate and remained there two weeks. His appetite and strength improved, but on his return, April 8, after an elaborate dinner, he complained of nausea and flatulency and felt feverish. He went to bed where he has since remained. He has vomited occasionally, and has had a half dozen loose movements a day, nearly black in color, probably the result of bismuth which he has taken frequently. During the last three days he has noticed a slight dry cough. The temperature chart shows a wavelike curve. Every nine or ten days the morning temperature is normal, where it remains for from one to four days. It then gradually rises for four or five days to 102° or 103° , and as gradually falls. The evening record follows the morning curve closely, but has rarely gone below 100° . The temperature is always higher at night, and often during the periods of morning apyrexia rises as high as 103° . He has lost greatly in strength and flesh.

Physical examination shows a man much emaciated and weak. Sensorium free. Both cheeks are slightly flushed. There is dulness over the left front down to the third rib and in the left supraspinous region, with bronchovesicular respiration, increased voice sounds, and numerous high-pitched, moist râles at the end of inspiration. The heart sounds are normal. The hard, smooth edge of the spleen is felt two inches below the ribs. The liver is normal. The abdomen is distended, tympanitic, somewhat tender everywhere, especially in the right iliac fossa. Pulse 112, weak and thready. Respiration 24. Leucocytes 12,000. Widal reaction positive in dilution 1-60, but not higher. Blood culture shows no growth. Examination of the stools showed bacillus of tuberculosis, *B. typhosus*, *B. coli communis*, streptococcus pyogenes, staph-

ylcoccus pyogenes albus. Urine 1018, acid, slight trace of albumin, a few hyalin and fine granular casts, amount 60 ounces.

1. How can the lung signs be explained in view of the fact that there has been but three days' cough and no sputa? Acute phthisis may produce no cough or sputa; the same is true of pneumonia, but the picture is more like phthisis.
2. Would further tests help the diagnosis? No; the data given are sufficient.
3. How do you interpret the Widal reaction in this case? As evidence of typhoid.

Diagnosis: Tuberculosis and typhoid are proved by the data in the stools.

Prognosis: The prognosis and treatment of typhoid fever, one of the two maladies from which this patient is suffering, have already been given in the discussion of Case 1. I will discuss here the prognosis and treatment of phthisis.

The outlook depends above all upon the patient's temperament — that is, upon the amount of courage and patience which he can muster in response to the call for a long, disappointing, and most tedious illness. It is almost useless to undertake the costly and intricate campaign by which alone a patient may be saved, unless the patient possesses or can be easily roused to manifest a spirit of determination, docility, and perseverance.

Next to the patient's character, his income is the most important factor in relation to his recovery. Taking it by and large, consumption is curable in the rich, incurable in the poor, while in the moderately well-to-do the chances are proportionately intermediate. Each of the essentials of treatment is costly. Neither rest, fresh air, nor food can be had without considerable expense, and the convalescence is almost as expensive as the acuter phases of the disease.

Next to character and income the most important determining factor is the family history. If a parent or near relative has shown great capacity to resist the disease and to transform it into the chronic so-called "old-fashioned" type of consumption, there is some ground for expecting that the

patient will show the same qualities which under the title of "diathesis" or "constitution" have long been recognized as of great importance.

The amount of lung involved is, if other conditions are equal, a very fair measure of the severity of the case. Nevertheless there are persons whose powers of resistance are such that despite an extensive involvement of both lungs they get along much better than many so-called incipient cases. Even some of the third-stage cases make complete and lasting recoveries, while some of the incipient ones cannot be checked.

More important in prognosis is the severity or mildness of constitutional symptoms indicating the amount of secondary infection by pyogenic organisms. Rapid pulse, high fever, quick respiration, sweating during sleep, emaciation, dilated pupils are among the most threatening and unfavorable of all the signs of phthisis. Even a rapid pulse without any of the others of this group is a bad prognostic sign.

The larger the amount of sputum and the more numerous the bacilli contained in it, the worse the outlook.

The condition of the patient's digestion before the onset of the disease, his liability to, or freedom from digestive troubles, the reliability of his appetite and presence or absence of a finicky disposition in relation to certain staple foods, such as milk, eggs, bread, or meat, are important factors as regards that maintenance of nutrition which is an absolute essential for successful treatment.

Pulmonary hæmorrhage, occurring early in the course of the disease, seems to me to have very little prognostic significance. This may also be true of hæmorrhage occurring later in the development of the malady, but one not infrequently finds that hæmorrhage in an advanced case leads straight to acute tuberculous pneumonia, and so to a fatal termination. Patients practically never die from loss of blood, and this fact is one which should always be made known to them, as it has great power to reassure.

Finally, I may mention the obviously grave significance of foci of tuberculosis in other parts of the body such as the genito-urinary tract or the bones. A complication with

laryngeal tuberculosis renders phthisis almost invariably fatal. Nevertheless there are exceptions to this rule.

Treatment: Everyone knows that the essentials for the consumptive are food, rest, and fresh air. Our problem is to furnish these in the most available form.

The patient should be told at the start that he will be unable to work for at least a year and that this period may very likely be prolonged to two, three, or even more years. He should further be made to understand that he is struggling with a life-long foe against whom he has need of eternal vigilance. Hygienic indiscretions such as the sound man can commit with impunity, may at any time be followed in the tuberculous patient by the return of all his old symptoms. There is no such thing as cure, in the sense that a broken leg may be cured. The disease tends perpetually and in all cases toward relapse, and it is only by watchful care and ideal hygienic habits that this tendency can be kept in check.

The general public and a considerable number of physicians have never learned that the fresh air, so essential to a tuberculous patient, should be obtained without exercise. Exercise is bad for the tuberculous patient throughout the larger portion of his disease, and especially in the earlier stages of treatment. Absolute rest in the open air is what we want and it must be confessed that it is a very hard thing to get. "Cot duty," the laborious wasting of one's time upon a cot or in a steamer chair outdoors, is the task to which we must strive to accustom our patients. Only a few minutes each day should be spent within the house. Some physicians believe that it is of great importance to keep the head low and therefore compel their patients to absolute recumbency.

Sleeping in the open air must be distinguished from lying awake in the open air. If a night out-of-doors means wakefulness with constant dread of bats, bears, and burglars, it is obviously inferior to a good night's sleep within the house; but if sleep can be obtained out-of-doors it is probably more beneficial because of the moving currents of air which, especially in summer, can rarely be obtained indoors.

The art of sleeping out-of-doors in cool weather is chiefly

a matter of dressing properly for bed. The head and neck must be covered by a knitted hood, or an extra wrap of some kind, drawn down so that only the tip of the nose projects. Hot-water bags or hot soapstones are often useful. In any event the patient must not feel cold.

Some persons are prevented from getting their proper sleep during the morning hours because they are awakened by the early light. This may be excluded by tying over the eyes a soft, black silk cloth which is kept at hand and tied on at the very first waking in the early morning. One soon acquires the habit of adjusting this blinder without staying awake more than a minute or two. The association of its presence and its pressure over the eyes with the act of going to sleep soon come to make it a valuable hypnotic during any daytime nap as well as in the early morning light.

To make up for the tissue destruction due to fever and toxæmia, the patient must be taught to take an excess of nutrition. All types of food are of value. There is no special virtue in taking an extraordinary quantity of meat, milk, or raw eggs, though these last two foods are convenient because they can be taken without cooking and at any time of the day, and because of the considerable amount of fat which they contain. There is no advantage in making the patient obese — indeed an excess of fat may bring a harmful strain upon the heart, which is usually more or less weakened in all tuberculous infections. The habit of taking six meals a day is one that most patients easily fall into, as people do on ship-board or whenever they have nothing else to do.

Occupation represents an important and difficult problem, for anything that involves much use of the muscles or any strenuous mental effort is likely to produce fever and check the progress of the patient's recovery. On the other hand, absolute idleness often leads to depression and restlessness. Light manual and mental tasks must be devised and prescribed in small doses with frequent rests.

In convalescence, after the fever has disappeared, muscular work is apt to be of distinct benefit both for the encouragement which it gives and for the benefit to nutrition and circulation. Possibly, also, it may serve to wash into the general

circulation a small amount of the patient's own tuberculin and thus to increase his immunity.

Last, but not least, it should be clearly understood that no patient is likely to finish his recovery without several changes of climate and environment. The good that is done by a new climate is due largely to the fact that it is new. Mind and body alike are stimulated and benefited by the change. Three or four months in one place are usually enough.

Drugs are, in my opinion, of no value except to combat such symptoms as anorexia or constipation. I have seen no advantage from any medication for the treatment of hæmorrhage and rarely any from the treatment of cough, though $\frac{1}{24}$ or $\frac{1}{12}$ grain of heroin is occasionally useful given every four hours for an irritating and unproductive cough.

Case 6. A. R., aged fifty, was seen June 3. He had always been troubled with constipation, his bowels moving only once or twice a week. For five weeks he had had epigastric pain, which for three days had been severe. He had had no movement of the bowels, no chills, or fever.

Physical examination showed a thin, worn-looking man. The pulse and temperature were normal, the tongue clean and moist. His chest showed diminished breathing throughout the left chest, bronchovesicular respiration and dulness at the right apex, and numerous râles throughout this side. The abdomen was distended. There was dulness in the left hypochondrium, with marked tenderness and muscular spasm. Elsewhere the belly was tympanitic.

A high enema relieved him of large masses of scybala and made him more comfortable, but on June 10 there was still a tender mass in the left hypochondrium. Temperature 99.6°, pulse 90.

1. In what way and to what extent should the patient's age and the condition of his chest influence our decision as to an operation? The signs are strongly suggestive of phthisis; if this is confirmed by sputum examination, the risks of anaesthesia, especially in a man of fifty, are considerable. Nevertheless, the risk of *not operating* may be greater.
2. What is a high enema? How and with what materials should it be given? A high enema is one which reaches above the rectum for a greater or smaller distance. It should be given with soft rubber tube passed up as high as it will go, with the patient on his left side and the hips raised. Warm suds preceded by warm oil may be used.
3. Importance of the temperature and pulse here? If they remain low and without leucocytosis, the danger of spreading peritonitis or of active abscess is not great.
4. What other data should be known? The condition of the sputa, blood, urine, arteries, and heart.

Diagnosis: Dulness, tenderness, and spasm in left hypochondrium unrelieved by high enemata, point to a localized peritonitis. This might be excited by ulcer or cancer of the stomach or colon, or by abscess of the spleen (very rare). The intestinal symptoms are not as marked as they are apt

to be when ulcer or cancer of the colon have passed their long period of latency and make themselves felt. The stomach seems likely to be the source of the peritonitis, but further than this we cannot go. Ulcer is more apt to perforate than cancer, but cancer is commoner at this age.

Operation showed a perforation of the anterior wall of the stomach near the cardia, with adhesions to the abdominal wall. No pus or general peritonitis.

Phthisis was proved by the sputum examination.

Prognosis: Only the prognosis and treatment of peptic ulcer will be here discussed.

First, as regards duration, we know that the average history of peptic ulcer covers many years of moderate inconvenience or suffering without actual disability. This much, therefore, may be predicted if one sees a case in the early stages. We know, further, from post mortem evidence, that a good many ulcers heal without ever having produced noticeable symptoms. Beyond this it is difficult to make any accurate statement, but probably something more than half the cases gradually recover of themselves, and the somewhat larger number are ameliorated by medical or surgical treatment. There is, however, a marked tendency to relapse after weeks or months of freedom from all symptoms, and one must also remember that in a not inconsiderable minority of the cases the ulcer gives no sign whatsoever of its presence until perforation of the stomach wall with resulting peritonitis is present or imminent.

What proportion of cases finally becomes transformed into cancer we have no means of judging, but the number is probably a considerable one.

Beyond this the prognosis depends very largely upon the treatment and upon the intelligence with which it is carried out.

Treatment: All the many disputed questions relating to the treatment of peptic ulcer center around the problem: When should surgical interference be advised? At the present time the great majority of competent observers agree that in all cases one should operate:

(a) If perforation is present or imminent.

(b) If pyloric stenosis and the resulting gastrectasis are such as to cause serious suffering and malnutrition, despite careful diet.

Physicians are not in agreement regarding the advisability of operation (gastro-enterostomy) for severe and persistent hæmorrhage. There is also a considerable difference of opinion regarding the question: How long should we persist with medical treatment, more or less unsuccessful, before resorting to operative interference? My own opinion is as follows:

If any operation is to be done for hæmorrhage it should be the direct transfusion of blood. Then after the anæmia has been overcome and the hæmorrhage checked one may consider upon its merits the question of operation for the relief of the other symptoms.

We should not consider that medical treatment has been proved a failure unless it has been carried out under conditions involving complete rest in bed and an efficient control of the diet. Very few cases will recover under ambulatory treatment, and even under the best and most thoroughly controlled plan of management one must expect that the patient will suffer more or less for the rest of his life, unless he observes certain restrictions as to the quantity and quality of his diet and unless he is able to avoid unusual strains of mind and body.

The plan of treatment which has been most successful in my hands is a modification of the so-called Lenhartz treatment. I believe the attempts to nourish the patient by the rectum are wholly unsuccessful in the vast majority of cases, and I no longer attempt rectal feeding as such in this or in any other disease. At the same time it is valuable to give fluid in the form of normal saline solution, 8 ounces, every four to six hours, in patients whose stomachs cannot be used for nutrition owing to persistent vomiting or to recent and profuse hæmorrhage. As a rule such a period of starvation with fluid supplied by rectum need be neither prolonged nor painful. We can almost always begin to feed a patient by the third or fourth day. The period of seven to ten days' total starvation (i.e., the so-called rectal alimentation) seems to me rarely, if ever, of value, as the general malnutrition

thus produced checks the healing of the ulcer more than the alimentary repose favors it.

Beginning from the establishment of the diagnosis in about nine-tenths of all cases, or from the end of a short period of starvation in the comparatively rare cases characterized by obstinate vomiting or hæmorrhage, the diet should consist at first of milk and powdered crackers, preferably such as leave a relatively slight residue after digestion. From 3 to 6 ounces of this mixture, which may be sweetened or otherwise flavored, should be given every three or four hours, the amount depending upon the patient's appetite and upon the degree of his comfort. Sometimes the amount has to be reduced or the carbohydrate varied, but the great majority of patients will take this diet despite its monotony for ten days or two weeks without serious complaint. After this period we may begin to give other carbohydrates and fats, avoiding all meat and meat products and keeping the proportion of fats high. The essential points are never to allow the stomach to become empty for any considerable period, to keep the amount of cellulose at the minimum, and to avoid meat and salt. The first of these objects is best accomplished by feeding at least once in three hours and by giving excess of fat.

During the early weeks of treatment the patient often gets much relief from sodic-bicarbonate which should be given in unlimited amount, the patient taking enough to check his pain. A saucer of soda (with a spoon and a glass of water) should be left at the bedside and its use explained to the patient. Other medication has not, in my hands, proved of much value, though many recommend the use of teaspoonful doses of the subcarbonate of bismuth given either in the morning before breakfast or at regular intervals throughout the day.

It is essential that the patient should remain in bed during the early weeks of treatment and should do no work for several months. After convalescence the patient should go without meat for a number of months and always take food at least as often as once in three hours during the daytime. A glass of milk, reënforced with cream, can be taken by most

patients in the middle of the morning and the middle of the afternoon with benefit.

Should the patient relapse and suffer severely from vomiting, pain, or hæmorrhage, the same régime may be carried out again. Should he then relapse still again, gastro-enterostomy may be advised.

Case 7. I was called April 30, 1910, to an unmarried woman of sixty-two, in complete coma which has lasted for twenty hours and been accompanied by relaxed sphincters. Seven days ago the patient began to be chilly and thirsty. Three days ago a swelling was noticed in the leg and she complained of sore throat. Fever ranging from 103° to 104.5° had been present for four days at least. The patient has been previously well though she has been known to have albuminuria for some years. She has had no convulsion, no vomiting and no headache. No paralysis has been noticed.

On examination the patient could not be roused from coma. There was no stiffness of the neck and no strabismus, but the left eye showed marked purulent conjunctivitis. The heart's apex was in the fifth space, three-quarters of an inch outside the nipple. The sounds were regular, rapid, clear. The lungs and abdomen were negative. The left leg below the knee was swollen and red, especially about the ankle and the dorsum of the foot, which was very tense, shiny, and intensely red though without any line of demarcation. Though obviously in deep coma and insensitive to touch in other parts of the body, the patient winced and stirred when the foot was touched. The blood showed 24,200 leucocytes, with 96% of polynuclears and no eosinophiles. It was not otherwise remarkable. Lumbar puncture liberated a clear fluid without tension. There was no excess of cells and no organisms were found.

1. Common causes of febrile coma? All forms of meningitis; the terminal stages of various infectious diseases; any injury or disease of the brain, such as apoplexy or cerebral tumor may likewise be accompanied by coma and fever. The same is true of uræmia.
2. What is the significance of the order in which the symptoms occurred in this case? The fact that the fever preceded the coma by at least four, and probably six days, makes it almost certain that we are dealing with the cerebral manifestations of general infection rather than with a febrile reaction supervening on some local lesion like tumor or hæmorrhage.

Diagnosis: The entire absence of headache and the condition of the cerebral spinal fluid sufficed to exclude meningitis.

It remains to decide what general infectious disease is most probably the cause of the symptoms. In view of the patient's age, the history of long-standing albuminuria, and the fulminating course of the symptoms, which has brought the patient to death's door within a week, it is suggested that we may be dealing with one of those unlocalized, terminal infections which so often complicate a chronic nephritis. But the condition of the left ankle is strongly suggestive of a local streptococcus infection of the type occupying the border line between erysipelas and a more diffuse phlegmonous or infiltrating cellulitis.

Although no blood culture was made, it seems reasonable to conclude that the case is one of general terminal streptococcus septicæmia with the focus of infection in and near the left ankle.

Prognosis: The outlook in cases of generalized septicæmia depends upon the following factors:

1. The organism responsible.
2. The general condition of the patient previous to infection.
3. The constitutional manifestations of infection.

The streptococcus is the worst, as well as the commonest of the infecting organisms. Pneumococci are less serious. Patients whose resistance is already weakened by arteriosclerosis, chronic nephritis, hepatic cirrhosis, or other debilitating diseases offer little opposition to the infection.

Other things being equal, the higher the temperature, pulse, and leucocyte count, the greater the muscular prostration, the more disturbed the nervous system (stupor, delirium), the worse the outlook.

Treatment: If any focus of infection can be discovered, it should receive prompt surgical attention. Otherwise, the treatment resolves itself into hygiene and nursing, i.e., rest in bed, nutritious but easily digested diet, laxatives if necessary to promote proper bowel action, and hypnotics if necessary for sleep. Heart stimulants and vaccines do no good.

Case 8. A business man of sixty-two was seen at his summer camp in the Adirondacks September 19, 1910. He had been seriously ill there for five weeks. I was consulted regarding the possibility of moving him to his home in Buffalo. The attending physician gave the following account of the case: Up to the age of fifty-five he was always well. Then he began to have curious heart attacks, resembling paroxysmal tachycardia, the attacks occurring every week or two, and lasting from an hour to ten days. Both the onset and the termination of these attacks were absolutely sudden and treatment made very little difference.

Three years ago he began to have a great deal of prostatic trouble; an operation was proposed, but declined because of the condition of the heart. Two years ago he was in bed for thirteen weeks with acute prostatic inflammation accompanied by epididymitis, pyuria, hæmaturia, chills, fever, and leucocytosis. During this time he had one thirteen-day period of rapid and irregular heart action. Since that time the heart trouble has been practically as before this attack. There have been several relapses of the local prostatic trouble, apparently brought on by sitting up for any length of time, and by jogging, especially on journeys. During the past summer he has had short cardiac attacks as usual about every six days. August 15 he had tonsillitis with follicular inflammation and fever lasting two or three days. August 28 the sore throat and fever returned, and the fever has persisted ever since, varying from 99° to 103° with frequent chills. The leucocytes varied between 13,000 and 19,000, the pulse between 48 and 60. An astonishing feature of the attack has been the entire freedom from cardiac symptoms, the longest period of respite which he can remember during seven years. The urine has varied from 1200 to 1500 c.c. It has always contained pus and colon bacilli. This colon bacillus infection has been known to be present for many months and vaccines have been given for it off and on without any notable effect. The amount of pus varies from a trace to 2% by volume. All the pus is passed with the first ounce of urine. Small blood clots occasionally accompany it. The specific gravity is from 1012 to 1018, and occasionally a few hyaline casts are found.

Larger or smaller traces of albumin are always present. The patient has been in bed continuously since August 29. His appetite is usually poor and he is losing weight. During the attacks of high fever, which occur at frequent intervals, he vomits and is often delirious or stuporous for hours.

On examination the patient was clear in his mind, and showed a fair amount of muscular strength despite moderate emaciation. His heart was normal, save for a slight accentuation of the aortic second sound. Blood pressure 165 mm. Hg. Except for the condition of the urine physical examination was otherwise negative.

The camp in which I saw the patient was on a lake high up in the mountains. To move him to his home would involve his being carried down some 2000 feet in a litter over a rough path, then an hour's automobile ride and a night's journey in the train.

1. Are the patient's fever and other symptoms due to the local infection alone, i.e., to a cystitis depending upon prostatic obstruction with or without an extension of the inflammation up the ureters to the renal pelvis? Malignant endocarditis or some other obscure form of septicæmia had been seriously considered by the attending physician, but the physical examination seemed to me to offer no support for any such serious hypothesis. There were no evidences of septic embolism, no constant cardiac murmurs, and no more fever or leucocytosis than could be accounted for by the local bladder trouble. Were the heart seriously weak there should be some signs of stasis in the lungs or elsewhere. The presence of repeated chills does not militate at all against the diagnosis of cystitis and pyelitis.
2. What is the nature of the cardiac attacks, and why should they so suddenly have ceased? It seems probable that these attacks are due to some form of defective conductivity of the impulse of cardiac contraction. I can assign no reason for their disappearance, although there are many parallel instances of one disease ceasing to manifest itself when another supervenes.
3. Is it desirable, and if so, is it safe to move this patient to his home? In my opinion it is both safe and desirable. The treatment of the original cause for his symptoms is

a matter demanding expert surgical care such as cannot be secured in camp. The disease shows no signs of subsiding spontaneously, and winter with increased difficulties in traveling is approaching. Very few patients with any form of disease are seriously or permanently harmed by a move of this kind, unless there is very obvious cardiac weakness, which is not here present.

In accordance with this belief the patient was moved to his home four days later although he had had a bad chill on the day preceding his start. Nevertheless he made the journey with a fair degree of comfort and seemed to be no worse for it.

A year later, after prostatectomy, he was decidedly better.

Case 9. A married woman, aged twenty-seven, is seen June 7. Both parents died of consumption. She has always been well except for an attack of rheumatic fever three years ago. Has had four healthy children, the youngest six months old. Her oldest child was taken with convulsions on the night of June 2, and died twelve hours later. After his death she seemed dazed and became delirious, but had intervals of apparent consciousness up to 6 P.M., when she complained of pain in the back of her neck and began to vomit. Vomiting was frequent and persistent until the following evening. She has remained unconscious since the evening of the third. Yesterday morning her hands and feet appeared swollen and inflamed. Her temperature has varied between 101° and 102.5° and has been irregular. Her pulse is 120, respirations 30. She is delirious, and does not appear to realize her surroundings. Both knee and ankles, the back of the left hand and the metacarpophalangeal joint of the right index finger are red, swollen, and tender. There is redness over both patellæ. The muscles of the calves and thighs are tender. The neck is somewhat stiff, the pupils dilated, and there is divergent strabismus. The knee-jerks are not obtained. Except for a few moist râles at the bases of the lungs, physical examination is otherwise negative. The white cells number 29,400. Urine: specific gravity 1030, acid, albumin very slight trace, sugar a trace. Sediment contains occasional hyalin and fine granular casts and a rare abnormal blood globule. The 24 hr. amount is 500 c.c.

1. What changes might be revealed by ophthalmoscopic examination? Optic neuritis, choroid tubercles (very rare).
2. Discuss the urinary anomalies in this case. Passive congestion and the acute degeneration resulting from any infectious fever are the commonest causes of such urine. The glycosuria is probably due to cerebral irritation.
3. What are the most important types and causes of arthritis? (See below, Case 94.)
4. Name three causes of strabismus. Congenital, tuberculous meningitis, syphilis.
5. What tests would simplify the diagnosis? Spinal puncture, ophthalmoscopy.
6. How is the vomiting to be explained in this case? The onset of an infectious disease.

Diagnosis: At autopsy tuberculous meningitis and general miliary tuberculosis were found. The family history, the sudden onset of fever, coma, delirium, retraction of the neck and strabismus make this diagnosis obvious. The pains in the peripheral joints and muscles are to be explained as a part of the general infectious process, though in all probability no gross tuberculous lesions were present there. The type of meningitis would be revealed by spinal puncture.

Prognosis: Since the more frequent use of lumbar puncture with the staining and bacteriological examination of the sediment from the spinal fluid, it has become evident that tuberculous meningitis is not an absolutely fatal disease. Perhaps one case in four or five hundred recovers. So far as I know there is nothing to distinguish these rare favorable cases from the great mass of unfavorable ones, but in every case we can truthfully say to the family that there is hope and that recovery is possible. Even in the most favorable cases convalescence requires many months.

Treatment: Our chief objects should be to maintain nutrition, to prevent bed-sores, and to relieve symptoms of cerebral compression (internal hydrocephalus) by frequent puncture of the spinal canal. In maintaining nutrition the dominant factor is the skill and tact of the nurse who, by coaxing and persuasion as well as by the attractiveness and flavor of the food which she serves, may succeed in getting the patient to take an amount of food which would be quite impossible without this personal skill.

The prevention of bed-sores is accomplished by keeping the skin and the bed as dry and clean as possible, by turning the patient frequently from one side to the other so that no one prominent part is long impinged upon, and by protecting the sacrum, the great trochanters and the heels with rings of rubber or cotton.

Lumbar puncture should be performed whenever evidences of cerebral compression are increasing. Such evidences are: a deepening stupor, strabismus, vomiting and choked disk.

Case 10. A teamster of forty-five entered the hospital February 1, 1911. For three years he has been complaining of dyspnœa and swelling of the feet, increased by any exertion, passing off when he was able to be completely at rest. So far as he knows he has had no previous illness, no chorea, rheumatic fever, diphtheria, or scarlet fever. He denies venereal disease. He takes two beers and two or three whiskeys a day.

In May, 1909, his first attack of very severe dyspnœa was accompanied by a multiple arthritis with many purpuric spots. For several days during this attack he had Cheyne-Stokes breathing. After this attack he felt much better and did a little light work off and on until six months ago. Since then œdema has been almost constant and has extended up the legs to the abdomen and also to the hands. The last three weeks he has been much troubled with cough, but has expectorated only a watery fluid.

On physical examination there is cyanosis and orthopnœa. The heart's impulse extends 7 cm. outside the nipple line in the sixth space. There is a loud systolic murmur best heard at the apex but very widely transmitted. A diastolic murmur is also heard along the left border of the sternum, and another systolic of harsher quality in the second right interspace. There is systolic venous pulsation in the neck, and the liver is markedly enlarged. Free fluid is easily demonstrated in the abdomen. The pulse is distinctly of the Corrigan type. The lungs and extremities are markedly œdematous. On the 7th of February a systolic thrill was easily felt over the manubrium and it was noticed that the whole right front retracted slightly with each systole, as did the tenth space below the angle of the left scapula.

His systolic blood pressure was 150. Urine high colored, 20 ounces in 24 hours, with a specific gravity of 1022, a large trace of albumin, a few hyalin and granular casts. The blood examination showed nothing abnormal. During a week's observation, the temperature was persistently subnormal, and the pulse rate normal.

Diagnosis: It seems pretty clear that we are dealing with aortic regurgitation and mitral regurgitation. The cause and

nature of the leaks are the only points that call for discussion. Is the lesion rheumatic, syphilitic, or arteriosclerotic? We have no positive evidence of arteriosclerosis, and although such disease may be present we should not so assume unless no other diagnosis is possible.

It must be admitted that we may have the rheumatic type of endocarditis without any evidence of joint troubles. In this patient there were joint troubles at the beginning of his illness, but it may be doubted whether these were of the ordinary rheumatic type, since acute rheumatism rarely begins at 43. The possibility of a syphilitic aortitis must certainly be considered. Further light can scarcely be obtained unless a Wasserman test is made. An X-ray of the bones of the lower leg may also throw some light upon the disease, since syphilitic periostitis is not infrequently demonstrated in such a case, even though the patient may have had no knowledge of any such infection.

The Wasserman reaction proved positive, and an X-ray of the shin showed lesions typical of periostitis (see Plate I).

Prognosis: In the great majority of cases this lesion remains latent until within two or three years from the time of death. After symptoms declare themselves, therefore, we cannot often promise more than this span of life. Anti-syphilitic treatment has, in my hands, given no brilliant results. Nevertheless it should always be undertaken and conscientiously carried out.

Treatment: Daily inunctions of mercury, 10 grains of iodide of potash after each meal, complete rest in bed, an ounce of magnesium sulphate in concentrated solution each morning before breakfast, diuretin 15 to 30 grains every four hours, and possibly digitalis, are of benefit. In spite of these remedies the patient whose case is here narrated died on the 23d of February. His heart weighed 820 grams. A syphilitic aortitis was found with aortic regurgitation and a slight generalized dilatation of the aorta without any obvious rupture of the coats. There was no stenosis of the aortic valve; except for a general passive congestion the organs showed nothing else of interest.

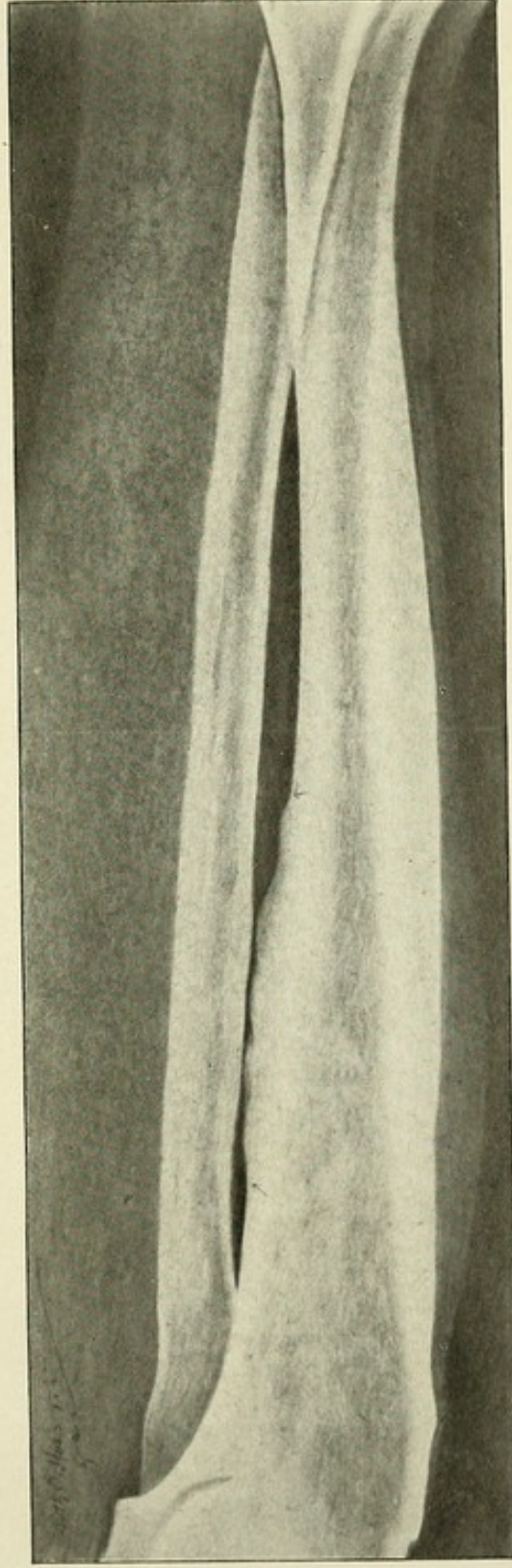


PLATE I.

Syphilitic Periostitis of the inner and less exposed edge of the tibia. (Note portion between the arrows.) (Crayon drawing by Ruth C. Huestis from X-ray plate.)



Case 11. A well-developed and fairly well-nourished man, eighteen years old, is seen for the first time February 26. His father died of consumption, his mother of rheumatism and heart disease. He has never drunk steadily, though occasionally to excess. He chews five cents' worth of tobacco and smokes twenty cigarettes daily. For eighteen months, ending seven months ago, he had almost daily coitus. For the last six months he has had gonorrhœa. When a child he had diphtheria, at fourteen typhoid, for the past seven months pain in the epigastrium, on rising, and latterly some pains about the head. Ten days ago, when he tried to get up, he had vertigo, chilliness, sweating, and a feeling of unsteadiness. He has been in bed most of the time since.

The present symptoms are: weakness, backache, epigastric pain (without nausea or vomiting), cough with white expectoration, thirst, headache, and constipation. His chief complaint is weakness; next to that headache and dizziness. There is some dyspnœa, but the cough is not troublesome. There has been no nosebleed.

The patient is pale. His pupils are equal and react to light. The tongue is protruded promptly and in a straight line, is not particularly tremulous and bears a slight white coat. Both sides of the chest move equally; there are no areas of marked dulness, of increased vocal resonance, or of bronchial breathing. A few coarse, crackling râles are heard persistently at the right apex. The heart's apex is in the fourth space in the nipple line. There is no murmur nor enlargement. The pectoral muscle contracts when percussed. The skin flushes easily. The abdomen is enlarged, tympanitic not tender. There is gurgling in the right iliac fossa. The spleen cannot be felt; its area is tympanitic. The hepatic area is normal. There are no rose spots. The knee-jerks are lively. A few glands are felt in the left side of the neck, and on the right side is a scar. The white cells number 3600. Temperature 101° , pulse 80, respirations 25. The urine has a slight trace of albumin, with a sediment containing pus and squamous epithelium. No diazo reaction is present. No tubercle bacilli are found in the sputum.

During the next five days the temperature is irregular, vary-

ing between 99° and 103° . The respirations rise slightly, to 30. On March 1 a faint diazo reaction is obtained. The headache ceases after February 29. Constipation persists. On March 2 the physical examination is the same as on February 26. On March 3 there is involuntary micturition, Cheyne-Stokes respiration, and external strabismus. Nothing peculiar is noticed about the neck.

1. What are the most significant facts in this case? The family history of tuberculosis, the debilitating habits, the existing gonorrhœa, the headache and vertigo, the persistent râles at the right apex, the fever, the leucopenia, the headache, Cheyne-Stokes breathing, and strabismus.
2. What is the importance of the pulmonary signs? In spite of the absence of the tubercle bacilli in the sputum, such signs are distinctly suggestive of tuberculosis. They may, however, result from bronchopneumonia due to influenza or to unknown infections.
3. Why is the cardiac impulse displaced upward? Because of the abdominal distention.
4. What do you infer if a pectoral muscle contracts when percussed? Increased muscular irritability, such as is present in many cases of debility, however produced.
5. Does the course of the temperature curve suggest any particular disease? Such a curve is most often seen in pyogenic infections.
6. What is the value of the diazo reaction in this case? The presence of a diazo reaction is never of considerable diagnostic value, though its absence in a febrile case argues against typhoid. In any disease it is a bad *prognostic* sign.
7. What is the value of the sputum examination in this case? A single negative sputum examination must be repeatedly confirmed before it becomes evidence against pulmonary tuberculosis.
8. What further examinations should be made in this case? None is essential, but a Widal test and a lumbar puncture would help to decide the question between typhoid and meningitis, and if the latter exists, to determine the organism to which it is due.
9. How do you explain the condition of the neck? Only by saying that any single symptom of any disease may be absent in a particular case.

Diagnosis: The data collected in the answer to question I point strongly toward acute general tuberculosis with predominant meningeal symptoms. Typhoid fever is the most important alternative, but seems unlikely, in view of the marked cerebral symptoms. A Widal reaction would help to settle this question, also a lumbar puncture. The leucopenia is consistent with tuberculous meningitis, but not with other types. The family history of tuberculosis, the cervical adenitis, the scar, and the signs at the right pulmonary apex, also support the diagnosis of general tuberculous infection. The temperature is consistent, likewise the diazo reaction. The condition of the abdomen is one often seen in a variety of infectious diseases.

In the further course of the case, the mental dulness deepened to stupor, the pulse gradually fell to 70, swallowing became difficult, ankle-clonus appeared, and the arms were at times rigid and contracted. In view of all these facts, the diagnosis of general tuberculosis with meningitis was made with confidence and was confirmed at autopsy.

Prognosis and Treatment (see above, Case 9.)

Case 12. A man of twenty-three returned two months ago from Mexico where he had spent six weeks. He arrived in good health. The following day he suffered from headache; the third day he went to bed and has been there since, with a continuous fever varying most of the time from two degrees to three degrees daily; sometimes 103° , more often 102° in the evening. He complained of pain in the lower left chest, transient but soon reappearing in the lower right chest and over the region of the liver anteriorly. This latter region was at times tender. Pain and tenderness have now disappeared. His bowels have been costive; at no time diarrhoea.

After a month's illness there was a slight leucocytosis — 10,000 to 12,000; absence of plasmodia and of the Widal reaction. Three weeks ago he began to cough violently, and since then has raised a curious sputum, blood-stained, thick, but non-purulent. Coincident with this the temperature rose four or five degrees; after two or three days it fell and then followed its usual course. He now has considerable annoying secretion of saliva. He still continues to expectorate. The liver is somewhat large. The spleen is also slightly enlarged.

Examination showed a nervous young man, somewhat emaciated, complaining of weakness and malaise, and of nothing else except the straining and coughing. The lungs were normal, save at the right base posteriorly where the breathing was diminished. Anteriorly the upper border of the liver reached the fourth interspace; the lower edge was easily felt below the ribs. The spleen was just palpable and reached the seventh rib above; the abdomen was otherwise negative. The first heart sound was feeble.

Diagnosis: Continued fever, slight leucocytosis, pain in the region of the liver, and the expectoration of a blood-stained but non-purulent sputum occurring in a man recently returned from a tropical climate makes a very suggestive clinical picture. The localization of the pain suggests something in the liver; fever suggests that this something is of an infectious origin, possibly an abscess. This is all the more probable since the patient has recently returned from Mexico. Now, since it is well known that amœbic abscess of the liver

may perforate into the lung and produce an expectoration like that here described, the pulmonary signs go to support the diagnosis of hepatic abscess, especially since jaundice is absent and the commoner causes of hepatic enlargement can apparently be excluded.

Prognosis: Amœbic abscess of the liver goes on to recovery in a considerable portion of cases, provided that free drainage can be established either by surgical interference or through the lung. The latter passageway is seldom sufficient and as a rule becomes obstructed, forcing the patient to seek relief by operative measures. In individual cases the prognosis depends upon the duration of the symptoms, the severity of constitutional manifestations, such as fever, high pulse, chills, sweats, emaciation, digestive disturbances, and insomnia. If the patient is in good condition at the time of operation we have good reason to be hopeful of the ultimate outcome, since amœbic abscess is often single and capable of being efficiently drained.

Treatment: As soon as diagnosis is established, or reasonably probable, surgical interference should be urged. We have no other way of helping the patient.

Case 13. A girl of nineteen is seen May 26. Her maternal grandfather died of phthisis. Family history otherwise good. She has always been rather pale and delicate, but has had no definite or serious illness. At the end of February she consulted her physician for slight swelling of the glands on the left side of the neck. The temperature was slightly elevated when taken after this, and during the next two weeks the glands increased considerably in size and she had some cough, apparently due to bronchitis. Toward the end of March she began to improve and the glandular swelling to subside. The appetite increased and she got out. Two weeks ago she was less well; fever returned to a moderate degree, as did cough, and slight crepitus was heard under both clavicles. One week ago, the day being mild, she sat on the doorstep and experienced a sudden pain at the root of the nose, just between the eyes. This pain extended over the forehead, increased in intensity, and was relieved more by cold than by hot applications. Four days ago without obvious cause she vomited once. The next day she vomited again and the headache became intense. For the past forty-eight hours she has retained nothing on her stomach. To-day, there was slight hiccough after vomiting and the menses appeared, the first time for three months. Morphia by the mouth gave her no relief. In the last twelve hours she has had three suppositories containing a quarter of a grain of morphia each, with only partial relief to her headache. Before the morphia was begun the pupils were large, equal, and reacted equally to light. Her aunt states that the pupils have always been large. They are now moderately contracted, equal, and respond normally. Photophobia. The pulse has ranged 90 to 100. Temperature 99° this morning, 100° last night.

The pulse is now 60 to 100, changing its rate quickly and frequently. Respiration easy. The mind seems clear, but she is disinclined to talk or make any effort.

The glands in the right side of the neck are slightly enlarged. The heart is negative. No râles are detected over the fronts. The backs are not examined as it does not seem wise to disturb her to that extent. Abdominal examination

gives negative results. The reflexes, superficial and deep, are not obtained. Urine negative. Neither the sputum nor the blood have been examined. There is no paralysis.

1. What can be inferred from the effect of the morphia here?
That the headache was of an intensity rarely seen except in organic brain disease, in uræmia and in exceptional instances of malarial infection.
2. Significance of the way the headache came on? The circumstances probably had nothing to do with it. The suddenness of onset is not characteristic of any single disease.
3. In what diseases do the pupils give the most important information? Tabes dorsalis, general paralysis, old iritis, morphia poisoning, aneurism of the aorta.
4. What cervical tumors are commonest? Adenitis (tuberculous or septic), Hodgkins disease, leucæmia, cervical rib, branchial cysts, cancer, and sarcoma.
5. What help could be gained by examination of the blood and sputa in this case? Normal blood would speak against meningitis, though in some tuberculous cases leucocytosis is absent. The presence or absence of malarial parasites is important, as malaria may cause marked cerebral symptoms. If the Widal reaction were absent and no basophilic stippling of the corpuscles present, we should have evidence against typhoid and against lead encephalopathy respectively. Sputum examination would help to settle the question of tuberculosis.
6. What other examinations should be made? Spinal puncture, Kernig's sign, Babinski's reaction, retinal examination blood pressure record.

Diagnosis: The intensity of headache with photophobia and vomiting suggest organic brain disease. The onset is more sudden than in most brain diseases, except meningitis. The family history of phthisis, the recent cervical adenitis, and apical bronchitis with fever suggest tuberculosis. Lumbar puncture and retinal examination would settle it.

All the symptoms here mentioned have occurred in brain tumor or abscess, but in most cases of these diseases, focal symptoms are present (paralysis, aphasia, Jacksonian epilepsy, local paræsthesia, astereognosis) and the onset is slower. In malaria there is almost invariably more pyrexia, and in lead

encephalopathy there are usually convulsions and evidences of lead in other organs.

Meningismus such as occurs at the onset of infectious disease (typhoid, pneumonia) is unlikely, on account of the severity of the headache, the moderate temperature, and the absence of positive evidence of any such infection. Tuberculous meningitis — that is, acute general tuberculosis with predominance of meningeal symptoms — seems the most probable diagnosis.

Prognosis and Treatment (see Case 9.)

Case 14. A married lady of fifty-seven, with a grown family of healthy children, began about three years ago to suffer from general headaches, during which she could understand and answer questions, though memory of what was asked and replied was lost. These headaches recurred irregularly, each attack lasting twenty-four hours or more. Two years ago her physician suspected myxoedema, and great improvement in all respects followed the taking of thyroid. The dosage was diminished and for some months back she has taken only 2 or 3 grains a day.

About one month ago headache, more constant and less severe than formerly, came on, and she failed in general health and strength without any definite symptoms other than the headache. Six days ago she began to get stupid and within twenty-four hours was in deep coma, in which she still remains. There is incontinence of urine. The bowels have not moved for several days. Two days ago the pulse, respiration, and temperature were all normal at 6 A.M. Between that hour and 9 A.M. the pulse rose to 110, respiration to 30, and temperature to 103° , remaining elevated ever since. Soon after the advent of coma the thyroid extract was increased to 15 grains three times a day. Until within twenty-four hours she has taken food fairly well. Pulse 130, regular, respiration 36, temperature 102.8° . Lies on back with flaccid, non-sensitive limbs; sides of face equal; pupils equal, moderately contracted, responding slightly to strong light stimulus; all other reflexes absent, except the plantar. The eye fundus is negative. Visceral examination is negative, except for dullness, bronchial respiration, and fine râles over the right lower back. The leucocytes are 23,000 per cu. mm.

1. What is the condition of the right lung? Pneumonia, probably of the hypostatic type.
2. If Babinski's reaction were present on one side, would your diagnosis be modified? (See question 4.)
3. Significance of the mode of onset in this case? A gradual onset of coma is against cerebral hæmorrhage or embolism.
4. What can be inferred from the absence of focal symptoms? That there are probably no lesions in the motor areas. The whole brain is probably affected to some extent.

Diagnosis: Cerebral tumor or abscess is possible, but the absence of focal symptoms, and especially of choked disk, are against these diagnoses. Uræmia could explain all the symptoms, but the urine showed no characteristic changes.¹ The thyroid treatment could not by itself produce such symptoms. The fever and leucocytosis make it needful to consider meningitis, but the gradual onset and the absence of choked disk and of cranial nerve symptoms are against it. Kernig's sign is apparently absent (flaccid limbs); in meningitis it is usually present. Cerebral arteriosclerosis, with or without syphilis and with or without definite foci of softening, seemed on the whole most likely.

Autopsy showed a "worm-eaten" and greatly thickened cranium, with two foci of softening, narrowed cerebral arteries and amyloid spleen and kidneys. Hypostatic pneumonia on the right.

Prognosis: We will consider here the prognosis of what is ordinarily known as "cerebral syphilis," that is, the cases with a well-marked history or lesions of syphilis elsewhere in the body, combined with the present and usually acute suffering from symptoms which point to the brain (coma, delirium, squints, vomiting, headache, and peripheral paralyses). In cases of this type, whatever the precise cerebral lesion may be, the prognosis for immediate recovery is good provided the treatment is properly administered. But the great majority of such patients has a relapse months or years later, which may again be successfully combated or may result in lasting paralysis or in death. Such patients, even if they escape the more serious cerebral symptoms such as are presented in this case, are apt to suffer from minor manifestations of the same type, presumably because of what Pal has called "vascular crises." The patient must expect to suffer from more or less trifling and transitory attacks of drowsiness, aphasia, Jacksonian epilepsy, monoplegia or hemiplegia, and from frequent headaches.

Treatment: It is my belief that with the cerebral mani-

¹ No mention of the urine was made in the account of the case given by the attending physician; hence it is omitted in the history printed above.

festations of syphilis, potassium iodid should be used in a way very different from that which is most useful in treating the other visceral and cutaneous lesions. Whereas in the latter it is rarely, if ever, advisable to give more than 50 grains of potassium iodid a day, study and experiment have convinced me that in cases with cerebral manifestations, really brilliant results are to be obtained by rapidly increasing the dose of iodid until 300 grains a day are taken. Small or moderate doses do not have the same effect. Mercury should also be given by daily inunctions, but its effects are very much less striking.

Aside from the administration of these two drugs, the treatment is essentially identical with that of tuberculous meningitis (see Case 9).

If the blood pressure is very high, bleeding or purgation may also be of value.

Case 15. An unmarried clerk of thirty-two, who was in the Philippines and in Southern China from 1903 to 1908 was first examined May 12, 1910. Immediately on his return from the Philippines, in the fall of 1908, he had a fever which lasted for the greater part of four months. The nature of this fever he does not know. Since it left him he has felt very weak, but has managed to do his work with occasional short rests. During the early months of his residence in this country he had catarrh.

For the past week he has had a cold, and last night he was troubled by wheezing and some dyspnoea. His appetite is good and his bowels regular, but he is incessantly gaping and yawning all day, perhaps because his nights are disturbed by nervousness, which makes him start up from sleep quite frequently.

His family history appears to be good, though his sister died at eighteen of a "general decline."

His present weight, 150 pounds, is greater than at any previous time, but he is exceedingly weak and nervous, liable, he says, to give out and collapse at any time.

1. Prior to physical examination, what diseases should be especially suspected? In anyone who has recently returned from the Philippines, syphilis, hookworm disease, and amœbic dysentery are suggested. Aside from these diseases we should always suspect incipient phthisis in a patient who has so much weakness without obvious cause, and especially in one who has had a prolonged, unexplained fever. Neurasthenia must also be considered if any reason for its occurrence can be discovered. A patient with symptoms very similar to these has recently consulted me, bringing in his hand a blood film made by another physician, and showing unmistakable evidences of lymphoid leucæmia. Another examination of a fresh specimen of the patient's blood, made as a control, showed precisely the same condition. Such a control is necessary, as disastrous mistakes may occur through a mix-up of blood films in a laboratory. Nephritis, larval Graves' disease, and typhoid should also be considered.

Diagnosis: Physical examination showed crackling râles and interrupted high-pitched inspiration with slight dulness

at both apices. No sputa could be obtained at the time, but the facts seemed to me to justify the diagnosis of phthisis. The further course of the case confirmed this assumption.

Prognosis: In a moderately advanced case like this the outlook depends upon the patient's temperament and character, upon the size of his pocketbook, and upon his natural capacity for acquiring immunity. Under ideal conditions, perhaps half of such cases may recover, but it is likely to be a life-long fight.

Treatment (see Case 4).

Case 16. A woman, apparently about forty, is seen at a hotel at 6 P.M., unconscious. Semi-dilated pupils, equal and responding to very strong light stimulus. The face is pale; pulse 90, regular, small, and soft. Respiration is shallow, with an occasional deep inspiration. Temperature normal. No blood or froth on lips; no odor to breath. No disparity between sides of face. Limbs flaccid, but firm supraorbital pressure causes motion in one or another extremity, so also firm pinching of leg muscles. No reflexes, deep or superficial; no œdema; no glands. Old, white, irregular scars seen near root of nose, on forehead, and right cheek. Physical examination of thorax and abdomen negative. Urine by catheter, 1017, acid, no albumin, no sugar.

In the absence of all friends, the housekeeper states that the patient and her husband came there from a neighboring town the evening before. The husband was awakened in the night by some noise to find his wife unconscious. Later, she vomited, but she has had no convulsion as far as known, either now or previously.

1. Important causes of coma? Apoplexy (including cerebral hæmorrhage, thrombosis, and embolism), uræmia and hepatic toxæmia, diabetes, cerebral concussion and compression, syncope (fainting), poisoning by opium, alcohol, and illuminating gas, sunstroke, epilepsy (after the seizure), hysteria.
2. What strong evidence have we against opium poisoning in this case? The effects of opium kill or wear off within eight hours. This attack has lasted already about eighteen hours.
3. What can be inferred from the abolition of reflexes? Any deep coma may abolish the reflexes, hence we can infer from this fact only that the coma is deep.

Diagnosis: Uræmia, diabetes, and hepatic toxæmia are excluded by the examination of the urine, abdomen, and breath; syncope, alcohol, and opium by the duration of the symptoms; sunstroke, concussion, epilepsy, compression, and gas poisoning by the history of the case. The reflexes are never wholly absent, but rather increased in hysteria, which is also unlikely because of the general muscular flaccidity. Apoplexy (in the wide sense above defined) is apparently the diagnosis. The

white scars on the forehead suggest injuries from a fall in epilepsy, also healed syphilitic lesions. The former explanation is ruled out by the history; the latter gives a very natural reason for the coma and for the lack of focal symptoms, which in apoplexy of syphilitic origin are often absent.

Prognosis: The majority of such cases recover from the attack within a few days or weeks, especially if vigorous anti-syphilitic treatment is carried out.

Treatment (see Case 14).

Wien
deut
drugs
diarrhoea
Stom
apoplexy

Case 17. A laborer of twenty-nine was seen March 5. Took to bed a week ago with fever. Now he looks very dull, with lips dusky, tongue dry and brown, teeth crusted with sordes. Temperature 101.5° , pulse 100, respiration 32. His chief complaint is of nervousness and insomnia, but he admits that his appetite is very poor and that he has vomited several times within the past week. He denies alcohol and venereal disease.

Chest negative. Abdomen slightly distended, tympanitic, not tender. Spleen not felt. The skin is unusually smooth and silky. There is twitching of the arms and legs and tenderness of the latter. All his movements are very alert. Urine: Normal color, acid, 1020, a trace of albumin, no sugar, no diazo reaction. Sediment, much pus (microscopic) and mucus, a little normal blood. The Widal reaction and blood culture are negative; white cells 16,000.

Scattered over the whole body are dull red macules about the size of a split pea or smaller. In places they are brownish.

1. What explains the condition of the mouth? Fever, mouth breathing, and neglect.
2. (a) What are the commonest causes of insomnia in a laborer of twenty-nine? (b) In old age? (c) In a baby? (a) Alcoholism. (b) Arteriosclerosis and its consequences; physiologically, the old sleep much less than the young. (c) Indigestion.

Diagnosis: The most distinctive physical signs here present are *fever* and a *rash*. The fever is moderate and is said to have lasted a week, but we cannot judge whether it was of the continued type, or irregular and intermittent. Nervousness, abnormally alert motions, and insomnia are a trio of signs which in a laborer we learn to associate with alcoholism and threatened delirium tremens. The smooth and silky skin is another important though not constant sign of alcoholism. The denial of drinking habits is not important in the presence of four such evidences. Can alcohol alone cause fever? Surely — and the fever is usually moderate, as in this case; but it is important to exclude by careful examination all infectious processes, especially typhoid and pneumonia. This has apparently been done in this case and the diagnosis

would seem to be delirium tremens. The poor appetite and vomiting in the previous week are then probably of alcoholic origin.

The rash is still unexplained. Macules of this size and color, without itching or hæmorrhage, are usually due to syphilis. The patient's denial of infection is not of importance and in this case was later shown to be false. That the fever was in part of syphilitic origin was suggested by the fact that, when the other symptoms of alcoholism ceased, the fever lasted on for some days. What other manifestations of syphilis might occur at this time? Adenitis, mucous patches, alopecia, periostitis, iritis. None of these appeared however.

Prognosis: For prognosis and treatment of alcoholism see Case 68. Here the prognosis and treatment of syphilis only will be considered.

Recent experience with the Wassermann reaction tends to make us believe that some results of syphilitic infection persist in the body for the greater part, if not the whole, of life unless vigorous treatment is kept up for years. But we must distinguish these latent and intangible results from definite lesions or symptoms of which the patient is in any way aware. Judging by these latter alone, we may say that after a treatment of one or two years the great majority of cases of syphilis appear to be permanently cured. Even in those, however, in which very thorough treatment has been carried out and all visible and obvious lesions made to disappear, experience shows that diseases of the nervous system, tabes and paresis, may later occur, and there is no good evidence that treatment, even if prolonged beyond one or two years, can be relied upon to prevent these sequels.

It seems to be an established fact that patients whose general condition is greatly lowered, either before the infection or as a result of it, react very slowly and imperfectly to medicinal treatment by mercury and potassic iodid. Probably a certain proportion of these stubborn cases can be cured by the use of Ehrlich's new remedy, salvarsan, but it is still too early to speak positively upon this matter. In well-nourished patients we may generally predict a rapid ameliora-

tion of most of the manifestations of a cutaneous, mucous, or visceral lesion within a few weeks under treatment by mercury and potassic iodid. With salvarsan the improvement is sometimes much more swift.

Treatment: Strict attention to the general health, to the diet, and the condition of the bowels, to exercise and proper sleep is important in all cases, especially in those who are debilitated. Beyond these general hygienic measures, our treatment resolves itself into the methods of administering mercury, iodid of potassium, and salvarsan. It should be distinctly understood that while iodid of potassium has great value for causing shrinkage and absorption of the exudates and tumor-like masses which incommode or disfigure the patient, there is no evidence that it has any tendency to kill the germ which produces the disease. For slaughter of the bacteria we must fall back upon mercury and salvarsan.

Potassic iodid should be administered in saturated aqueous solution which is practically one grain of the salt per drop. Five drops of this mixture should be given in a little milk after each meal. The irritating effects of the drug are thus best neutralized. Except in the cerebral lesions of syphilis, which have been discussed above, the dose of potassic iodid should not be increased beyond 15 grains three times a day. In the great majority of cases 7 to 10 grains work as well. Even with these doses a cutaneous rash, a metallic taste in the mouth, and other disagreeable symptoms are not infrequently produced. The belief that large doses hurry the cure of the disease is, except in cerebral cases, ill founded.

Regarding the length of time during which KI should be given something will be said below. There is no demonstrable advantage in administering iodine in the form of one of its other salts or in any of the other proprietary and widely-advertised mixtures now upon the market. The old-fashioned potassium iodid is just as good and much cheaper.

Mercury, the great germ killer in syphilis, acts much more slowly than KI, but is, on the whole, the more important of the two drugs. The best way of giving it in the majority of cases is by inunction. A lump of mercurial ointment, the size of a large pea, is taken in the palm of the hand and rubbed

into the skin until no considerable residue is left. This requires as a rule about half an hour of rubbing. A different portion of the skin should be selected each night; first one side of the chest, then the other, then the upper portion of one leg, then the corresponding portion of the other leg, next the lower leg, and so on, until upon the seventh night one returns to the portion first employed. The advantage of carrying out the inunction each night is that a certain amount of the mercury is absorbed during sleep. The remainder can be washed off in the morning, and the patient enjoy a reasonable cleanliness until the next night.

Patients who desire to keep their diseases secret can rarely use this method of administering the drug, unless at a sanatorium or hospital. It is on the whole, nevertheless, the best method, for it combines perfect safety with great efficiency, and a minimum of gastro-intestinal irritation. In Europe subcutaneous injections are very widely used. They have the advantage of saving trouble and protecting the patient from discovery. On the other hand, they are painful and occasionally dangerous. On the whole the most useful preparation for subcutaneous use is that known as enesol, in which arsenic is combined with the mercury. $\frac{1}{8}$ grain of this substance is injected deeply into the muscle at intervals of about seven days. Others use corrosive sublimate, one grain dissolved in two drams each of glycerin and distilled water, 5 to 15 minims being injected every two or three days. These preparations are on the whole preferable to the insoluble preparations, despite certain advantages of the latter.

The drug may also be administered by mouth. This is the simplest and most time-saving of all methods, but is less reliable and more apt to cause gastro-intestinal irritation. The salt chosen does not seem to be a matter of any great importance. As convenient as any is the use of corrosive sublimate, from a thirty-sixth to a twenty-fourth of a grain, in pill form, taken three times a day after meals.

Whatever form of mercury is used, the patient must be instructed to give special attention to the care of the teeth and gums, brushing and rinsing them several times a day in order to prevent inflammation with the resultant salivation.

As soon as there is the least soreness or lameness on striking the teeth together the drug must be discontinued, and not taken again until all soreness has departed. If we are warned by this early danger signal we shall rarely get a troublesome stomatitis.

Salvarsan should probably be reserved for the severer and more obstinate cases, and for those in which mercurial treatment has proved a failure, or is for some reason or other impossible. The intramuscular, and the intravenous methods of administration have each their warm advocates, and I do not feel prepared to decide between them. In any case the preparation of the crude drug for injection requires an apothecary of some experience. The dose given by the intravenous method is usually .5 gram and by the intramuscular .6 gram. As a rule only one dose is administered, and we then await developments. Possibly no second dose will be required, but in the majority of cases this expectation is not fulfilled. Treatment should be persisted in until the Wasserman reaction remains constantly absent. This means as a rule many months of treatment. Probably it is safer to resume treatment after one or two years of abstinence, and to submit the patient to short courses of mercury or salvarsan at intervals throughout his life.

Case 18. A young man of twenty-one is seen January 10. At the age of twelve he had very severe scarlet fever, followed by endocarditis, for the results of which he was under medical care for about three years. Of recent years his health has been very good and he has ridden the wheel fast and far without inconvenience. Rather more than two months ago he went to the doctor's office with a "cold"; temperature normal. A few days later he returned with a temperature of 103° , and said he had had night sweats. He was sent home, sat about the house for two days, and then took to his bed, which he has not left since. A four-hourly chart has been kept for sixty-two days, and shows a continuous fever, ranging from 101° to 104° , usually higher in the afternoon. On the seventh and tenth days after taking to his bed he had nose-bleed. This he had occasionally when well. Cough has been a fairly constant though not prominent symptom, and twice has led to vomiting. The bowels have been regular with the aid of an occasional enema. Delirium has been practically absent. Early in his illness there were a few doubtful rose spots. The spleen has never been palpable. He has once or twice complained of some pain in his shoulders, but has had no other articular symptoms.

The pulse was about 90 at first, regular, of good strength. It has lately become irregular and rapid, some of the heart beats not reaching the wrist. Under digitalis, brandy, and strychnia, the pulse has improved very much and is now regular, 100. Ever since he took to his bed he has been on an exclusive milk diet. The urine is sufficient in quantity with a large trace of albumin, granular and hyalin casts, specific gravity 1015.

The patient is pale, lies on his back, is not much emaciated, has a clean tongue, and complains only of weakness.

On physical examination the lungs seem clear. The heart's impulse is in the fifth space, half an inch to the left of the nipple. A systolic murmur is heard with maximum intensity over the impulse, transmitted into the axilla. Inside the left nipple is a doubtful presystolic murmur. The pulmonic second sound is accentuated, aortic second sound clear. The belly is slightly distended, duller at the flanks than in the

center, the dulness and resonance shifting somewhat with change of position. The blood shows a moderate leucocytosis and no Widal reaction.

1. In what diseases do night sweats occur? Those producing fever, prostration, or both: phthisis, syphilis, rheumatism, pneumonia, and typhoid (especially in convalescence), septicæmia in all forms, alcoholism, neurasthenia, and others.
2. Significance of the cough in this case? The common causes of cough are (a) irritations of the upper air passage; (b) any disease of the lungs; and (c) any disease of the heart that produces pulmonary stasis. In this case there are no evidences of (a) or of (b). Hence we fall back on (c), pulmonary stasis due to the heart lesion above described.
3. How is your diagnosis affected by the third (short) paragraph printed above? Doctors sometimes conclude from such evidence that no serious disease is present. This conclusion, however, is quite unjustifiable when the physical signs belie it. Hence the importance of accurate and thorough physical examination.
4. Name three common fevers which may run for weeks without touching normal. Typhoid, tuberculosis, septicæmia (with or without septic endocarditis).
5. What further valuable evidence might be obtained from the blood? Blood cultures should be made.
6. Why is the specific gravity of the urine so low? Exclusive and profuse milk diet.
7. If the spleen had become palpable, how should the diagnosis have been modified? Not at all, since all the diseases to be considered here may produce splenic enlargement.
8. What further symptoms might appear which would clinch the diagnosis? Evidence of embolism, commonest in the spleen and kidney, rarer in brain, extremities, or subcutaneous tissues.

Diagnosis: Typhoid after sixty-two days of fever is almost sure to show a Widal reaction and no leucocytosis. Tuberculosis of this duration should show more evidence of cerebral, pulmonary, or other local lesions. Pure tuberculous peritonitis would produce the abdominal signs here described, but rarely if ever produces such fever and would not account for the cardiac signs. Septicæmia with septic endocarditis will account for all the facts of the case. The ascites was

apparently due (like the cough) to heart weakness. The acute mitral endocarditis was proved at autopsy to be engrafted (as the previous history suggests) upon an old process of like nature. Multiple embolic infarctions of the spleen and kidney were present.

Prognosis: The outlook in cases of endocardial fever persisting more than three weeks is usually bad. It is almost invariably fatal when bacilli can be recovered from the circulating blood (see the article by Libman, Transactions of the Association of American Physicians, 1910, page 5). It thus appears that the results of blood culture are very important in prognosis, though they help us very little either for diagnosis or for treatment. Probably in a larger series of cases Libman's utterly hopeless outlook for all showing bacteraemia would not be maintained. Presumably some cases of this group will recover, but they must be very few. If bacilli are not found in the peripheral circulation, a recovery is always possible, especially within the first three weeks of continued fever.

The excellent condition in which the patient usually remains throughout the larger part of his illness, confirms the results of animal inoculation, in showing that the virulence of the organism is not intense, although for some reason it seems to be one against which the patient can form no antibody, but is gradually worn out in the struggle. The cases which recover usually suffer for a number of weeks, and are left in an emaciated and feeble condition for some months. There is always a marked tendency to relapse when the heart valves are the site of chronic endocarditis.

Treatment: Medication has so far proved useless. None of the antitoxins or vaccines, none of the drugs yet tried have shown any power to arrest the disease or to modify its course appreciably. We are reduced, therefore, to hygienic management which is usually very simple, as the patient is obviously better off in bed, and can usually digest and absorb all the ordinary foodstuffs. As in all infections the windows of the patient's room should be kept open day and night and his bowels properly regulated. If the fever is high a sponge bath given as in typhoid fever may be a relief and help to conserve his strength by assisting nutrition and sleep.

Case 19. A male nurse, thirty-three years old, with a negative family history, is seen May 5. Except for typhoid fever nine years ago, his past history was unimportant. His general health has always been good. About the 24th of March he caught cold and suffered from malaise, loss of appetite, and a slight cough which confined him to the house, but he did not send for a doctor until March 30. On that day he felt much sicker and had pain all over. It was especially noticed in the lower part of his right axilla, but was not very severe. His cough became very troublesome, and was accompanied by a tenacious sputum streaked with blood. For the next two or three days he was nauseated and vomited frequently. A four-hourly chart showed a temperature varying between $101\frac{1}{2}^{\circ}$ and 104° . The respirations were 36, and the pulse 120. Signs of marked consolidation were found at the right base. On April 8, the temperature had returned to normal by lysis, and there was a coincident fall in the pulse to 90 and in the respirations to 24. That afternoon intense pain, much increased by respiration, came on in the lower part of the right chest. The temperature, pulse, and respiration again rose to their former height. The severe symptoms subsided after a few days, but the temperature has remained elevated, varying between $99\frac{1}{2}^{\circ}$ and 101° , with evening exacerbations. The respirations have never fallen below 26, nor the pulse below 110. He has lost considerable weight. When seen on May 5, the patient was sitting in a wheel chair. He was pale, thin, with flushed cheeks, and looked sick. The examination of the chest showed marked dulness merging rapidly into flatness below the fourth rib on the right side in front, and from two inches below the spine of the scapula behind. Over this area, voice and respiration were bronchial in character but diminished in intensity, and numerous coarse and medium moist râles were heard. Fremitus was diminished over the upper portion, absent below. The right border of the heart was not determined. The left extended beyond the nipple line. The apex was in the fifth space one-half inch outside the nipple. The pulmonic second sound was accentuated. Physical examination otherwise negative. Whites 17,000. Tubercle bacilli

were not found in the sputum, which was rather copious and mucopurulent in character. Urine 1030, acid, slightest possible trace of albumin. Sediment not examined.

Diagnosis: The interpretation of this patient's symptoms seems to be as follows: The initial symptoms were presumably those of lobar pneumonia which ran the ordinary course of that disease up to the 8th of April. With the return of fever the pulmonary signs became more decidedly those of fluid in the pleural cavity, and this with the emaciation, leucocytosis, and the absence of tubercle bacilli in the sputum points to a postpneumonic empyema presumably of the ordinary extra-pulmonary type and not confined between the lobes.

Prognosis: With prompt and skilful surgical treatment almost every case of this disease recovers completely. Indeed the prognosis is much better than in serous effusions, because the latter have usually tuberculosis in the background while purulent effusions are practically always due to the pneumococcus. In postpneumonic empyema promptly and efficiently drained we can look for complete recovery in the course of two to four months. If drainage is insufficient or is not established until the pus has remained for many weeks in contact with the lung, it may be a very slow and difficult matter to heal up the inflamed pleural cavity and to obtain full distention of the compressed lung, but with proper attention on the part of the attending physician there should be no long interval between the beginning of the purulent process and the establishment of drainage. Under these conditions practically every case should get wholly well.

Treatment: Occasional patients provide drainage for themselves through the bronchial tract. Still more rarely this drainage is efficient. In the great majority of cases one or two ribs should be excised and surgical drainage established as promptly as possible. There is no medical treatment of these cases.

Case 20. A physician, fifty-one years old, is seen January 15. Has had rheumatism off and on since childhood, but no cardiac symptoms; has walked a great deal and has done a large practice without a carriage. November 17, he began to have chills and sweating at irregular intervals, but kept at work until December 27, when he had sudden pain in the left leg, followed by some coldness and numbness.

Since December 30, there has been fever from 99.5° to 103° , with irregular chills. Few days ago, siezed with pain in right arm, and the pulse was not to be felt in that wrist. Also a transitory blindness in right eye. Pulse 72, regular, good strength. Presystolic murmur at apex. No cardiac enlargement or other abnormalities. Arms and legs now warm. The patient is bright and not feeling very sick. Spleen slightly enlarged, palpable, tender. Some doubtful rose spots. At the right base behind, a patch of bronchial breathing about the size of an apple with crackling râles and increased voice sounds. No distinct dulness. Urine said to be negative.

1. Common causes of true chills? Malaria, sepsis, tuberculosis, the onset of any infection, neurasthenia.
2. In what diseases besides malaria may chills recur daily at the same hour? Sepsis, tuberculosis.
3. Types of thrombosis? Puerperal, infectious (typhoid), post-operative, marantic, those seen in cardiac disease, and those of unknown cause.
4. Causes of presystolic murmurs? Mitral stenosis, "Flint's murmur" in aortic regurgitation, tricuspid stenosis, adhesive pericarditis.
5. What symptoms not here mentioned should you expect to see sooner or later in this case? Purpura, emaciation, diarrhœa, and mental symptoms.
6. What should you tell the patient about his condition? Nothing unless he forced the issue. Then the prognosis as given below.

Diagnosis: A long-continued fever with chills, embolic phenomena, and a cardiac murmur suggest at once an infective endocarditis, whether "malignant" or not remains to be seen (see prognosis in Case 18). Emboli appear to have lodged in the arteries of the left leg, right arm, right eye, spleen, and lung (bronchopneumonia). The "rose spots" are skin-emboli. In view of the "rheumatic" history we may

suppose that the acute endocarditis was here engrafted on a chronic process. Blood examination showed a marked leucocytosis and no Widal reaction. The urine showed the ordinary evidences of an infectious process.

Prognosis: Recovery is quite possible (see above, Case 18) but not likely. The symptoms may continue for weeks or months and finally cease or kill. Between mild and malignant processes there are intermediate types of all degrees of severity.

Treatment (see above, Case 18).

Case 21. A coachman, forty-two years old, of good family history, is seen April 20. Health has always been good except for a severe attack of pneumonia three years ago, which was followed by phlebitis in the left femoral vein. The left leg has remained somewhat swollen, and has been tense and slightly painful toward night. It has caused rather more discomfort than usual during the past few days. Yesterday morning he got up feeling as usual, but on reaching the house of his employer felt nauseated and had some diarrhœa, which continued during the day. He felt feverish and weak. Went to work again this morning, but gave up after half an hour owing to nausea and pain in the lower abdomen, and went to bed. At eleven o'clock had a distinct chill.

Was seen for the first time at 12.45 P.M. The patient was a stout man who looked acutely sick. The chest was negative. Owing to a thick fat layer, examination of the abdomen was not altogether satisfactory; it was somewhat distended and tympanitic and there was considerable tenderness over the lower portion below the level of the iliac crests, but no area of special tenderness, nor could a tumor be felt anywhere. The left leg was somewhat larger than the right throughout. The skin below the knee pitted slightly on pressure. There was a little tenderness over the femoral ring. The temperature was then 103° , pulse 110, respirations 26. At 3 P.M. urgent summons was received to call immediately as the patient had had a convulsion, was breathing rapidly and with great difficulty, and was very cyanotic.

1. What are the commonest causes of cyanosis? Heart disease (valvular or parietal), emphysema, pneumonia, asthma, methæmoglobinæmia (usually from acetanilid in headache powders).
2. What important data do you miss in the account of this case? A leucocyte count and urinary examination.
3. Do you expect a leg to remain swollen three years after an attack of phlebitis? Yes; the leg does not often regain its normal size.

Diagnosis: The symptoms at the first visit were very indecisive. Diarrhœa, nausea, abdominal pain with fever

and weakness suggest nothing more than acute gastroenteritis, and even the tenderness found in the lower abdomen is not distinctive. Peritonitis (possibly from appendicitis) was considered. But the history of an old femoral thrombosis and the tenderness over the femoral ring lead us to think that the thrombus may have progressed up into the abdominal veins, and to interpret the later pulmonary symptoms (sudden onset of dyspnœa and cyanosis) as pulmonary embolism from the thrombosed abdominal veins. Autopsy showed this condition.

Prognosis: Most cases of phlebitis in the veins of the lower extremity recover completely in the course of a few weeks or at most a few months. The leg is apt to swell more or less throughout the rest of his life, if the patient is much on his feet, since the collateral circulation is not the equal of that provided by nature. Nevertheless, accidents such as occurred in the case just quoted are very rare and so far as I know cannot be prevented or warded off.

Treatment then is confined to the management of the acute stages of the disease and essentially to the relief of pain. We know of no way of hurrying the process of recovery, but we can make the patient much more comfortable by applying either heat or cold to the affected part. As a rule heat gives much more relief than cold, and should be applied in the form of flaxseed poultices which are changed as soon as they begin to get cold, and not after a fixed period.

It is of the utmost importance to caution the nurse, the patient, and his friends against the dangers of any massage applied to the region of the blocked vein. I have known sudden death to follow such massage in two cases, the clot being apparently detached and blocking a large pulmonary vein as in the case now under discussion. It is difficult to give any good reason for our decision when to let the patient get up and move about. As a rule we keep him quiet in bed until there is no tenderness over the inflamed vein and little or no induration along it. Nevertheless the "end reaction" is never as sharp as one could wish it, and many people carry a more or less indurated cord marking the site of the old phlebitis throughout life.

Case 22. A painter, twenty-three years old. Family history negative. General health always good. Clap eight months ago, a slight mucopurulent discharge still persisting. Seven months ago had an attack of colic, lasting three or four days, similar to his present trouble, but less severe. Bowels move once daily without medicine. Seven days ago began to have cramps which have grown rapidly worse since and have been only partially relieved by large doses of morphia and atropin. The abdomen at first was generally tender, especially just to the right of the navel. The bowels have been constipated from the start, in spite of repeated doses of salts and enemata. Very little gas passes per rectum. Has vomited three times, the vomitus containing nothing of note.

Physical examination shows a poorly-nourished man, suffering acutely from general colicky pains in abdomen. Expression pinched, anxious. No jaundice. Faint line of grey-black dots on the free margin of the gums. Radial arteries slightly thickened. Heart and lungs normal. Abdomen distended, and tympanitic. Between the attacks of pain no marked tenderness is elicited even on fairly deep pressure. The distended, moving coils of intestine are visible through the thin walls, which are somewhat rigid everywhere. The finger high up in rectum strikes a tender point a little to the right of the median line. The pulse is small, 120, and has been steadily rising. The temperature, taken only during the past five days, has never gone above 99°. Urine scanty, high colored, acid, specific gravity 1026. No sugar, no albumin. Sediment negative. Leucocytes five days ago 35,000, now 19,000.

1. Common causes of oliguria? Obstruction (prostatic, cancerous, or calculous), nephritis, infectious fevers, starvation (including pyloric obstruction with gastric dilatation), vomiting, diarrhoea, sweating, low proteid diet, hysteria.
2. How does the temperature record influence our diagnosis here? By itself it would incline us to believe that no inflammatory process is going on.
3. Significance of the leucocytosis here present? Uncomplicated plumbism never produces such a leucocytosis;

intestinal obstruction rarely raises the count to 35,000. A focus of inflammation is probably indicated.

4. Have the thickened radials any connection with the other symptoms of this case? Lead poisoning the patient certainly has. Lead is said to produce thickening of the arterial walls.
5. What organs and tissues are injured in plumbism? The gums, the blood, the nerves supplying the extensors, the brain, the arteries, the kidneys, the gastro-intestinal tract (colic, constipation).

Diagnosis: Operation showed general peritonitis due to appendicitis. The purgation probably did great harm. The obvious presence of plumbism led to a disastrous mistake in diagnosis.

Prognosis: So much has been written on the prognosis and treatment of appendicitis that I shall consider this subject rather briefly here. The prognosis may be said to depend first, on the virulence of the infection, and second, upon the time when efficient treatment is begun.

The first of these factors calls for no special comment. Suffice it to say that there are cases which hurry the patient into his grave, despite all that can be done by early, prompt, and efficient treatment. In the vast majority of cases, however, nature succeeds in walling off the inflammatory process and in bringing about an arrest or cure of the disease. This is especially favored by the treatment about to be mentioned.

Taking all cases of the acute form of the disease as seen at the Massachusetts General Hospital, the mortality is about 6%. In the sub-acute relapsing or chronic cases there should be no mortality if operation is undertaken at the right time, and with adequate technique.

Treatment: Our action should be guided by information which tells us whether the patient is getting better or getting worse at the time when he is seen. This means that we should see the patient twice, with an interval of several hours intervening, and record the temperature, the pulse, the leucocyte count, and the condition of the abdominal walls at each visit. If the temperature and pulse are falling, the leucocyte count decreasing, the amount of tenderness and spasm lessening, we have every reason to postpone operation and await de-

velopments. If, on the contrary, the temperature, pulse, leucocyte count, tenderness, and spasm are increasing, or if the patient is getting worse in most of these respects, operation should usually be advised. If it is impossible to secure comparative records such as have just been suggested, and if one's decision must be made once and for all at a single visit, one must endeavor to make up one's mind from the history and the observations of others, whether, in all probability, the case is getting better or worse. According to the impression thus formed one's judgment is determined. There are, however, certain alterations and exceptions to the rules just laid down.

In the first place, if the patient is getting worse, but has not as yet been properly treated, one may delay the decision until there has been opportunity to try what can be done by some sensible plan of management. If, for example, the patient has been moving about and receiving food, one may reserve judgment until he has been put to bed and starved for a short time. If these measures, with the application of a hot sterile poultice fail to improve his condition, as shown by any of the tests above mentioned, within a reasonable period, operation is again advisable.

When a patient has previously been given morphin or some other opiate, a delusive appearance of improvement, especially as regards pain and tenderness, may be presented. We must be on our guard against being deceived in this way. It is most important that the patient's pain should not be relieved, since that pain furnishes the most valuable of all guides by its waxing and waning, and by the area over which elicited on pressure. Our judgment regarding the advisability of operation should always be influenced by what we know of the skill and the experience or non-experience of the surgeon available. With only a mediocre surgeon available one may advise delay in a case which would call for immediate operation were any expert surgeon at hand.

Finally, we must always take account of the individual factors such as temperament, sex, and previous knowledge and dread of the disease. A high-strung girl, thoroughly acquainted with the natural history of appendicitis, may

deceive even the elect into believing that she is suffering from this disease, when in fact nothing of the kind is going on. If operation is delayed, the treatment by supervision and poultices is best fitted for all cases, except those showing evidence of general peritonitis. Morphia should never be given unless the patient's life is altogether despaired of.

Case 23. An electrician, thirty-one years old, of good habits and family history, was seen September 25. Except for an attack of "inflammation of the bowels" two years ago his previous health has been excellent. His work has been hard, and for about two months past he has been consciously tired. About ten days ago he had a little diarrhœa. He was then all right for several days. While walking in the street the evening of September 15, he was seized with severe cramps in the abdomen, not localized, recurring through the night and preventing sleep; no diarrhœa or vomiting. The next morning the doctor saw him in bed with normal pulse and temperature; no abdominal tenderness; the bowels had moved twice normally since the advent of the pain. The next day more or less general pain was still present; tenderness over the lower abdomen, more marked on the left side, was noted; the temperature was 102° , A.M., 103° , P.M.; there was some diarrhœa. Calomel was given the day before, opium both days. September 18 the morning temperature was 104.5° , pulse 110, pain and tenderness were more marked, and slight distention was noted. At the evening visit the pain had moved to the epigastrium and subsequently continued high rather than low. The following day the temperature dropped to 100° , pulse to 90. The bowels did not move from the 18th until the 21st, then after enema. Again on the 24th there was a large, partly-formed dejection, and much gas passed the 25th. Vomited twice on 21st after barley water; not before or since. Abdominal distention has gradually increased.

The mind is clear; the pulse fairly good; tongue slightly coated; decubitus dorsal with legs outstretched; moderate pain and tenderness in upper abdomen, not sharply localized; chest negative; abdomen moderately and generally distended, duller in the flanks and hypogastrium than superiorly, the dull areas changing somewhat with changing position. Urine and rectal examination negative. No tumor or localized resistance. Blood not examined.

1. Common causes of symmetrical abdominal distention?
Tympanites, obesity, ascites, tuberculous peritonitis.
2. What can be inferred from the statement "decubitus

dorsal with legs outstretched"? That no considerable psoas spasm is present.

Diagnosis: The sudden onset of severe abdominal pain, with fever, rapid pulse, constipation, abdominal distention, slight general tenderness, and shifting dullness in the flanks, points to general peritonitis probably due to appendicitis, possibly to cholecystitis or peptic ulcer. Calomel aggravated the lesions and opium masked the symptoms. Intestinal obstruction is excluded by the effect of cathartics.

Prognosis: Perhaps one case in five recovers; the outlook depends upon the virulence of the infection and the skill and speed of the surgeon.

Treatment: Laparotomy and drainage is the obvious indication. (For fuller discussion see Case 22.)

Case 24. A Lithuanian teamster, forty-eight, entered the hospital April 22, 1904, with the following history: Parents died of old age. He uses thirty-five cents' worth of tobacco a week; alcohol occasionally. He has always been well until April 15, when he went to work feeling all right. In the afternoon his neck began to pain him, he was chilly, then felt hot, and sweat a good deal. Later his neck began to swell and became more painful. His throat was sore, dry, and painful on swallowing. Two days later he started to work, but had to give up and came to the hospital.

Physical examination showed a well-nourished man with slight prostration. Slight conjunctivitis. Tongue protruded in median line. Throat dry, red, with considerable dirty secretion on the walls of the pharynx. Slight cyanosis of the face and finger tips. Neck short, thick, and reddened at the base with brawny induration. Redness and induration extend down over the upper part of the chest. Tenderness and swelling at the posterior edge of the sternocleidomastoid muscle at either side.

Inspection shows no enlargement of the veins of the upper chest or of the arms. Percussion of the chest shows dulness over manubrium, extending one finger's breadth on either side. Lungs are apparently normal. Heart's apex in fifth interspace nipple line. Right border at right sternal edge. Sounds distant, no murmurs heard. Pulse 120, regular, fair volume and tension. Abdomen full, tympanitic, not tender. Liver and spleen not enlarged. Knee-jerks present, no paralysis, no Kernig, no œdema, no general glandular enlargement. Blood shows:—red cells 5,001,800, white cells 21,700, hæmoglobin 90%. Differential count of 200 leucocytes shows:—polynuclears 78%, lymphocytes 22%, eosinophiles 0. Urine normal, amt., specific gravity 1021, albumin slight trace, chlorides diminished. Sediment: numerous hyalin and fine granular casts, with occasional cells adherent. Occasional free mononuclear cells, rare blood corpuscle. Temperature 101.4°, respiration 25.

April. 24. Delirium for past two days requiring restraint. Quieter this morning. Throat somewhat cleaner, less cyanosis and tenderness in neck. Otherwise physical examination unchanged.

May 1. Temperature has ranged from 99.5° to 101.4° to-day. Pulse from 120 to 100, respiration from 25 at entrance to 35 to-day.

May 2. Tumor at side of neck apparently increasing in size. Some œdema over the neck, and the small veins of that region more prominent. Bronchial breathing over the right infrascapular region, with a few râles just below the angle of the scapula. Some cough and frothy sputum. Laryngoscopic report: "No œdema or paralysis of recurrent laryngeal, but some pressure œdema of left aryepiglottic fold."

May 6. Considerable cough and expectoration. Some abdominal pain; has lost considerable weight. Fever lower; cervical tumor decreasing.

1. Causes of substernal percussion dulness? Aneurism, enlarged bronchial glands (tuberculosis, pseudoleucæmia, sepsis, cancer, sarcoma), tumors of the thyroid or thymus gland, mediastinal abscess.
2. Significance of the lack of eosinophiles here? Eosinophiles may disappear in a severe type of any infection which causes leucocytosis, occasionally in toxic conditions associated with leucocytosis, and in some severe anæmias. Their reappearance is always a favorable sign.
3. How is the patient's delirium to be accounted for? Any severe infection may produce delirium, though meningitis and pneumonia most often do so. The particular infection here present is also especially prone to delirium.
4. Of what diagnostic value is the fact that Kernig's sign is absent? Kernig's sign is usually present in meningitis of any type. Its absence tends to exclude meningitis.
5. What further facts are needed for diagnosis in this case? The sputum should be examined for tubercle bacilli. No other data are essential, but a Widal reaction might help to exclude typhoid, and a spinal puncture to exclude meningitis.

Diagnosis: The physical signs of disease are chiefly in the neck and upper thoracic region. Tuberculosis of the lung, meninges, and cervical glands would account for some of the signs, but would not be likely to produce so much pain and local œdema. The sputa are negative for tubercle bacilli

on repeated examination. Venous thrombosis would not explain the inflammatory reaction in the neck and would cause more œdema and more enlargement of the superficial veins. The same evidence is valid against mediastinal new growth or abscess. Deep-seated inflammation in the neck (with or without pus) is the most defensible diagnosis,—Ludwig's angina. The Widal reaction is negative.

Prognosis: The majority of cases die unless operated upon, and even with this assistance the outlook is grave. Convalescence is always tardy and painful. There is, however, no special tendency to relapse, if the patient once conquers his infection. In this case, defervescence and improvement of all symptoms went on slowly but steadily after May 6, and in a few weeks he was well — substantially without interference other than good nursing.

Treatment: Surgical interference should be called for as soon as the diagnosis is made. The surgeon may be unable to locate any considerable focus of pus, but even an incision into inflamed and congested areas seems to be of benefit, as with many cases of peritonsillar abscess. Before and after operation relief of pain is to be obtained chiefly by poulticing or in extreme cases by morphia. The patient gets some relief from sucking small pieces of ice and from the swallowing of very cold foods.

Case 25. A negress of sixty-seven has had "falling of the womb" for forty years. To hold it up she stuffs a wad of cotton into the vagina and ties a tight bandage round the lower part of the abdomen. Some years ago a lump grew in her belly, — "sore as a boil." One night she heard a click, felt something give way, and "it all ran out the front passage," after which she felt all right. Eight months ago she noticed another lump in her belly, not tender, but sometimes "it kicks just like a baby."

Five days ago she "felt pretty smart," but had had no dejection for two days. Four days ago swelling of the belly, tenderness in the left groin, and vomiting began. Three days ago she had a small, hard dejection and ceased vomiting, but since then "the lump in her belly has been moving round and making a noise." Pain, distention, and constipation have continued.

Examination: Does not seem much sick. Temperature 100°, pulse 100, respiration 32. Chest negative. Belly much distended, tympanitic, and somewhat tender, especially in the left iliac fossa, where there is dulness and a rounded mass the size of an orange is felt. Pressure over this mass causes the cervix uteri to move down. No thorough pelvic examination is possible on account of tenderness.

1. What was the probable cause of the symptoms described in lines 5-7? Salpingitis or pelvic peritonitis.
2. By what means can we secure abdominal relaxation when deep palpation is important? A warm bath or, if the bath is insufficient, an anæsthetic.
3. What light might be thrown on this case by examination of the blood? If leucocytosis is absent, suppuration is unlikely.
4. Should you recommend operation in this case? What would influence your decision? (See below — Treatment.)

Diagnosis: The history is of salpingitis some years ago, — of a painless lump in the belly for eight months, and of five days' acute symptoms. The acute symptoms are constipation, vomiting, painful, swollen, and tender belly, with borborygmi and slight fever. A mass apparently connected with the uterus is also felt. In a negress any pelvic disturbance

should suggest fibroid, especially if there is a palpable tumor connected with the uterus. How can a fibroid produce acute symptoms? By suppuration, twisting of a pedunculated portion, or both. The methods of holding up the uterus described in paragraph one would certainly favor the occurrence of pelvic suppuration, but it is hard to say whether they are connected with the symptoms in this case. Further diagnosis is impossible with the data given.

Prognosis: That in the great majority of these suppurations and degenerations in uterine fibroids recovery follows is shown from the numbers of adhesions and contracted scar formations which are to be seen on operation or post mortem in most long-standing cases. Aside from the general knowledge thus obtained, one can judge of the severity of each individual case only by the degree of constitutional reaction such as fever, tachycardia, chill, sweating, vomiting, leucocytosis, local pain, and muscular spasm. The degree of favorable response to simple methods of treatment of course influences our judgment regarding the outlook.

Treatment: Rest in bed and hot poulticing will relieve many cases without any further interference. Free evacuation of the bowels should be secured, and the patient fed as in any other infectious fever, i.e., according to the digestive power, but without the omission of any one class of foods. If fever, pain, spasm, and leucocytosis persist or increase despite these simple measures, laparotomy and probably hysterectomy must be performed.

Case 26. The patient is a man of thirty-five, who has had fever and cough for two weeks. At the onset he had much pain in the front and right side of chest, near attachment of diaphragm. Had a chill on two successive days and on the fourth day. No dyspnoea; no sputa till sixth day, when a scanty, mucopurulent spit began and has steadily increased in amount and grown more purulent since. The fever has ranged from 101° to 104° , and at times there has been a good deal of sweating and slight delirium. Has taken liquids fairly well. The bowels are rather loose, as they have been off and on for several years. No pain anywhere now.

The man is sallow, dull, and listless; tongue clean. Poorly nourished. Over lower half of right chest marked dulness, with distant bronchial respiration and increased whisper; voice sounds nasal, especially near angle of scapula. *Fremitus* nearly absent. Over upper half of lung medium moist râles were heard on the first and third days and none on the second. Viscera otherwise negative, except slight tenderness and fulness in the abdomen.

Sputa examined twice for bacilli; none found.

Urine high-colored, acid 1027, trace of albumin, no sugar.

Sediment: Abundant urates, leucocytes, and squamous cells. Few hyalin and coarse granular casts.

Blood: Red 4,200,000; white, 26,000; Hg 43%.

1. What points are against the diagnosis of typhoid fever (with complications) here? Typhoid even with lung complications usually runs its course without leucocytosis. Splenic tumor and rose spots are apparently absent. The Widal reaction should be tried. If it is absent, typhoid is unlikely.
2. Significance of nasal voice sounds? This is "egophony" and occurs oftenest in pleural effusion — sometimes in solidification of the lung from any cause.
3. What further examination is essential in this case? Puncture of the chest.
4. Comment on the urinary sediment. In most fevers one sees such sediment; it has no diagnostic value.
5. Common causes of leucocytosis? Infections, local or general, due to cocci (strepto-, staphylo-, pneumo-, gonococci), scarlet fever and diphtheria, violent muscular exertion, some toxæmias, e.g., uræmia and gas poisoning, and any acute organic brain lesion.

Diagnosis: Phthisis, unresolved pneumonia, abscess of the lung, empyema, or subdiaphragmatic abscess rupturing into the lung, are the diagnoses most deserving consideration. The two negative sputum examinations make phthisis unlikely, but do not exclude it. Unresolved pneumonia does not produce profuse purulent sputa. The signs and symptoms of the other lesions above mentioned may be identical. Abscess of the lung is rare, and a definite cause (such as the inhaling of food or foul material) is usually to be found. The same is true of subdiaphragmatic abscess. Empyema not uncommonly breaks through the lung. Hence statistical grounds should incline us towards this diagnosis. Exploratory puncture is the next and most important means of clearing up the diagnosis.

Prognosis: Under proper treatment, that is, under early and efficient surgical drainage, the vast majority of cases of empyema will thoroughly and permanently recover, though the process is apt to consume a number of months before its termination is reached.

Exception should be made of the rather rare cases of tuberculous empyema, which may persist unhealed for many years, despite operation, and finally wear the patient out with sepsis and amyloid degeneration of the parenchymatous organs.

For the vast majority of cases, however, which are due to the pneumococcus, the favorable prognosis stated holds good.

Treatment: Every case should be operated on as soon as the diagnosis is made. There is no possible ground for delaying operation or for trying any other method of treatment. Experience has abundantly proved that neither simple tapping, with or without the injection of antiseptic mixtures, nor any form of internal medication can be counted upon to check the infection. We should delay merely until we can establish as accurately as possible the position of the suppurative focus. Sometimes even this is impossible until a good-sized surgical opening, involving the excision of one or more ribs, has been made.

While the above statement can be made without any modification so long as we keep clear the traditional defini-

tion of empyema, it must be remembered that if we chance to perform paracentesis in almost any case of pneumonia we may find a few cubic centimeters of clear or turbid fluid containing a sediment made up of polynuclear cells and bacteria, this is not empyema, although certain rash or academically minded persons may be disposed to treat it as such. It needs no interference and is absorbed along with the pneumonic exudate.

When, as in the present case, an empyema has ruptured into the bronchus, and is draining by mouth, the question as regards the advisability of operation depends upon making up one's mind whether or not the drainage is really efficient. Under efficient drainage the patient's temperature and pulse should steadily approach normal, the leucocytes should diminish, and the general condition improve. The amount of sputum, after continuing profuse for a considerable period, should very gradually diminish. The physical signs should progressively improve, or at any rate get no worse. Under these conditions operation may be unnecessary. Otherwise it is demanded.

Case 27. A merchant, aged thirty-five, is seen March 30. Has never been very rugged. Last summer had a cough which persisted until he went to the mountains. Lately has felt rather better than usual. On the evening of March 28, attended an elaborate dinner. Shortly after returning home, he had a chill and began to vomit, lobster and mushrooms being noted in the vomitus. On the morning of the 29th he complained of nausea and violent headache. Temperature 101° , pulse 96. Toward noon he began to grow stupid and within an hour could not be roused. The respiration became rhythmical with occasional intervals of apnœa lasting twenty-five seconds. The pulse also was rhythmical, varying from 38 to 108 as extreme limits, the lower rate corresponding to the periods of apnœa. On the morning of the 30th he had regained consciousness but was still dull. Headache much better. Temperature normal, pulse and respiration showed a hardly noticeable rhythm. Vomiting had not occurred since eleven o'clock the preceding day. He was still dull, but could be roused to take interest in his surroundings. Is constantly tossing about the bed. At five o'clock in the afternoon, his physician noticed that he was absolutely deaf. Examination of ears negative. He replied intelligently but slowly to written questions, and appeared to have some difficulty in seeing them. For the past twenty-four hours he has required catheterization. Temperature 98° , pulse 72, respiration 24.

Physical examination shows a pale but fairly well-nourished man. Pupils contracted and unresponsive to light. Head moves freely except forward, in which direction motion seems slightly restricted. Examination of chest and abdomen negative, except for a slight systolic murmur over the pulmonic area. Knee-jerks lively, but equal. No Babinski, no ankle-clonus. Patient apparently has full control of all his muscles. White cells 16,000. Urine high-colored, specific gravity 1024, acid, very slight trace albumin, few hyalin and fine granular casts, no sugar. Amount in past twenty-four hours, 32 ounces.

1. What is the significance of rhythmic changes in pulse and respiration? Cheyne-Stokes breathing.

2. How do you explain the cough of the previous summer?
It may have been due to tuberculosis or simply to bronchitis.
3. What was the use of asking him to answer written questions? To test his cerebration.

Diagnosis: Ptomaine poisoning, uræmia, and meningitis should be considered. The first two do not stiffen the neck or produce deafness. The urine is not characteristic of any type of nephritis. The blood and urine are consistent with any of the diagnoses considered. In favor of meningitis is the predominance of cerebral symptoms (coma, Cheyne-Stokes breathing, deafness, stiffened neck, headache) in a febrile disease of acute onset. Death occurred in three days and epidemic meningitis was found at autopsy.

Prognosis: Since the discovery of Flexner's anti-meningitis serum, the prognosis of epidemic cerebrospinal meningitis is good in about 75% of cases, instead of 25% as was previously the case. Even a larger proportion of patients can be saved if the diagnosis is made early, and the treatment is vigorous and prompt. Other things being equal, the infections are more fatal in adults than in children. If recovery occurs it is usually complete within a month or two, and there is no danger of relapse. Occasionally, however, a case may drag on into a chronic form with great emaciation and irregular waves of fever protracted over a number of months, and finally ending either in death or in recovery. Since the use of Flexner's serum these chronic cases have been much less frequent and more favorable in outcome.

This serum has also reduced very materially the number of post-febrile complications such as deafness, blindness, or mental impairment, though there are still a good many cases of deafness despite all that the serum can do.

Treatment: As soon as the diagnosis is made, Flexner's serum should be injected daily, the quantity introduced being the same as withdrawn by the immediately preceding lumbar puncture. If this treatment is faithfully carried out, nothing else except good nursing is required. The patient can be fed substantially according to the method given under the treatment of typhoid fever. Analgesics, hypnotics, and laxatives

are rarely required. The bowels may be moved by enema every second day if they do not act spontaneously. Great care should be taken to prevent bed-sores, the methods used being essentially those already detailed on page 40.

Case 28. A boy of fourteen, a new inmate of a reform school, was seized February 18, 1903, with headache, backache, and fever. His appetite became poor but he managed to go to his meals that day. Next day a red papular rash appeared, scattered over the entire body. On the third day some of the lesions began to be pustular, and when he was seen by the writer on the fourth day the great majority was distinctly pustular and had a hard, shotty feel under the skin. Some were drying up and covered with dark-red crusts. The fever was continued, ranging between 100° and 102° . The boy felt decidedly sick, and could take only liquids without nausea. Slight headache and general muscular soreness persisted.

The rash was nowhere confluent, and the skin between the lesions was normal. The internal viscera were apparently normal, as was the blood. The urine showed the characteristics usual in fevers.

It was subsequently learned that he had taken some cough medicine for the ten days ending one week before the present illness began. The nature of this medicine could not be learned. There were no other cases like this in the reform school.

- I. Commonest causes of generalized pustular eruptions?
Acne and furunculosis, drug-poisoning, chicken-pox, small-pox. Less common are pustular eczema and impetigo contagiosa.

Diagnosis: The presence of fever and constitutional symptoms makes all of the above affections unlikely, except varicella and variola. Acne and furunculosis do not appear so rapidly, and this is equally true of the eczema and impetigo. Our diagnosis practically is between varicella and variola. The constitutional signs (pain, fever, and digestive disturbance) and the shotty feel of the lesions point rather to variola. Decidedly, and on the whole definitively, against variola is the rapidity with which the lesions reached and passed their maturity. It is almost unheard of that any part of a small-pox eruption should have passed through the pustular stage and be drying up by the fourth day. The diagnosis of exanthematous infection will never be satisfactory as long as it

has to rest on the characteristics of the exanthemata, but we have at present no more reliable clinical test.

The fact that there were no other cases in the school was of no importance in diagnosis, for the boy had but recently entered it. Drug eruptions are always to be remembered in such cases, but it seems very unlikely that any such eruption could produce so much pain, fever, and digestive disturbance.

Prognosis: Except for the very rare cases of streptococcus infection with resulting erysipelas or arthritis, there are no serious complications of chicken-pox beyond the nephritis which in isolated instances has been known to occur. The vast majority of cases recover without any complication or any serious symptoms. A week or two usually makes an end of all manifestations of the disease.

Treatment: Nothing more than isolation is necessary. The vast majority of cases are not really sick and require nothing more than a slight simplification of diet.

Case 29. J. B., male, aged thirty-two (occupation, cook), came to the out-patient department of the hospital January 6, 1899. His family history was negative and previous history good. He denied any syphilitic infection, but admitted having had a urethritis some years previously. He had never had an attack similar in character to the present. His illness dates from December 30, 1898, eight days before he applied for relief at the hospital. The first symptoms seemed to have come on rather suddenly with a rigor of marked severity, followed by fever and, later, by profuse sweating. Almost immediately afterward he was seized with intense muscular pains, extending over the trunk and limbs; these pains were agonizing in character, increased on the slightest exertion, and had been present, with varying degrees of severity, until his admission. They prevented him from sleeping, and were spoken of by the patient as being not unlike rheumatism, i.e., dull and aching, while he was in the recumbent posture, becoming intensely lancinating as soon as the slightest exercise was attempted. His appetite, which had previously been of the best, was absolutely lost and he had eaten nothing for three days. With the exception of some little frequency of micturition and a slight cough with expectoration, there was nothing else of importance in the history of the illness.

Examination: The patient was rather a large, well-formed man, the mucous membranes of good color, tongue moist, and with a slight white fur. The eyes were markedly injected, the eyelids slightly but distinctly œdematous, and an erythematous area above the swelling. Negative results were obtained everywhere on auscultation and percussion, except at the bases of both lungs behind, where a few moist râles were made out. The heart sounds were quite clear. The liver and spleen were not palpable; the abdomen was soft and natural in appearance, negative results being obtained on palpation. No rose spots were seen. There was no superficial glandular enlargement. Pulse was 100, respiration 24 to the minute. The temperature ranged in the vicinity of 103° for three weeks and then gradually subsided. The urine was normal in color, acid, specific gravity 1026. Microscopically,

it showed pus-corpuscles in considerable quantity, epithelial cells, and a few mucous casts.

1. What important information might be gained by testing the knee-jerks in this case? Neuritis — one of the diagnoses to be considered in this case — would be suggested if the knee-jerks were diminished or absent.
2. Commonest causes (*a*) of absent knee-jerk? (*b*) of increased knee-jerk? (*a*) Neuritis, tabes, anterior poliomyelitis. (*b*) Brain hæmorrhage or other organic brain lesion (focal or diffuse), spastic paraplegia, pressure myelitis, chronic arthritis.
3. What infectious diseases cause severe pains in the trunk and limbs? *Grippe*, *tonsillitis*, variola, dengue, trichiniasis, yellow fever. Milder pains accompany some cases of typhoid, sepsis, pneumonia, or any other infection.
4. What further examinations would throw light upon your preliminary diagnosis here? Blood examination and tests of the deep reflexes.

Diagnosis: Blood examination showed a leucocytosis. This suggested a differential count which revealed a very marked eosinophilia. A bit of the biceps muscle was then excised and trichinæ were demonstrated in it by histological examination. If blood examination is included in our investigation of such a case, diagnosis (in temperate climates) is usually very easy as there is no other chronic febrile disease with eosinophilia and severe muscular pains. In the tropics other fevers complicated by the presence of intestinal parasites may be hard to distinguish from trichiniasis unless trichinæ are found in the muscles. In any climate many cases closely simulate typhoid and without blood examination are sure to be mistaken for it. Others pass as "muscular rheumatism."

Prognosis: The outlook depends upon the number of trichinæ which have been taken in with the infected meat. The mortality varies greatly in different epidemics. Sometimes nearly a third of all those affected die. As a rule, however, the outlook is much more favorable and in some epidemics only one or two per cent of the cases are fatal. The duration of an attack is usually comparable with that of typhoid fever though the convalescence is sometimes somewhat slower. Relapse occasionally occurs. I have followed

one such case with great interest. Children are less seriously affected than adults as a rule.

Treatment: No drugs or other therapeutic measures yet suggested have any obvious effect upon the course of the disease. Most patients suffer very little as long as they lie quiet in bed. After the initial gastro-enteric disturbances, which may be very slight, there is usually no trouble with digestion and the symptoms are those of any infectious fever. Practically all that has been said under the heading of treatment in typhoid fever may therefore be applied to the management of trichiniasis. Hot applications, aspirin or acetanilid, rarely morphin, may be employed for the control of pain, though as previously mentioned this is rarely severe. The most important element in treatment is the education of the patient, his family, friends, and neighbors regarding the dangers of eating raw or imperfectly cooked pork in any form.

Case 30. July 20, 1905, a girl of sixteen, previously healthy, was attacked in the morning by pain in the sternum with a sense of pressure. Later the pain extended round the chest and became severe on any movement of the intercostal muscles — so that breathing was painful and shallow. She felt feverish and nauseated, and in the evening her temperature rose to 101° . She slept fairly well and next day her fever was gone and she was almost well; walked, drove, and ate her meals with good appetite. On the third day the pain and fever returned and both were worse than before; the pain extended round both sides of the chest, from the armpit to the bottom of the ribs, and also into both shoulders. In the evening the temperature was 103° . Next day she remained in bed feeling greatly improved, but still somewhat sore and achey.

On the fifth day the pain came three or four hours earlier than in the previous attack, and was agonizing in character. The temperature reached 104° in the evening.

There was no chill, no sweating, and no cough at any time. Visceral examination was negative — also the urine. The blood was not examined. Calomel was given on the fourth day, without relief.

1. (a) Causes of severe thoracic pain? (b) Of mild thoracic pain? (a) Pleurisy (pneumonic, tuberculous, or "simple"), angina pectoris (organic or functional), intercostal neuralgia, muscular pain ("pleurodynia"), spondylitis (nerve-root pains), trichiniasis, aneurism. (b) Infectious diseases, fatigue.
2. By what additional data could diagnosis be made easier here? A careful history with special reference to a possible source of infection; a thorough examination of the blood and of the spleen.

Diagnosis: Paroxysms of fever recurring every second day with complete apyrexia on the intervening days, almost never occurs except in malaria. Pyogenic infections (including advanced phthisis) may, in rare cases, produce such a fever curve, but in these conditions the patient is never as well on the intervening days as this patient was, and usually shows well-marked local lesions of some kind. The pains of this case are very unusual for malaria but not unknown, and it

is a safe rule to assume, until it is proved to the contrary, that *any* symptoms that recur every forty-eight hours, with fever, and disappear completely on the intervening days, leaving no physical signs of disease, are due to malaria. The blood was not examined in this case until after quinin had been given with complete and permanent relief of all symptoms. After this no parasites were found in the blood. Abdominal pain is not infrequently the only striking symptom of malaria, but thoracic pain is rare.

Prognosis: I have yet to be convinced that there are any cases of tertian malaria accurately diagnosed as such by good examination, which resist treatment by quinin. Difficulties occur, I believe, only in connection with the other types of the disease, and chiefly the æstivo-autumnal form which occasionally resembles the tertian in its symptoms. Here I shall consider only the true tertian. Under prompt and efficient treatment the active symptoms of the disease should be over within four days, usually within forty-eight hours. Some weakness and anæmia may of course remain if the infection has been allowed previously to go on for some weeks unchecked. Very rarely acute nephritis may darken the otherwise wholly favorable outlook.

Treatment: In my experience it is wholly immaterial what form of quinin is given or what the relation between the administration of the drug and the progress of the symptoms, provided always that the quinin actually gets into the blood. One can kill the organism by administering quinin before a chill, after a chill, in hourly doses, or at eight-hour intervals. But whatever way we give it, we must be sure that it is actually dissolved and absorbed. It is above all important to avoid the ancient and dessicated pills sometimes brought down by the apothecary from an upper shelf, for these are capable of passing through the intestinal tube without being dissolved or absorbed at all. To insure the absorption of the drug one should administer it either in compressed uncoated tablets or in capsule. The sulphate of quinin, though somewhat less effective than other salts, is so much cheaper that it may well be employed in the great majority of cases.

Thirty grains should be administered in the first twenty-four hours, after the diagnosis is established, 10 grains in the next twenty-four hours, 10 in the third twenty-four hours, and thereafter 2 grains three times a day until a week has elapsed. Experience has shown that it is well to give a somewhat larger dose, say 10 grains a day, upon the seventh, fourteenth, twenty-first, and twenty-eighth days after the last chill.

In the rare cases in which there is an idiosyncrasy against the drug, and in cases of middle-ear disease in which the pain due to congestion of the middle ear from the quinin is very severe, one may use euquinin, and if that fails methylene-blue may be tried.

CHAPTER II.

DISEASES OF THE GASTRO-INTESTINAL AND BILIARY TRACTS.

Case 31. Man, fifty years old, a hard drinker, except during the past year. No family history obtained. For two or three years he has had pain after taking food, occasional vomiting, and progressive loss of flesh and strength. For the past eight or ten weeks he has complained of frequent and severe pain of a "stretching" character in the right hypochondrium, without much tenderness there. For the last two weeks he has been deeply jaundiced. For a week he has been confined to bed and is emaciated and prostrated. His nights are disturbed by pain. The liver is greatly enlarged, hard, irregular, and nodulated, the lower edge reaching to the anterior spine of the ilium; it also extends to the left of the median line about two inches. It is slightly tender. There is little or no ascites. Pulse 92; temperature 98.5°. Urine rather scanty and very dark. No itching of skin.

1. What diseases can produce emaciation with jaundice? Gall-stones and their results, cancer obstructing the biliary passages, syphilis of the liver, cirrhosis, septicæmia (toxæmic jaundice).
2. Common causes of hepatic enlargement? Passive congestion, biliary obstruction from any cause, fat, cirrhosis, cancer, rickets; rarer causes are abscess, leucæmia and pseudoleucæmia, cholangitis, amyloid, and hydatid disease.
3. What importance would there have been in a good family history? None in this case. (The diseases in which the family history *is* of value may here be emphasized.)

Diagnosis: Gastric symptoms, nodular hepatic enlargement with severe pain, emaciation, and jaundice, and without evidence of portal stasis (ascites, etc.), point strongly to *cancer of the liver*, probably secondary to gastric cancer. The history of alcoholism and the hepatic enlargement suggest *cirrhosis*,

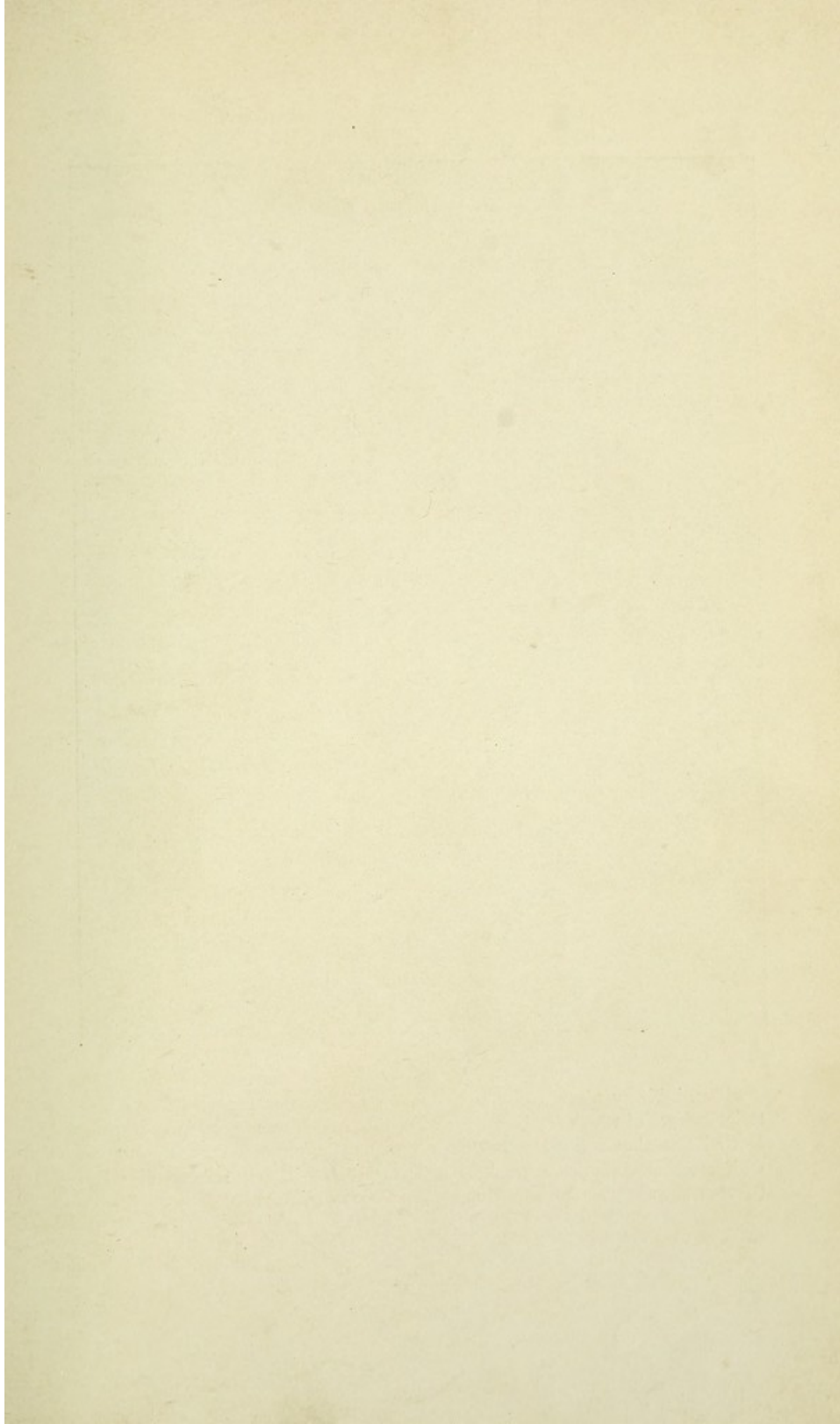
but there is rarely if ever so much pain in cirrhosis (or indeed in any liver disease except cancer), and the "hobnails" of cirrhosis are not large enough to make the liver feel "irregular and nodular" through the abdominal wall. The absence of ascites is also against cirrhosis. *Syphilis* of the liver might produce all the signs described and can only be finally eliminated by the therapeutic test, but the amount of pain here present is almost unknown in syphilis and the amount of hepatic enlargement is very unusual.

Prognosis: The prognosis of gastric cancer is almost invariably fatal. Personally I have never known a recovery, even after the most favorable type of operative interference.¹ As a rule the symptoms last from eight months to eighteen months after the patient first begins to be distressed. Yet under careful diet and rest very marked periods of improvement not infrequently occur, especially if the patient is given the benefit of encouragement and frequent lavage.

Treatment: Operation should be advised in all early cases as soon as the diagnosis is made. Unfortunately there are very few cases which can be truthfully said to belong in this category. The diagnosis is usually impossible until the disease is advanced beyond the stage at which operative measures can furnish any considerable measure of relief. Cases in which a tumor is palpable are very rarely benefited by operation, which should nevertheless be undertaken, in my opinion, in practically every case, because of the possibility that the tumor may not really be cancer at all, but may represent a thickening about the site of a peptic ulcer. I have known a number of cases in which an expert was unable to distinguish a cancerous tumor from the perigastritis associated with ulcer, even when the abdomen was open and the mass exposed to sight and touch. Indeed even the histological examination of an excised gland not infrequently leads to false conclusions.

For these reasons it seems to me that operation should be advised in almost every case even though we may believe, as I do, that in genuinely cancerous cases, it is rarely of value.

¹ The extensive statistics of the Mayos' clinic show 1 patient alive 10 years after operation. Collected Papers of the Mayo Clinic, p. 122.



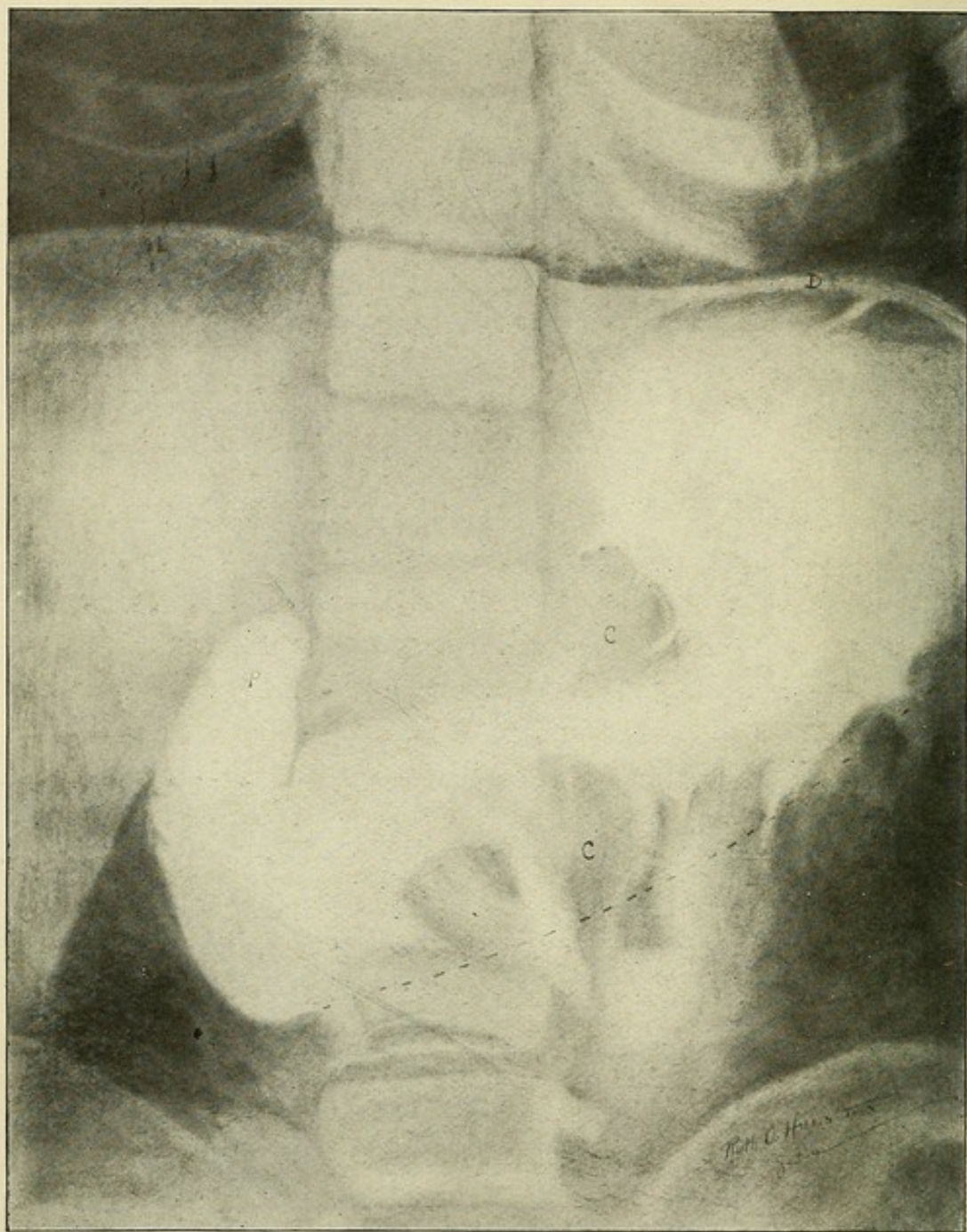


PLATE II.

Bismuth-X-ray picture of a stomach on the greater curvature and posterior surface of which (at C) a cancerous infiltration was found at operation. Dotted line shows roughly the lower limit of the organ. D = Diaphragm, with stomach bubble beneath, P = Pylorus, L = Upper border of liver. (Crayon drawing by Ruth C. Huestis from X-ray plate.)

If operation is refused or if no competent surgeon is at hand to perform it, our treatment consists in overcoming the bad results of stasis through daily lavage, and selecting a diet which will provide the maximum of nutrition and the minimum of gastric irritation. In almost every case meat is the most objectionable of all foods, and has to be excluded from the diet. Aside from this there is no single food which is not well borne by certain patients, and one's plan of action has to be determined experimentally. The administration of dilute hydrochloric acid, 10 to 20 minims during the course of each meal, seems to help some patients, possibly by its action in stimulating the flow of pancreatic secretion. It is hard to believe that the amount of acid we can administer as a therapeutic can have any considerable value in the stomach chemistry.

· **Case 32.** A married lady, childless, fifty-five years old, of good family history, is seen in February, 1900. She passed the menopause without difficulty, and several years ago had cystitis, with good recovery. During the winter of 1899 she traveled in North Africa, going to Germany toward spring. There her appetite became capricious and she suffered occasionally from slight nausea, without vomiting. She then had an attack of "grippe," which much impaired her strength. In the early summer she returned home, when her appetite and digestion improved much, and her strength returned in great measure, though her friends remarked that she was distinctly paler than formerly. She considered herself well enough until five months ago, when she began to suffer from sciatica, at first and more severely in the right side, but later also in the left. About a month later her appetite failed again and more or less constant nausea came on, with occasional vomiting, the latter without relief or definite relation to either the time of taking food or its quality. Then came on very troublesome salivation, leading her constantly to spit up a clear, somewhat frothy fluid, which is sometimes poured out in such quantity as to run from her mouth. This persists to the present time. The sciatic pain now has practically disappeared. She has kept her bed for some weeks, losing flesh (though she is still stout), but sleeping well. Of late there has been slight bleeding from the gums, but no other hæmorrhage has been noted.

Pulse 96, regular, soft; temperature 99°, above which point it is said not to have risen. Except for marked pallor, physical examination is negative. The urine is negative and contains no arsenic. Several examinations of the gastric contents show neither free HCl nor lactic acid.

An examination of blood slides shows: Red cells 3,000,000 or thereabouts; white 15,000; Hg relatively low.

Reds: Marked achromia, slight deformities, no polychromatophilia, average diameter normal, one normoblast.

Whites: Polymorphonuclear 80%; lymphocytes 20%; eosinophiles 0%.

1. What types of anæmia are oftenest seen at 55? Pernicious anæmia, and that secondary to cancer, metrorrhagia or other hæmorrhage.
2. What diseases are oftenest diagnosed (wrongly) as "grippe"? Tuberculosis, febrile gastro-enteritis, tonsillitis and pharyngitis, bronchitis, bronchopneumonia, and many infections not yet named.
3. Significance of the absence of free HCl in the gastric contents? It may be temporarily absent in many conditions and often without any known cause. Permanent absence of HCl is commonest in diabetes, gastric cancer, gastric catarrh, and other chronic dyspepsias, and pernicious anæmia.
4. What further information about the stomach is needed here? Its size and motor power.

Diagnosis: The cause of the marked anæmia here present should be looked for in one of the following diseases: Intestinal parasites, myxœdema, malignant disease, pernicious anæmia. Myxœdema is suggested only by the salivation and can be ruled out by the therapeutic test. The stools should be searched for eggs of intestinal parasites. Careful pelvic and abdominal examination should be made under ether or in a warm bath in search for a focus for malignant disease. The blood is not typical of pernicious anæmia, but is consistent with that disease in a period of remission. Diagnosis is impossible from the data here given. (Later in the case evidences of gastric cancer appeared.)

Prognosis: The outlook is almost hopeless, though early operation saves some cases. As a rule life is not prolonged beyond two years, but after careful diet, with or without gastro-enterostomy, a great improvement may occur for a few months.

Treatment: Careful diet and lavage produce striking temporary improvement in some cases. The administration of HCl is apparently of value. In all doubtful or early cases operation should be advised (see Case 31).

Case 33. A sailor, thirty-nine years old, is seen on November 5. His mother died of "stomach trouble." Has had gonorrhœa three times, and ten years ago a sore on his penis. No secondary symptoms were observed. Always well up to two years ago, when he began to have epigastric pain after eating. He vomited frequently and usually with relief of pain. After three months in a hospital, he improved somewhat, but after discharge the old symptoms returned and with them headache and alternate constipation and diarrhœa. He again entered a hospital and remained six months, but lost strength and weight steadily and vomited everything taken. The vomitus, occasionally amounting to a quart at a time, was often "dark in color, and now and then contained a streak of blood." The patient is much prostrated and emaciated. The abdomen is retracted, but more prominent in the epigastrium, where there is some rigidity of the muscles and a little tenderness. Physical examination is otherwise negative. Pulse 110, respiration 18, temperature 98°. Urine 1020, alkaline, no albumin, no sugar. The inflated stomach extends from the normal limit above, to an inch below the umbilicus. Its capacity is fifty-four ounces. Two days ago, an hour after a test breakfast of one ounce of bread and ten ounces of water, twenty ounces of brownish fluid, containing much mucus, were withdrawn. Free HCl and blood absent. Lactic acid, intense reaction. Butyric present. This morning the stomach was washed out again, and a pint of oat-gruel was given. An hour and a quarter later twenty ounces were withdrawn which contained considerable mucus but no blood. Free HCl absent; combined, present in small quantity. Lactic acid, a trace. Total acidity, .237. The leucocytes, before eating, numbered 5600; after, 7300. The stomach after inflation extended from the normal limits above to a point an inch below the umbilicus. Its capacity was fifty-seven ounces.

1. How many ounces of fluid does the normal stomach hold?
About forty-eight.
2. Significance of mucus in the stomach content? Mucus is always present in the stomach. By practice with many cases needing gastric lavage, one learns to recognize

how much mucus is to be extracted from the normal stomach, and hence to recognize marked excess suggesting catarrh.

Diagnosis: Gastric pain and vomiting (the vomitus bloody, and sometimes a quart in amount), loss of flesh and strength, evidences of gastric dilatation and stasis, and the continued absence of HCl all point towards pyloric cancer. The scar of an ulcer near the pylorus (peptic or syphilitic) might, by contraction and obstruction of the pylorus, bring about gastric dilatation, stasis, and the other symptoms of this case; but the continued absence of HCl, the absence of hemoptysis, and the age, make gastric cancer more likely.

Prognosis and Treatment : (see above, Case 31).

Case 34. Dentist, forty-two years old, always well until within four days, when, after a hard day's work, was taken with a chill, vomiting, and epigastric pain. Temperature 102° . Next day, 99.4° , but vomiting continued and was so exhausting that $\frac{1}{4}$ gr. of morphia was given subcutaneously. Pain not so severe as the night before, but considerable epigastric tenderness. Kept his bed. Temperature 101.4° in afternoon.

On the third day, the one previous to that on which I saw him, the vomiting was less persistent and temperature a little lower, but he felt very weak and faint, wanted no light or sound in his room, and desired to be left alone and not disturbed. Slight tenderness over the whole abdomen now developed, with perhaps a little more on the right iliac region. Bowels have been moved freely by cathartics each day. To-day, feels as if there was a mass in the rectum. Urine very scanty in the last three days. It was examined a week ago and found normal. There has been no œdema. Has been working very hard of late.

Examination: Tongue clean; temperature 99.2° at 5 P.M.; pulse 68, good strength. The patient is pale, and looks exhausted and in pain. Thorax negative. Slight general abdominal tenderness, not localized, but slightly greater in the epigastrium. Rectal examination negative.

1. What is the significance of the mass apparently felt in the rectum? Any rectal irritation may give the feeling as if a mass were present.
2. Why is the urine so scanty? Presumably because of the persistent catharsis.
3. What further tests should be made? Leucocyte count, urine examination.

Diagnosis: Has he or has he not a localized peritonitis — perhaps from appendicitis? In favor of peritonitis are the initial temperature and the suggestion of localized tenderness on the third day. Against it are the absence of localized tenderness or elevated pulse upon the fourth day, the free movements of the bowels, the mental condition, and (to some extent) the temperature. The presence or absence of leucocytosis would help to decide the question. It is conceivable

that a nephritis with uræmia may have declared itself within the week since the urine was last examined. The photophobia suggests meningitis or hysteria, but there are no other data confirming these hints. Previous to obtaining a leucocyte count and urinary examination, acute indigestion, aggravated by cathartics and by fear of appendicitis, seemed the most probable diagnosis. Leucocytes and urine proved normal and the diagnosis just mentioned became still more probable. The course of the case confirmed it.

Prognosis: He should be well and at work within a week. The malady is trifling.

Treatment: To convince one's self and then the patient that he has no appendicitis or other serious disease, to stop the cathartics and soothe the rectum with an enema of thin cooked starch, to get the patient out of bed and gradually increase his diet are the main indications. Nux and gentian will probably help him, also advice about hygiene.

Case 35. A factory overseer of sixty-three had long been subject to constipation, and for two years had had right inguinal hernia. Otherwise his previous history was excellent. On the day before his illness he had what he regarded as a satisfactory movement of the bowels. That night he ate heartily of clam chowder and strawberries. The next afternoon he felt some abdominal discomfort. Later, while taking a bath, he found his hernia was down (as he had taken the truss off), and found more difficulty than usual in replacing it. That night he vomited many times, the first vomitus suggesting strawberries, and had great abdominal pain, not localized. When seen next morning at 4 A.M., he was not collapsed. The tongue was moist, with a slight white coat. Temperature 98.4° , pulse 60, respiration 14. The abdomen was soft, not tender. The hernia was found to be perfectly reduced. Nothing abnormal was felt per anum. The pain required an injection of morphia, gr. $\frac{1}{2}$. Nausea was so troublesome that the patient refused even bits of ice. Nothing whatever passed the bowels. On the second day the vomiting became stercoraceous. On the third day the vomiting persisted. Temperature 98.5° , pulse 68. Large enemata ($5\frac{1}{2}$ quarts) had been given without apparent benefit. The belly was distended, rather hard, not tender. In the right side an ill-defined resistance was felt, corresponding to the ascending colon.

1. What cause can you suggest for the slow respiration in this case? Possibly he has already been given morphia.
2. How does the temperature record help us here? It tends to exclude peritonitis.
3. Causes of pyrexia and of subnormal temperature? (a) Infections with or without inflammation; (b) toxæmia (e.g., in eclampsia); (c) disturbance of heat-regulation, as in sunstroke; (d) after use of atropin and in nervous excitement. Subnormal temperature in a measure of the degree of prostration from any exhausting or wasting disease (nephritis, cancer, heart disease, myxœdema).
4. Is the combination of clam chowder and strawberries a particularly indigestible mixture? What is its probable relation to this case? Not in a normal stomach. Probably no relation to this case.

5. Causes of stercoraceous vomiting? Intestinal obstruction and general peritonitis.
6. What can be inferred from the results of the enemata in this case? That the obstruction is above the sigmoid flexure.
7. Significance of the tongue in disease? In this case? A coated tongue has little diagnostic significance in general or in this case, since it is present in so many conditions of health and disease. A clean tongue with dyspeptic symptoms suggests hyperchlorhydria, peptic ulcer or extra-gastric disease.

Diagnosis: Intestinal obstruction is obviously present. Its cause might be the hernia reduced "en bloc," but from the shortness of its stay outside the body this is unlikely. At this patient's age cancer is by far the commonest cause of obstruction. The acute onset of symptoms without previous constipation or other complaints is not surprising, for it is well known that cancerous stricture may suddenly "shut down" after existing for months without symptoms. The mass in the ascending colon is probably feces collected behind a cancer at the hepatic flexure.

Prognosis: Cancer of the large intestine grows as slowly as any form of epithelioma known to medical science unless it be that occurring on the lower lip. I am confident that such cases may live in very tolerable comfort for three years or more before the malady is discovered. Even after that time its advance and the occurrence of metastasis is very slow. If operation is promptly and successfully performed we may hold out a genuine prospect of recovery.¹

Treatment: There is no excuse for advising any treatment other than surgery when the diagnosis is clear. Should operation be refused our efforts are limited to measures for emptying the bowels and for preventing the occurrence of such accumulations or irritations as lead to a "shutting down" of the stricture. Presumably the symptoms of acute obstruction which occur in so many cases are due not simply to the mechanical blocking of the intestine by the growth, but to an additional element of irritation and muscular spasm

¹ Mayo Clinic; Collected Papers, pages 258-9.

occasioned by some temporary source of irritation. A diet containing the smallest amount of irritating matter that is consistent with daily movements of the bowels should be prescribed, and the patient should be cautioned never to allow a day to pass without securing some sort of evacuation, using an enema for the purpose if that is necessary. Perfect regularity of life and the avoidance of special strains and sources of fatigue are advisable.

Case 36. A rather nervous gentleman, forty-three years old, both of whose parents died of cancer, moved from the city to the country about a year before his present illness began, and became quite active outdoors, with benefit to his appetite and general health. The winter snows, however, forced him to be more sedentary. When first seen in consultation with the family physician, who had been called only four days before, he complained of obstinate constipation. For six weeks he had had darting pains in the lower abdomen, worse at night, but relieved by walking. The physician had first prescribed a laxative pill, which caused pain but no dejection. The next night he sat bending forward in pain most of the night, getting relief from a hypodermic of $\frac{1}{4}$ grain of morphia, twice repeated; this was followed by a fecal discharge. The bowels were soft, except for resistance corresponding to the ascending and transverse colon. The next night he had an ounce each of glycerin and castor oil, but was worse the following day. Some flatus escaped on the day of the consultation, but no fecal matter had come away for at least four days. The temperature had remained normal. There was no vomiting.

Physical examination showed a spare man, with an anxious face. Rectal examination was negative. The abdomen was distended with gas and somewhat tense, but nowhere especially tender. When the patient's attention was diverted, the resistance already described could be felt. The pulse was not remarkable at first, but after the examination it became rapid and feeble, improving again after a little brandy.

1. What special significance has the effect of the morphia in this case? When morphia produces a fecal movement it does so by relieving spasm. Such spasm is apt to occur above a stricture (cancerous or other) of the gut.
2. What can be inferred from the rectal examination here? That there is no obstruction within reach of the examiner's finger.
3. How do you interpret the absence of vomiting? The obstruction is not complete (gas passes) and is probably low down in the large gut.
4. Why were his pains relieved by walking? The element of spasm above mentioned may have been helped by walking, as any form of constipation may be.

Diagnosis: Gradually increasing constipation, leading finally to complete stoppage of fecal movements, with abdominal distention, pain, and a pulse that easily becomes rapid and feeble, all point to intestinal obstruction, apparently in the region of the splenic flexure of the colon, behind which feces are accumulated. At his age, and in the absence of any history of previous peritonitis or laparotomy, cancer of the bowel is the commonest cause.

Prognosis: Grave; operation may relieve, but early recurrence is the rule.

Treatment: Immediate laparotomy, artificial anus; later an attempt to extirpate the growth (see Case 35).

Case 37. A gentleman of eighty-two is seen April 17. He has always enjoyed good health, except that a number of years ago he suffered from attacks of pain in the right upper abdomen, diagnosed as bilious colic; for this pain he kept morphin constantly on hand. During the past year he has aged rapidly, but he attended to business regularly until a month ago, when painless jaundice came on and rapidly deepened, the stools being clay-colored. A week ago the jaundice seemed less and some color was seen in the dejections, but this was only temporary. The appetite and digestion have been fair; he smokes a good deal. He has been up until to-day, when increasing weakness induced him to remain in bed. Pruritus has interfered much with sleep. The temperature has been normal until to-day, when 100° was registered. The pulse has been regular, about 70; yesterday it was irregular and intermittent.

When seen, he was sleeping in the right dorsal decubitus, with easy respiration; pulse 68, regular, of fair strength and volume. Icterus intense, the tongue heavily coated, the mind clear.

Thoracic examination gave negative results, except for slight crepitus at the right posterior base. A smooth edge could be felt below the right costal border, descending with inspiration, not tender. The gall-bladder could not be felt. Abdomen soft, otherwise negative. Urine sufficient in amount, 1018 in specific gravity, deeply icteric, with a trace of albumin, hyalin and granular casts.

1. Name and distinguish five common varieties of colic. Biliary, renal, uterin, intestinal (including saturnine) and that due to Dietl's crises. In biliary colic the pain is apt to spread from the region of the gall-bladder to the back and right scapular region; jaundice may appear before, during, or after the attack. In renal colic the pain follows some portion of the course of the ureter, and is often associated with the passage of blood or gravel by urethra. Uterin colic is usually associated with or precedes flowing — menstrual or irregular — and is referred to the groins or pelvis. Intestinal colic (if not saturnine) is associated with diarrhoea or flatulence. It shifts its position frequently. Lead colic is recognized

only by association with other evidence of lead (gums, blood, brain, extensor muscles). Dietl's crises are recognized only by the association of abdominal pain with the presence of a floating kidney and the absence of the signs of other colics.

2. What significance has the fact that the gall-bladder is not felt here? A gall-bladder not tense with fluid cannot be felt, whatever its size, and the belly walls often prevent any satisfactory exploration of this region. Hence negative evidence is of little value.
3. What cerebral symptoms are likely to appear later in this case? Coma, delirium, vomiting, and convulsions — as in uræmia.
4. When a patient ages rapidly what disease is probable? Arteriosclerosis.

Diagnosis, Prognosis, and Treatment: (see Cases 38 and 39). Autopsy showed cancer of the bile duct near duodenal papilla.

Case 38. A liquor dealer, forty-seven years old, is seen December 15, 1904. His father died at sixty-seven of "obstruction of the bowels," his mother at sixty-three of pneumonia. He regularly used whiskey and beer to excess up to 1891, when he had an attack of bloody vomiting after a debauch. He had a similar attack in 1895 and again in 1902. He never was kept in bed more than a few days, and always returned to business within a week. After each attack he gave up all alcohol for periods varying from six months to two years and then relapsed into his former habits. He has suffered for years from digestive disturbances, "sour stomach," which have been much worse during his periods of alcoholism. After twenty months of abstinence he began to drink about three months ago, and since then has complained of anorexia, pain, eructation of gas, nausea, and vomiting. The pain is located in the epigastrium, comes on ten to fifteen minutes after eating, and is relieved by vomiting. On the afternoon of December 11 he vomited a small quantity of bright-red blood, and since then he has vomited after nearly every meal, but he has noticed blood only on one other occasion, two days ago, when he threw up nearly a pint. He has noticed black stools for several days. He has recently lost about 15 pounds; present weight 185.

Mucous membranes pale. Heart normal in size, action regular, soft systolic murmur at apex, not transmitted. Pulmonic second sound not accentuated. Abdomen tympanitic throughout, slight tenderness on pressure over epigastrium. Liver dulness extends from fifth interspace to two fingers' breadth below costal margin where a smooth edge can be felt. Lower edge of spleen felt on full inspiration. Physical examination otherwise negative. Pulse 100, regular, of good quality. Temperature 98.4°. Urine, specific gravity 1020, acid, no sugar, no albumin, Hg 50%, red cells 3,172,000, no nucleated cells. Leucocytes 9200.

1. What is the type of anæmia in this case? Typical secondary.
2. Significance of the patient's family history? None whatever.

3. What causes produce tarry stools? Bismuth, iron, blackberries, blood from high up in gut.
4. How do you interpret the cardiac signs here present? Functional murmur.
5. What are the commonest causes of splenic enlargement? Typhoid, malaria, rickets, cirrhosis, leucæmia, anæmia.
6. What causes of hæmatemesis should be considered here? Gastric or duodenal ulcer, cirrhosis, aneurism.

Diagnosis: Hepatic cirrhosis, ruptured œsophageal varix, secondary anæmia, passive congestion of stomach.

Prognosis: Unless the duration of the case is prolonged by operative treatment, the length of life is not apt to exceed one year after the appearance of ascites and other evidence of portal stasis. The disease remains for many years latent or compensated, but when it once makes its appearance in a form capable of recognition at the bedside, its course is usually rapid and severe.

Treatment: I have never seen any striking improvement follow an abstinence from alcohol. In the majority of cases the patients have given up the habit before they came under the physician's management. If this is not the case the drug should be prohibited at once.

In my opinion it is our duty to treat every case with potassic iodid and mercury, recognizing as we must the possibility of a syphilitic basis for the disease and the impossibility of excluding this by physical examination or by history. I have known two cases confidently believed to be of the ordinary type of alcoholic cirrhosis yet showing swift and permanent improvement after anti-syphilitic medication. Doubtless such cases, however, are rare.

After excluding syphilis we have no therapeutic resources except the amelioration of the patient's local discomforts by repeated tapplings, the restitution of his blood mass by transfusion after hæmorrhage, and operative procedures for establishing a collateral circulation. Although this latter operation does not succeed in any considerable percentage of cases, it seems to me that it should be advised in practically all patients whose general condition warrants their being subjected to anæsthesia and operative shock. This is all the

more justifiable because the diagnosis of cirrhosis of the liver is one of which we can rarely be certain unless the abdomen has been opened. Other and more curable causes of ascites may be present. The patient should therefore be given the benefit of the doubt and an exploratory laparotomy advised in almost every case. Whether a further operation for the restoration of a collateral circulation shall be carried out in case the malady proves to be cirrhosis, is a question best determined by the surgeon when the liver is accessible to sight and touch.

Case 39. A metal polisher of fifty-five entered the hospital December 10, 1910, for the third time. His first entrance was in 1879 when he was operated on for stricture of the urethra; a second operation was done for the same trouble in 1884. Otherwise his general health has been good. He had gonorrhœa and a soft chancre in 1872, took alcohol in moderation until last summer when he drank heavily. He smokes and chews twenty-five cents' worth of tobacco a week.

For the past four months he has had constant dull pain in the loins with irregular exacerbations. In these sharper attacks the pain shoots down along the course of the ureters, especially the right ureter, and he has increased desire to urinate with no relief from pain after urination.

For the past three months he has suffered from another pain, a dull, gnawing ache at the pit of the stomach, coming on immediately after meals and lasting from one-half an hour to an hour. It is usually relieved by taking hot water or soda. He has rarely vomited and has never seen any blood in the vomitus. His bowels are very constipated. Although his appetite has remained good, he has lost 23 pounds in the last year and had to give up work some weeks ago.

The patient was well-developed and nourished, his skin and mucous membranes of good color. Three days after entrance jaundice appeared accompanying an attack of abdominal cramps. The chest showed nothing abnormal. Pulse and reflexes were normal. A slight tenderness over the pubes and in the left iliac fossa. Sudden pressure under the right costal margin caused the patient to wince. Steady pressure produced no pain. Otherwise the abdomen was normal. Slight general œdema was present. Rectal examination showed enlargement, hardness, and irregularity of the prostate. The temperature was 98°, the pulse 84, respiration 24; urine from 25 to 40 ounces in twenty-four hours, specific gravity 1026 with a very slight trace of albumin, no sugar. The sediment showed a moderate number of leucocytes and a few casts. The systolic blood pressure was 140. Hæmoglobin 75%, leucocytes 6000, stained smear normal. Wasserman reaction negative. Three weeks after entrance the liver was felt 3 cm. below the costal margin. The jaundice was still intense. The capacity of

the stomach was 800 cm., and on inflation the lower border reached the level of the navel. Examination of the contents after a test meal showed nothing abnormal and before breakfast the stomach was shown to be empty. Although the pain was somewhat relieved by poulticing, the general condition grew slowly worse and vomiting more frequent. The temperature was never above 99° and the pulse averaged 80. This condition of things went on from December 10, to February 14, the patient gradually losing strength and weight throughout. Then the temperature rose sharply to 103° , the patient became partially unconscious, and died three days later.

Diagnosis, Prognosis, and Treatment: Gall-stones and cancer are the affections most to be considered. Unfortunately for this patient the condition of his prostate as felt by rectum led a number of eminent surgeons to a very positive belief that he had malignant disease. Consequently he was allowed to die without any attempt at operative interference. The writer repeatedly urged operation on the ground that gall-stones was a perfectly possible diagnosis and that the patient should be given the benefit of the doubt. Autopsy showed that the patient died of gall-stones and the resulting toxæmia associated with his long-standing and intense jaundice. This is the second case that I have known to die of gall-stones owing to faulty diagnosis. It has impressed upon me very strongly the importance of exploratory incision in all cases in which the diagnosis of gall-stones is reasonably possible, even those cases in which the weight of evidence is against it.

The case also demonstrates that patients can die of gall-stones independent of any perforative peritonitis or local sepsis. The death in this case was apparently due to exhaustion from pain and auto-intoxication associated with the obstruction of the biliary flow. The rapid emaciation of this patient is notable since it undoubtedly went to support the false diagnosis of malignant disease.

Of course we cannot urge operation in every case of jaundice. When free fluid is present in the abdomen, I think we can exclude uncomplicated gall-stones. In the vast majority

of cases the combination of free fluid and jaundice means malignant disease, cirrhosis or syphilis of the liver, and in no one of these three affections can it be said that operation is imperatively demanded. It is in cases of intense jaundice without ascites that we should be very chary of making a diagnosis which excludes the possibility of surgical interference.

At autopsy the gall-bladder was found greatly enlarged and so crammed with gall-stones that it compressed the common bile duct, producing obstruction, although the duct was not occupied by any stone or cicatrix. The enlarged gall-bladder also pressed upon the pylorus and caused a considerable degree of obstruction at that point and, moreover, the gall-bladder exerted pressure upon the vessels in the lower omentum to such an extent that very marked œdema of the stomach wall resulted. The wall of the stomach was three-quarters of an inch thick.

Case 40. The patient is a married woman, age thirty-four, large and fat in person. She has had two children and three miscarriages, the last six weeks ago. Otherwise she says her health has always been good, until within three or four months; has been in the habit of drinking beer freely, but has not been intemperate. For two weeks there has been pronounced jaundice, anorexia, and bilious vomiting soon after eating; dizziness, flatulence, occasional diarrhoea with pain at epigastrium; slight œdema of feet and ankles. These symptoms have been increasing. There has been no headache and no hæmorrhages or chills.

The tongue was clean, the pulse 80, temperature 97.8°. The heart and lungs were normal. The liver was much enlarged and smooth. The spleen was felt below the ribs. There was no ascites. The urine had a specific gravity of 1017, was of a deep yellow color, and contained a trace of albumin and much bile; sediment normal. The blood was negative.

1. What forms of jaundice need not be considered in this case? The toxæmic forms can be excluded. This leaves cancer (probably of the pancreas), "catarrhal jaundice," syphilis, cirrhosis.
2. What can we infer from the smoothness of the liver surface? That cancer of the liver is not very likely to be present. Cirrhotic elevations and depressions are not often palpable through the belly wall. Syphilis often causes great deformities of the liver.
3. In what types of hepatic enlargement is pain a prominent symptom? Chiefly in passive congestion and in cancer. Gall-stones may produce much pain, but do not often produce demonstrable hepatic enlargement. In abscess there is no pain until the pus has burrowed up close to the surface so as to stretch the capsule where lie practically all the nerves of the liver. Cirrhosis is rarely painful, syphilis often painless.
4. What are the significant points in the past history? The miscarriage (which suggests syphilis), the alcoholism (which suggests cirrhosis), the build (which suggests gall-stones).

Diagnosis: Gall-stone in the common duct is possible but unlikely, owing to the presence of splenic tumor, the lack of

any intermission in the symptoms and the absence of pain, fever, or chills. Catarrhal jaundice cannot be excluded, though it rarely leads to much enlargement of the liver or spleen. The points against cancer are the absence of pain, cachexia, or irregularities on the liver surface. Syphilis might produce all these symptoms and can be positively excluded only by the therapeutic test. Cirrhosis, or the combination of cirrhosis and fatty infiltration, is the most likely diagnosis. This accounts better than any other hypothesis for the splenic enlargement, the large, smooth liver, and the jaundice. The gastric symptoms would then result from passive congestion of the stomach. The course of the case confirmed the diagnosis of cirrhosis.

Prognosis and Treatment : (see Case 38).

Case 41. A watchman of twenty-three entered the hospital February 26, 1911. Except for an attack of jaundice lasting three weeks two years ago, he has always been well and his family history is negative.

Three months ago he was in a hospital for three weeks on account of pain in the right upper quadrant, with some vomiting. The diagnosis then made was "possible typhoid fever." For some years he has had occasional attacks of epigastric distress coming about two hours after meals and lasting about twenty-four hours without vomiting. The attacks were usually attributed to indiscretions in diet.

Three days ago he had sudden and very severe pain in the epigastrium and right hypochondrium, and vomiting of bile-stained fluid. Pain and vomiting have continued ever since. The bowels did not move until last night, having been constipated for the three previous days.

On examination the chest and extremities were negative. The abdomen was tense and generally tympanitic, except for slight shifting dullness in flanks and flatness in the right hypochondrium, where there was boardlike rigidity and localized tenderness. In other parts of the abdomen there was slight general spasm. The temperature was 100° , pulse 110, respiration 25; the leucocyte count 16,000.

Diagnosis: The diseases chiefly to be considered are, peptic ulcer, inflammation of the gall-bladder with or without stones, and intestinal obstruction. Physical examination makes it pretty obvious that we are dealing with a perforative peritonitis which is most severe in the right upper quadrant, and which appears to have produced general peritonitis. The main question is: what has perforated? Presumably the present symptoms are due to the same cause as those which had previously confined him in the hospital three weeks. This is the second attack. Against intestinal obstruction is the marked localization of the symptoms in the right hypochondrium, and the age of the patient. Intestinal obstruction in young people is generally due to the bands or adhesions produced by previous operations or previous attacks of peritonitis. We have no sufficient evidence that either of these has occurred in this patient. The amount of tenderness

is out of proportion to what we should expect in pure obstruction.

Between peptic ulcer and cholecystitis the diagnosis is difficult. On the whole, however, the history seems to me more like gall-bladder disease than like peptic ulcer, for the attacks of the latter disease are apt to last more than a day, and are generally accompanied by vomiting when they have persisted for a number of years as in the present case. There is no evidence that the attacks were relieved by food or that any other method of relief, such as soda or gastric lavage, had been discovered. On the whole, then, the gall-bladder seems more probably the seat of the disease. Since the present symptoms, those of perforative peritonitis, it seems probable that perforation of the gall-bladder has taken place. Possibly one of the bile-ducts may have been perforated by a stone.

Prognosis: Since it appears that the inflammation has not become walled over, but is pretty general throughout the peritoneum, our prognosis must necessarily be very grave, as is always the case in general peritonitis. The possibility of recovery depends upon the promptness and thoroughness of the surgical interference, the nature of the infecting organism, and the patient's power of resistance.

Treatment: There is no justification for any treatment except prompt laparotomy. This was at once performed in the present case, and showed perforative cholecystitis; nevertheless the patient died the next day.

Case 42. A cigar maker, fifty-one years of age, is seen March 15. Family history negative. Thirty-five years ago had tuberculosis of the knee, which recovered after operation, but left a stiff joint. Eighteen years ago he had jaundice and fifteen years ago syphilis, otherwise always well. Has used beer to excess.

About six weeks ago, while in his usual health, he had an attack of acute bronchitis for which he was given iodid of potassium. This, he says, upset his stomach and caused vomiting which lasted for a number of days. About two weeks after his cough began, he noticed that his skin had a yellow tint which has been steadily deepening. Coincident with the jaundice a circumscribed reddish eruption appeared on various parts of his body and limbs, which was diagnosed by his attending physician as erythema multiforme. Itching has been general and intense. There has been no vomiting for over two weeks, but his food has been carefully regulated. His appetite is poor. He has lost much in strength and flesh. His temperature has remained near the normal line, but has occasionally risen to 100° F., particularly during the last week. The pulse has varied between 70 and 80, with a rising tendency. The stools are clay-colored.

Patient still preserves considerable fat tissue, but has evidently lost weight and looks sick. Deep icterus of a decidedly greenish tinge. Heart and lungs normal. The liver dulness begins at the sixth rib. Its lower edge, which appears to be smooth, can be felt about an inch below the costal margin. A fluctuating tumor of indefinite outline and size is suspected below the hepatic edge about in the mammillary line. Percussion over it shows an area of dulness about two inches in diameter. Deep palpation of abdomen reveals no other abnormality. No glandular enlargement, no characteristic scars. Urine contains much bile, but no other abnormal constituents. White cells 8000.

1. What points in the past history are most important here?
The syphilis and the alcoholism.
2. What diseases produce the deepest icterus? Gall-stones and cancer of the bile ducts or the pancreas.
3. (a) What is the tumor? and (b) what is its connection

(if any) with the eruption and the itching? (a) Probably the gall-bladder. (b) None. The eruption is due either to KI or to syphilis (see below), and the itching to jaundice.

4. Do you expect pain in this case? Why, or why not? Probably not, because there is probably no disease present which stretches the liver's capsule.
5. What explains the fever? Syphilis and cancer both cause fever (see below).
6. Are any important data missing? The condition of the chest, the size of the spleen, evidence for or against ascites.

Diagnosis: Syphilis of the liver, cirrhosis, gall-stones, and cancer are to be considered. Cirrhosis cannot be diagnosed in the absence (as here) of any evidence of portal stasis. It cannot be positively excluded, but does not account for all the facts in the case. Gall-stones are rarely associated with *both* jaundice and palpable gall-bladder. (The tumor in the gall-bladder region is probably thus to be explained.) Syphilis can only be excluded by the therapeutic test, but it rarely produces jaundice or enlarged gall-bladder. Cancer of the pancreas is the commonest cause of the group of symptoms here present; the common bile-duct is pressed upon by the tumor, and intense jaundice with dilated gall-bladder results.

Prognosis: Cases of true cancer of the pancreas usually prove fatal within nine months of the time when the symptoms are sufficiently advanced to permit of diagnosis. Errors and uncertainties, however, are frequent owing to the difficulty of distinguishing cancer of the pancreas from chronic pancreatitis, even when the abdomen is open and the pancreas in the surgeon's hand. This mistake is very frequently made. Hence the not infrequent "recoveries" from supposed pancreatic cancer.

Treatment: If the diagnosis is correct, no treatment is of any value, but since diagnosis is so frequently erroneous, it seems to me that exploratory laparotomy should be performed in every case in which the patient's condition warrants his undergoing the strain of anæsthesia and operative shock.

Case 43. A saleswoman, single, thirty years old, is seen April 23. Her mother died of cancer of the uterus. She had chorea at twelve, and has since had frequent attacks of rheumatism; has never been strong; is of constipated habit. Catamenia regular. On April 3 she had rheumatic pain and swelling in several of her joints which kept her in bed for three days. She then started to work again, but on the following day, April 7, she began to complain of nausea and felt slightly feverish. The next morning she felt "dreadfully;" was very weak and feverish. She was nauseated, but unable to vomit. Her temperature was somewhat elevated for the first three days. Jaundice and clay-colored stools were first noticed on April 9. Her chief complaints have been weakness, constipation, nausea, and vomiting. All food has caused gastric distress, so that she has eaten very little of the fat free diet which was allowed her.

Patient is markedly emaciated and jaundiced. The heart's apex is in the fifth interspace, one inch to the left of the nipple line. Its right edge is one inch outside of the right border of the sternum. A soft systolic murmur is heard at the apex transmitted to the axilla. The second pulmonic sound is accentuated. The abdomen is soft, lax, and tympanitic. The upper border of the liver is at the fifth intercostal space. Its sharp, smooth edge can be felt below the costal margin. It was somewhat tender on pressure up to a few days ago. Physical examination is otherwise negative. Urine acid, high-colored, specific gravity 1025, very slight trace of albumin. Bile pigment present. Sediment contains occasional hyalin and fine granular casts. Stools are clay-colored. Temperature 98°, pulse 60, respiration 18.

Diagnosis: Apparently this patient's trouble started out with a multiple arthritis, in other words, with evidence of an infectious disease, but this particular manifestation has now disappeared and we have to deal with a case of jaundice with emaciation and a somewhat enlarged liver, the symptoms of approximately three weeks' duration occurring in a young unmarried woman. In such cases catarrhal jaundice is our natural diagnosis provided we can exclude gall-stones and cancer. The age of the patient, the absence of severe pain

or enlargement of the gall-bladder, makes it impossible for us to call the trouble gall-stones, though that disease cannot be definitely excluded. Cancer is likewise very unusual at this patient's age and we have no positive evidence in its favor. It seems reasonable therefore to base our prognosis and treatment upon the belief that the patient is suffering from that form of acute infection which results in jaundice of the type ordinarily called catarrhal. In my opinion this is the nature of the vast majority of cases of catarrhal jaundice. There is very little evidence to support the old theory of a gastric catarrh extending to the duodenum and up the common bile-duct so as to occlude the latter.

Prognosis: In the vast majority of cases the patient is free from symptoms within six weeks of the beginning of the illness. Any extension of symptoms beyond this time makes the diagnosis doubtful. Attacks occasionally recur, but this is infrequent. The greater number of cases get well within three weeks though the coloration of the eyes may persist somewhat longer.

Treatment: To make the patient comfortable is all that we can do. We have no medicines or other agents which will accelerate the disappearance of the jaundice or force the bile to flow more freely. The use of the so-called cholagogues and of ox-bile is altogether without benefit in my hands, and we have no reason for being disappointed at this result. Calomel has no special value although it is of course desirable to use whatever methods may be necessary to keep the bowels free.

The patient should be given a diet adjusted to his powers of digestion, but what these powers are has to be ascertained by experiments in each case. In my experience fats and carbohydrates are borne fully as well as proteids.

Case 44. A vigorous man of sixty-two comes of a gouty family, many members of which have been long-lived. His mother is said to have died of cancer, seat unknown; and a paternal uncle of gastric cancer. In recent years the patient had had two brief attacks of pain and swelling in the great toe-joint; he has also had eczema, said to have been considered of gouty origin. For some years he has occasionally lost moderate quantities of fresh blood from the rectum. He has been a good, though not a free liver; and has always taken much exercise in the open air.

Six months ago he was duck shooting on Lake Erie, and, the water being very low, he says that for three weeks he worked harder than ever before in his life, pushing and dragging his boat in shallow water. After returning home he felt tired and was indisposed to exert himself in any way. Soon after he began to suffer every few days about 1 P.M. from severe continuous pain just below the right costal border and outside the edge of the rectus muscle. The pain bore no apparent relation to the quality of food; the attacks lasted from one-half an hour to three hours, and were relieved by the passage of gas upward or downward. Sometimes the escape of gas seemed to be promoted by cooking soda or aromatic spirits of ammonia. The pain is sometimes very sharply localized, even to a point no larger than the finger tip; but sometimes spreads to the left and downward over an area as large as the palm of the hand. Gradually the attacks have increased in frequency and come on daily; of late, toward 5 P.M. There has been at times slight nausea apparently due to the extreme severity of the pain. He never vomited until two days before he was seen, then repeatedly during the night; the vomitus was not characteristic. Position does not seem to influence the pain except in so far as it may aid the expulsion of gas.

A week or ten days before he was seen, he had on two successive days black movements of the bowels, one very copious, unattended by rectal pain, faintness, or subsequent loss of color. Fever has been absent, and the urine negative. The appetite and ordinary digestion have been fair; there has been no noticeable loss of flesh or color. The tongue is

slightly coated, the fingers show some gouty deposits, there is some tenderness on deep pressure just above and to the right of the navel; the smooth edge of the liver can be felt to descend below the right costal border, but only on full inspiration. Physical examination is otherwise negative.

1. What diseases often cause epigastric pain relieved by the belching of gas? Dyspepsia of various types, angina pectoris, neurasthenia. Usually motor disturbance and not fermentation is the cause of such belching.
2. What type of stomach trouble is to be expected at the age of sixty-two? Cancer; rarely ulcer; sometimes the gastric symptoms depending on gall-stones, cardiac diseases and their results.
3. What is the relation of the gout to the other symptoms? Gout and arteriosclerosis are often closely associated. Arteriosclerosis is one of the diagnoses to be considered in this case.

Diagnosis: Duodenal ulcer is strongly suggested by the position and sharp localization of a pain which tends to occur when the stomach is empty, by the tarry stools and the relief by alkalis. Hepatic cirrhosis is possible, but rarely causes such pain and cannot be diagnosed unless evidence of portal stasis appears. Angina pectoris may cause abdominal pain relieved by belching, but never produces melæna. There are no physical evidences of arteriosclerosis, but it may nevertheless be present. On the whole, the chief symptoms in the case seem best explained by the diagnosis of duodenal ulcer. The course of the case apparently confirmed this diagnosis.

Prognosis and Treatment : (see Case 6).

Case 45. J. S., aged forty years, a merchant, was seen in consultation April 8 at 10 P.M.

He had suffered for years with indigestion, and had lost considerably in weight. For several months he had been treated by an eminent specialist in diseases of the stomach. His stomach had been washed out for three weeks. He had been on a liquid diet. He had made no improvement and for one week had remained in bed on account of an aggravation of epigastric pain. At one o'clock on the 8th of April he got out of bed and went to the back door to look out. While there he was seized with sudden severe pain in the abdomen. He vomited and crawled back to bed. His attending physician saw him at 3 P.M. He found his pulse 90, temperature 101° , abdomen of boardlike rigidity, tender everywhere, but much more tender in the epigastrium. The patient showed but little shock. His physician administered $\frac{1}{4}$ grain of morphin and saw him again at 9 P.M. He was then somewhat improved, and his spasm was a little less. The consultant saw him at 11 P.M., and found him pale, sick-looking, with no peritoneal facies and no marked shock. There was distinct spasm and tenderness in the epigastrium, shading off into other regions of the abdomen, which was generally retracted. There was no dulness. The tongue was moist. Pulse 90, temperature 101.4° .

1. What is the significance of the peritoneal facies and why was it absent in this case? Vomiting, fear, or both are the usual causes of the peritoneal facies, which is often seen in simple seasickness. The absence of "shock" or of recent vomiting explains the absence of this "peritoneal facies."
2. In what diseases is the use of the stomach tube contra-indicated? When aneurism or bleeding gastric ulcer is suspected, or in very weak patients.
3. What further data might be of value in diagnosis here? Blood examination, urinary examination, color of conjunctivæ (see also next question).
4. How can we exclude plumbism? By careful questioning, examination of the gums, blood, and extensor muscles (wrist drop). Tabes dorsalis? By testing pupils and knee-jerks. Malaria? Search for parasites and enlarged spleen.

Diagnosis: Lead, tabes, and malaria were excluded; laparotomy showed a perforated gastric ulcer (anterior gastric surface) walled off by fresh adhesions. Posterior gastroenterostomy was done. Three months later the patient had gained markedly in weight and was in excellent condition. Acute cholecystitis and acute pancreatitis were excluded positively only by the operation. The preceding gastric symptoms suggested the stomach as the source of the trouble, but are compatible with pancreatitis or gall-bladder trouble.

Prognosis and Treatment : (see Case 6).

Case 46. A Jewish buyer of twenty-eight consulted me May 6, 1910, complaining that immediately after meals he feels a weight in the region of the lower sternum. This sensation lasts about half to three-quarters of an hour. He has noticed it for seven months, but it has been especially troublesome for the past two months. He is also conscious of a sense of continual irritation about the navel and says that while at stool he has a horrible feeling of emptiness in the lower part of his abdomen. He has no nausea or vomiting, his appetite is excellent, and in other ways he feels well. At the age of sixteen he weighed 140. For the past two years he has weighed 270.

Physical examination showed nothing but extreme obesity.

1. What are the common causes of substernal pain without external manifestations? Angina pectoris, general nervous fatigue, and flatulence with or without gastric stasis and fermentation. Aneurism and mediastinal tumors occasionally give pain in this region, but as a rule the suffering which they cause is referred to the region of the manubrium and the adjoining parts of the upper chest.
2. Significance of pain immediately after meals? Until the last decade such pain was usually considered suspicious of peptic ulcer, but the surgical experience of the last ten years seems to show that gastric or duodenal discomfort connected with ulcer is much more likely to come before meals or at any rate after a considerable interval following the taking of food. In other words, it seems to be relieved rather than produced by eating. Post-prandial pain is more apt to be due to chlorosis, pulmonary tuberculosis, gall-stones, nervous dyspepsia, or gastric stasis however produced.

Diagnosis and Treatment: The essential point appeared to me to be the enormous gain in weight. On cross-questioning, the patient admitted that his appetite was enormous, and volunteered the remark that he thought he often ate too much. In view of the history and the results of the physical examination the case seemed to me one of simple overeating, to be relieved, in all probability, by a modification of this habit.

Prognosis: In most cases the patient finds the cure worse than the disease and does not change his habits. If he ever comes to prefer comfort to gluttony he can usually cure himself in a few months or less.

Case 47. P. J. G., twenty years old, a piano varnisher, was admitted to the hospital October 3, 1903. For about a year he had suffered from occasional pain in the epigastrium, and for six months had always had pain after taking food. One week ago, he received a blow in the right hypochondrium while boxing, and after that had slight pain in that region until the day before entrance, when he was taken suddenly ill with violent, griping pain, starting in the epigastrium and spreading all over the abdomen. His bowels had not moved since this pain started. He vomited after taking warm drinks, and had a chill lasting one hour. He walked to the outpatient department, where his temperature was found to be 100.3° , pulse 60. His skin was slightly yellow. The abdomen showed no distention. There was slight general spasm and tenderness over the gall-bladder region. No mass could be felt. The leucocyte count was 16,000.

With rest in bed and emptying of the bowels by enemata, the tenderness and spasm over the gall-bladder region disappeared until on October 7 there were very few symptoms left.

Diagnosis: The symptoms are those of acute localized peritonitis. Other causes of epigastric pain (such as plumbism, tabes, and uræmia) are excluded by the tenderness and spasm. Localized peritonitis in a man of twenty is oftenest caused by appendicitis, cholecystitis, and peptic ulcer. Pancreatitis, intestinal obstruction, and floating kidney are rare causes, especially in a young man. Acute gastro-enteritis usually produces diarrhœa and has less tenderness and spasm.

Between appendicitis, cholecystitis, and peptic ulcer the following considerations should be weighed. Cholecystitis is not common under twenty-five; nevertheless the site of the physical signs in this case corresponds accurately with that of the gall-bladder. Peptic ulcer is faintly suggested by the history of gastric troubles here. Appendicitis usually produces signs lower down in the abdomen. The constitutional symptoms of the case are consistent with any of the three diagnoses considered.

An operation for gall-stones was done, but the gall-bladder and appendix were found normal. There was an excess of

clear, dark, peritoneal fluid and a perforation of the stomach near the pyloric end, which was glued to the under surface of the liver by fresh adhesions.

Prognosis and Treatment : (see Case 6).

Case 48. A coachman of forty-five, of a very neurotic family, has had dyspepsia for fifteen years. Any worry or excitement brings on distress and sour eructations. Three years ago had "spinal meningitis;" since then never well in mind or body. Forgetful and bewildered up to the last two months, when he became much clearer and has since devoted himself to his health. Two spots, one over the left kidney and one on the top of his skull, feel hot to him. Also numbness on the left leg, less noticed when he is busy. Left hand always colder than the right.

Since the fever three years ago his dyspepsia has been worse. Almost any food distresses him after a time. More than one-half a cupful of any liquid causes vomiting, and despite care he vomits very frequently. No blood or brown stuff in vomitus, which consists of food and slime.

Pain and tenderness in the epigastrium are almost incessant. Appetite excellent, bowels always costive, sleeps poorly.

Examination: Rather thin, good color, tongue protruded very far. In epigastrium, a resistance uneven, soft and doughy in feel, dull on percussion and very tender. The lower border of it is well defined, especially on the left. At times, movements, apparently peristaltic, can be felt there. Visceral examination is otherwise negative.

The stomach tube was passed and abundant free hydrochloric acid found, but the ingestion of over six ounces of liquid caused the patient great pain, which lasted for two hours after the tube was removed.

The patient was constantly expectorating saliva, and stated that milk always poisoned him, and that the only food that agreed with him is wild game. A partridge was procured for him, but he had a bad night after it, because, as he said, he tasted some of the shot with which the partridge had been killed. He remained in the hospital from November 1 to November 11, 1892, and then left unimproved.

Diagnosis: The first paragraph and the last point very strongly to a gastric neurosis, and this diagnosis still stands on the hospital record book to-day. Against this, however, are the small capacity of the stomach (six ounces causes

great pain and often vomiting), the peristaltic movements in the epigastrium, and the other physical signs at that point. A contracted stomach with pyloric obstruction and abundant free HCl is a very unusual combination, but to that the signs point. At autopsy (three months later) exactly this combination was found. The gastric wall was from one-half to three-quarters of an inch thick, the capacity about seven ounces, the scar of a large ulcer near the pylorus, and great thickening and stenosis of the latter. The case is very important because both neurasthenia *and* organic disease were present, and the neurasthenic aspects altogether blinded us to the rest.

Prognosis and Treatment: An operation should of course have been done, and with this the patient might well have recovered within a few months (see also Case 6).

Case 49. A washerwoman, sixty-eight years old, generally healthy, has been feeling poorly for a month and losing appetite. A week ago began to have pain in abdomen; at first all over, but later settling in the lower left corner. It is worse when she walks, but has not kept her awake until last night. She has always been constipated, and the bowels have not moved for two days; has eaten little for two days.

Examination: Emaciated, sallow, tongue coated, breath offensive. Temporal arteries stiff and tortuous. Heart dullness reaches to the right sternal border and up to the second rib. Apex just below the fifth rib in the nipple line. At the ensiform cartilage, a short murmur replacing the second heart sound and heard less distinctly elsewhere. First sound at the apex very short; heart's action somewhat irregular. Few moist râles at bases of both lungs, with slight dulness and diminished breathing over lower half of left back; voice sounds normal, tactile fremitus diminished. Abdomen slightly distended; tender in left iliac fossa, where a deep resistance is felt, but no tumor. Liver dulness from seventh rib to rib margin. Right kidney palpable. Urine normal color, acid 1017, trace of albumin, no sugar. Sediment: pus, squamous, and spindle cells, calcic oxalate and mucus. Knee-jerks not obtained. Temperature 102° at entrance to the hospital, normal next day. Pulse 100. An enema brought away a small movement, very dark in color.

1. What is the significance of tortuous temporal arteries?
Nothing, unless they are also rough and hard. All temporal arteries are tortuous.
2. How do you interpret the dimensions of the heart in this case? They are normal.
3. How do you explain the murmur? If the pulse is collapsing the murmur is probably due to aortic regurgitation.
4. How does the significance of arrhythmia in aortic regurgitation differ from its significance in mitral stenosis?
It is much more serious in aortic disease. Mitral arrhythmia is consistent with years of fair health.
5. Name three common causes of cardiac arrhythmia.
Myocardial weakness, mitral disease, tobacco.
6. What sort of pulse should you expect in this case? A collapsing pulse.

7. How much can be inferred from the pulmonary signs here described? Œdema of the lungs with right hydrothorax.
8. How do you explain the area of liver dulness here given? Senile emphysema.
9. What does the calcic oxalate mean here? Nothing — as is usually the case.
10. How is the temperature accounted for? The fatigue and emotion strain of entering the hospital.

Diagnosis: A high enema brought away an enormous amount of feces with great relief to all symptoms. Fecal impaction and arteriosclerosis seemed to account for all the facts in her case. Sigmoid cancer was excluded by the course of the case.

Prognosis and Treatment: By regular enemata the recurrence of impaction can probably be prevented.

Case 50. Mrs. A., a Jewess of thirty-six, has been suffering for six months with pain in her left side. At the beginning of the period a small lump appeared in the left breast. It was pronounced cancer by a competent surgeon and immediate removal was advised, but in three days it had completely disappeared and has not been seen since. From that time to the present she has had pain of gradually increasing severity throughout the left side of her body and in the back of the head. When the attacks of pain come she feels flushed but looks pale (sometimes with red spots on the face), and has "electric feelings" in the chest which are somewhat relieved (as is the pain) by pressure with the hand.

The pain is most apt to come on at night and sometimes keeps her awake or checks speech. There is a constant sense of pressure at the root of the nose and a beating in the head.

Her appetite is poor and there is often "bloating" after meals. The bowels are costive and she is nervous.

In the past three months, since a vacation in the country, with a good deal of exercise, she has decidedly improved, and now has the pain not more than an hour or two a day. The day after a good night sweat (which she has occasionally) she feels much better. She thinks she has lost about six pounds in weight.

Physical examination (including blood and urine) is negative.

Diagnosis: The dictum of the competent surgeon had impressed itself with such force upon the mind of this neurotic Jewess that she could not rid herself of the idea of cancer somewhere, internal if not external. The wide area over which pain is felt (head, chest, leg), the vasomotor symptoms and paræsthesia, the relief by vacation in the country with relatively good hygiene, and the improvement after sweating all point to a *fear-neurosis* as the chief cause of her symptoms. No doubt the constipation and dyspepsia play a considerable part in her sufferings. Of course the negative results of physical examination are most important as confirmatory evidence of the neurotic basis of the symptoms.

Prognosis: I have called the diagnosis of this case "apprehension," with "constipation" as a minor element in the

illness. The outlook for a neurosis of this type depends, in the first place, upon the degree of intelligence possessed by the patient. Many patients cannot be made to grasp the idea that fear and worry can so aggravate and prolong sufferings, in themselves trifling, that the bulk of the illness may truly be said to be of psychical origin. If we cannot get this idea into the patient's mind by any direct method, his chances of recovery will depend on his being able to receive some partial and debased form of the same notion through a quack — an herb physician, a Christian Scientist, or some other misguided person.

Further than this the prognosis depends on how much the patient wants to get well. It is a strenuous and difficult process to change one's point of view and many a patient after getting near enough to see what kind of effort it means sidles away from the attempt usually in complete unconsciousness of what he is doing. At bottom, such a patient would rather continue to be sick than suffer the pain inseparable from the effort which is necessary for recovery.

A favorable issue depends, further, upon the patient's opportunity of being cared for by a physician who is familiar with such troubles and understands something of their management. If a patient falls into the hands of a practitioner whose only idea of the treatment of neurotic conditions consists in prescribing rest and bromid or sanatorium treatment, there is little to be hoped. Still worse is the prospect for patients who are so unfortunate as to be treated by physicians of unrestrained surgical enthusiasm. Under these conditions the patient may lose organ after organ and be stitched and patched *ad libitum*, the total result, as a rule, being the accentuation of the existing morbid tendency to dwell upon local ills.

It must further be admitted that the prognosis is often much better for the rich than for the poor. A large part of what ought to be done for neurotic patients is expensive and, under the conditions existing in most communities, impossible except for the well-to-do.

Inheritance decidedly influences the prognosis. The patient, one or both of whose parents are failures, starts with

a heavy handicap. If, on the other hand, we can truly accuse the patient's circumstances or his peculiar misfortunes of having produced or very greatly increased his sufferings, the outlook is proportionately more cheerful.

Treatment: The first essential is a thorough physical examination — essential both for the confidence which it gives to the physician, and for the reassurance which it produces in the patient. In many cases no further treatment is necessary after we have been able to assure the patient, with the confidence and authority produced by such an examination, that no organic disease stands as an obstacle between him and recovery.

The next step in treatment is to get the patient's mind emptied, so far as possible, of its accumulation of haunting fears, doubts, and suspicions. Merely the detailed recital of these in the presence of a sympathetic listener is sometimes a source of considerable relief. It also gives the physician the first instalment of that thoroughgoing understanding of the patient on which all his future treatment must be based. As the child's nightmare loses much of its terror when recited to its mother, so merely the statement of what he has been through helps the patient out of many of the simpler troubles. Doubtless the Roman Catholic institution of the Confessional has helped to prevent or to assuage many a neurosis.

The next step is to explain, as frankly and fully as possible to the patient, how his symptoms have been produced and aggravated by his own mental habits or lack of habits. He is thus enlisted as the physician's best ally in combating the disease.

For a person whose life has lacked routine and regularity, much rest and relief may be obtained by prescribing a fixed regimen with a schedule which states what is to be done every hour of the twenty-four. As a part of this regimen every patient not already occupied should be put to work, not merely on account of the benefit which accrues from anything which is regular, but chiefly because work takes our minds off ourselves and gives us in time that sense of being of some worth in the world which is the only lasting source of encouragement.

As a rule we have to understand something of the patient's

home surroundings and family ties if we are to help him. The family must take its part in carrying out the treatment. Sometimes one or more of them needs as much attention and as much reformation as the patient himself.

Rest cures are of value only as a preparatory and subordinate part of that reëducation which is the essential thing in the treatment. If the patient is really tired out by some unusual exertion of body or mind, he should be rested as any other patient should, in order that he may get a fair start upon that strenuous course of effort by which he may lift himself out of his troubles.

Drugs, and more especially hypnotics, are not only useless but very definitely harmful in most cases. Of course they may be used for any of the infectious or other organic complications to which the neurotic, like other people, is exposed. Massage, hydrotherapy, electricity, and other physical agents are of value only by way of filling up the patient's unoccupied time or as a means through which the operator's personality may be of benefit to the sufferer. In this way I have known osteopathy to prove a useful vehicle for the influence of a person of strong character.

CHAPTER III.

DISEASES OF THE URINARY TRACT.

Case 51. A mill treasurer of sixty-five, always previously well, was taken $3\frac{1}{2}$ weeks ago with fever and general malaise. His bowels were constipated, his urine scanty, frequent, and painful. Two days later he felt better and went to his office again but felt worse that evening and called the doctor, under whose care he remained for the next week, running a continuous fever which was suspected at the time to be typhoid, as no local lesion sufficient to account for it was discovered. In the course of the next fortnight he gradually improved, the fever left him, and he was able, four days ago, to move from his country place to his permanent headquarters in Boston, expecting to resume work within a few days. Three days ago he again noticed fever at night, although in the morning he seemed to be free from it. For the last day or two he has noticed that his urine is bloody, but there is no pain either before, after, or during its passage. At present his only complaints are of weakness and anorexia.

On examination the temperature was found to be 101° at 6 P.M. Physical examination was entirely negative. He was unable at this time to pass any urine. Next day at noon the temperature was 99.6° , pulse 78. He felt much better. He passed urine four times during the night and again noticed that it was bloody. He had no pain and was eating better. The twenty-fourth-hour urine obtained next day was exceedingly bloody, 24 ounces in quantity, specific gravity 1010, a moderate trace of albumin sufficiently accounted for by the amount of blood, which was practically the only unusual feature of the sediment.

The prostate showed a moderate enlargement, not otherwise remarkable.

1. What types of hæmaturia should here be considered as possible causes for this patient's illness? Since pain is absent we have no considerable reason to suspect stone in the kidney or bladder. Renal tuberculosis is rare at his age and hæmaturia is generally less prominent in that disease than bladder symptoms and pyuria. We have left neoplasms of the bladder, benign or malignant, inflammation of a hypertrophied prostate, and hæmorrhage from a contracted kidney.
2. What inferences are to be drawn from the early onset of fever and from its recurrence with the hæmaturia? These facts make prostatic inflammation far more likely than either neoplasms or renal hæmorrhage complicating nephritis.

Diagnosis and Prognosis: Prostatic inflammation is accordingly the most probable diagnosis. It will be confirmed in case the trouble soon quiets down under appropriate treatment and no other symptoms of malignant disease are manifested. The prognosis is that of prostatic hypertrophy, the course of which is not notably modified by such a hæmorrhagic inflammation as that described above. In the present case the symptoms were gone within ten days.

Treatment: Rest in bed, an abundance of water by mouth, and urotropin 5 grains three times a day were advised and proved immediately efficacious.

Case 52. A woman of thirty-five, married ten years, five children. Has had considerable womb trouble and been treated for it by local physician. Of late, it has been less troublesome. Father died of cancer, mother of "a decline." For a year has had much to worry her, and has been running down and getting nervous. Is troubled with sour eructations after meals, especially in the morning. Bowels rather costive. Appetite as good as usual. Lost no flesh. Occasional severe headache, frontal and occipital. Sleeps poorly. "Hot flushes" frequent. For the last day or two (since coming to Boston) has been vomiting a good deal of greenish stuff.

When seen, was drawn and pinched in the face and nauseated. Complained of general abdominal pain, but no tenderness could be found, and physical examination was negative except a sharply accented aortic second sound. At times she was quite hysterical, after which she passed a large amount of pale urine. Very nervous, restless, and alarmed about herself. No fever; pulse 110. Complained at times of headache. Kneejerks lively; no clonus. Uterus retroflexed and bound down with adhesions.

Diagnosis: Increasing nervousness and debility for a year, headaches, dyspepsia, and vomiting might all be explained as the common portion of hysterical women at this age. The association of headache and vomiting ("sick headache") suggests migraine, and the condition of the uterus might be thought of as helping, together with dyspepsia and constipation, to explain these headaches. Such was in fact the diagnosis made in this case, and thereby a serious mistake was made. *The woman died in three days of uræmia.* The urine by some accident was not examined, but even without that, the sharply accented aortic second sound should, at her age, have suggested nephritis. At autopsy secondary contracted kidneys were found.

In this case the hysterical symptoms so impressed themselves on us, that we neglected a thorough search for organic disease. It is important to remember that the combination of headache and vomiting may mean *either* a common "sick headache" *or* a dangerous uræmia. Organic brain disease, tumor, abscess, meningitis are also possible, but there were

no focal symptoms or choked disk in this case. The high tension pulse, sharp aortic second, and abundant pale urine pointed straight to the diagnosis, had we not been blind to it. The uterine condition in this, as in many other cases, produced no symptoms and had nothing to do with the case. Much harm is often done by treating such lesions as disease, instead of letting them alone.

Prognosis: In this particular case it is not likely that anything could have been accomplished beyond postponing for a few weeks or months the inevitable termination of the disease. Like icebergs, most of whose bulk is said to be submerged and invisible, the larger part of a case of chronic nephritis is wholly latent and symptomless. What we call the symptoms of the disease are, in fact, the manifestations of its final stages, after the natural compensations and the self-adjustments of the body have broken down. Cases seen for the first time with symptoms as advanced as those described above, rarely live more than twelve to eighteen months.

If the cardiac weakness, which almost always is accountable for a considerable proportion of the patient's symptoms, turns out, after careful study, to be the dominating element in the vicious circle, the outlook is relatively more favorable than in cases manifesting chiefly the renal or toxic side of the symptom complex. Cardiac compensation can be restored far more frequently and more permanently than renal compensation.

Patients who have demonstrable retinal changes represent the severest type of the disease and rarely live more than a year after the first definite breakdown.

Of similarly ominous significance is the presence of anæmia which is presumably of the hæmolytic type, and points to a severe toxæmia rarely to be reached by any treatment.

Treatment: Rest in bed is essential because of the almost invariable cardiac decompensation. It must be borne in mind, however, that this therapeutic measure will now and then do more harm than good, just as the rest, otherwise so advisable for fracture of the neck of the femur, may prove disastrous in patients past sixty. It is possible fatally to

upset the body's balance in nephritis as well as in fractures of elderly people. Fortunately this well-meant aggravation of the disease through rest prescribed as a therapeutic measure, is a comparatively rare occurrence.

To reduce blood pressure by catharsis, sweating, and occasionally by bleeding is the first and most important task in all cases associated with hypertension. If œdema is present a saturated solution of magnesium sulphate in doses of from one-half to one ounce of the salt is the best method of catharsis, but in the absence of œdema it is better to use elaterium, since magnesium may be absorbed and cause poisoning. Daily catharsis before breakfast is usually to be advised.

Sweating by means of a hot-air bath is even more effective than purgation and should be carried out every second day provided the patient responds to the heat and sweats profusely.

Diuretics are of value only when the cardiac element in the case predominates. Indeed their effectiveness in any given case is one of the evidences of such predominance. In pure nephritis they have no value. Diuretin should be given in doses of 15 grains every four hours in capsule. If no effect is obtained within three days the dose should be doubled and continued for three days more. If it shows no power to increase the amount of urine within six days it should be given up. Calomel, in doses of 2 grains every four hours, sometimes succeeds after diuretin has failed or has lost its efficiency, but if the kidney is seriously affected we must be vigilantly on the watch against stomatitis, and must nip in the bud any beginnings of this distressing symptom.

Meat should be excluded from the diet or given sparingly once a day. Red meat is no worse than white. Not more than one egg a day should be allowed in most cases. On the other hand, all cereals, vegetables, and breadstuffs, most fruits and fatty foods are harmless. The amount of water should be limited to three pints unless an unbearable thirst is thereby produced. When œdema is marked, some benefit may be obtained now and then by restricting or abolishing the amount of common salt in the diet, but this measure has nothing like the width and brilliancy of application that French writers have led us to anticipate.

Cardiac stimulation is of value in the group of cases benefited by diuretin. Some preparation of digitalis should be administered after the preliminary period of sweating and purgation is over — i.e., about the end of the first week. Of the preparations now on the market I prefer that known as "digipuratum," 1, 2 or 3 tablets a day according to the effect produced. Occasionally one gets better results for a time by combining or replacing this with strychnin, $\frac{1}{40}$ or $\frac{1}{50}$ of a grain given subcutaneously every four to six hours.

Doubtless there are many patients of this type who would live longer in a dry, equable climate such as that of Egypt, but in my experience most patients would rather die at home than live in Egypt.

Case 53. A lawyer of forty-seven, of good family history, and previous health, had complained for many years of dyspepsia. He had been noticed to be losing flesh for three or four months and to have grown pale. Frequent headaches, weakness, and shortness of breath on exertion have troubled him. An oculist whom he consulted referred him to his family physician, who found pallor, diminished eyesight, fullness of eyelids, increased pulsation in the neck, dyspnœa, and exaggerated heart action.

The apex was in the sixth interspace, mammary line. The heart sounds were loud, and the valvular sounds at the base were accentuated; respiratory sounds at the base of the right chest behind were lessened, and numerous fine moist râles could be heard in lower portions and in the anterior margin of each lung. Abdomen negative. There was swelling of feet and ankles, and the patient stated that at times his hands seemed larger than usual. Urine 1011; pale. Albumin, a trace. Granular and hyalin casts, and fatty elements were found in considerable number. The patient also mentioned cough, with thin, frothy expectoration, and that of late micturition at night had annoyed him, and that the quantity of urine voided in twenty-four hours was increased.

Within three months there was gradual change for the worse, and after a day of considerable exposure he had a chill, severe headache, and oliguria. He was found in bed unconscious, on the third day after the chill, and died on the following afternoon.

1. What was the condition in the lungs? Œdema of both; right hydrothorax.
2. Causes of diminished respiration below the right scapula? Effusion (inflammatory or dropsical), thickened pleura, solidification (pneumonic, tuberculous, cancerous), atelectasis, enlargement or upward displacement of the liver.
3. Causes of painless swelling of both hands? Nephritis, hot weather, trichiniasis, obstruction to the superior cava.
4. Significance of frequent nocturnal micturition? Prostatic obstruction, chronic nephritis, nervousness (in women).
5. (a) Causes for accentuation of the aortic second sound? Arteriosclerosis, aneurism, high tension in the peripheral arteries (nephritis; excitement). (b) Of the pulmonic

second? Obstruction in the lungs due to mitral disease, pneumonia, any chronic lung trouble, pleurisy, and thoracic deformities.

Diagnosis: Autopsy showed chronic interstitial nephritis, cardiac hypertrophy and dilatation, general œdema. Death from uræmia. Retinal hæmorrhages had been found by the oculist.

Prognosis: After retinal hæmorrhages are found patients seldom live a year. Otherwise the duration of life is difficult to predict. It depends on the patient's ability and willingness to undergo proper treatment, the response of his organs to such treatment, and the occurrence of complications.

Treatment: Good hygiene with the avoidance of strain and worry; dry, warm climate, such as Egypt; sweating and purgation each once or twice a week; restriction of liquids and replacement of table salt by sodium bromide (see also Case 52).

Case 54. A child, seven years of age, of healthy parentage, had made frequent complaint of pain in the left side of abdomen and was found by her mother to be rapidly losing flesh and strength. There was also an account of quite frequent voiding of high-colored urine, with a brownish sediment.

After several weeks, the emaciation progressing, the mother noticed that the left side of the abdomen was larger than the right; that there was pain and tenderness on pressure, and that periods of "constipation" occurred, followed by the escape of large quantities of semi-liquid feces, without much change in the size of abdomen or relief to the pain and tenderness in left lumbar region.

About this time the patient was taken to a physician, who confirmed the mother's observation of loss of flesh and strength, for the child was pale or sallow, emaciated, and extremely weak. In the left lumbar region a mass, irregular in outline and surface, painful on palpation, extended into the umbilical region and upwards to the margin of ribs in front; percussion showed tympanitic resonance over the central portion of the tumor. Elsewhere the tumor was flat on percussion.

A specimen of urine showed an acid reaction, specific gravity 1014; sediment, brownish and consisting of blood and brown granular matter. There were no casts, and the quantity of albumin present was small.

1. What abdominal tumors are most frequent in children?
Hypernephroma, congenital cystic kidney, dilated colon, secondary enlargements of spleen and liver.
2. How are tumors of the kidney to be distinguished from enlargement of the spleen? The sharp edge of the spleen and its notch can usually be felt. The kidney produces a rounded tumor palpable bimanually with one hand in the flank. The inflated colon traverses tumors of the kidney but passes behind those of the spleen.

Diagnosis: The age, the tumor, the emaciation, the hæmaturia without casts, the apparent anæmia, strongly suggest malignant disease of the kidney, and at this age hypernephroma is the commonest type of malignant disease. Congenital cystic disease of the kidneys does not produce such cachexia and is

almost never associated with hæmaturia. The condition of the bowels excluded dilated colon. The characteristics of this tumor are not those of a spleen. The tympanitic resonance over its center is very possibly due to the colon.

Prognosis: I will take for granted that this was a case of hypernephroma. It occurred before the present classification of renal and adrenal tumors had been worked out, but probably belongs to the adrenal group. At the time when the diagnosis of such a tumor is made the outlook is usually hopeless, for it is very often the metastases in bone which give us our first unmistakable evidence of the existence of an adrenal growth. There is reason to believe that these tumors remain latent and symptomless for years. Some of them show their presence only by an occasional attack of hæmaturia. If they can be recognized at this period, the outlook may be favorable with radical operation. There is no hope for more than a year of life for those in whom metastases have been discovered. With the radical removal of a tumor which has not produced metastases we may hope for permanent recovery.

Treatment: Early and radical surgery is the only thing which a physician can recommend in cases free from metastases. In those that are too ill for operation, or that refuse it, one can merely meet the symptoms as they arise. Possibly something may be accomplished also by X-ray treatment.

Case 55. An Italian laborer of fifty-six entered the hospital August 28, 1910. His family history was negative. He had been in the United States twenty-two years. Thirty years ago he had had a severe hæmorrhage "from the mouth" and was sick a week. Three years ago, chills and fever; two years ago a severe cough began and has persisted ever since. One year ago he had slight hæmoptysis for a week; this had occurred three or four times since. He has never been sick in bed, and denies venereal disease. He has smoked a good deal, and drank heavily until two years ago, since which time moderately.

The patient now complains of oliguria, abdominal pain, nausea, and vomiting. Fifteen days ago he went to bed with severe cough, raising considerable sputum which showed no blood. This cough subsided three days ago. Since then he has felt worse because of increase of symptoms above noted.

Urine is passed two or three times during the day, once or twice at night. The urine appears normal. For the last three or four days he has had three or four bloody movements from the bowels daily. His appetite has been good, but eating causes "pain in the stomach." Last night he vomited three or four times, and was unable to keep anything on his stomach. He slept poorly for some weeks because of abdominal pain. He has had no known loss of weight.

Examination: The patient was well-developed and nourished, somewhat "dopy," the mucous membranes slightly pale. He had no jaundice; the pupils and reflexes were normal; the tongue showed a brown coat; no lead-line on teeth. The left border of cardiac dulness was normal; the right border 2.5 cm. from mid-sternum. The sounds were regular, distant, of fair quality, no murmurs. The pulmonary second was greater than the aortic second, not accentuated.

Throughout both lungs there was increased resonance, diminished breathing, prolonged expiration. Many fine râles were heard at the right base. The abdomen was level, tympanitic, no palpable masses; there was involuntary right-sided spasm, and considerable tenderness in right upper quadrant. The liver dulness extended from the fifth space to the costal margin. The edge of the spleen was not felt

and there was no œdema. The rectal examination was negative.

The temperature was 99°, pulse 82, respiration 25. The urine was turbid, acid, specific gravity 1012, albumin slight trace, sugar 0; sediment negative. Blood: Hgb. 75%, whites 22,500; the smear showed polynuclear leucocytosis. The sputum was thin, yellowish green, purulent, showing no particular organisms; no tuberculosis. The stools gave a positive guaiac test and showed considerable pus.

The patient remained in the hospital four days, during which time he could take nothing by mouth, was unable to retain enemata, and passed pure pus by rectum. The spasm and tenderness in the right upper quadrant persisted. Urine was obtained only by catheterization. He raised very little sputum although his lungs were full of râles; the bacterial contents of the sputum and the pus from rectum were similar. The patient's condition prevented any operative interference; his respirations rose, became shallow and labored, and he died quietly.

Diagnosis: The presence of vomiting and the stuporous condition not otherwise accounted for, suggests at once the possibility of kidney disease. The nocturnal urination might support this diagnosis provided we are sure that there is no marked enlargement of the prostate.

The presence of pus in the bowel movements together with a positive guaiac test makes it practically certain that we are dealing with an ulcerative colitis. In persons of this patient's age a colitis complicating chronic nephritis is not at all uncommon. The tenderness in the upper right quadrant may however possibly be explained as the result of the colitis.

The condition of the lungs suggests tuberculosis and the negative sputum examination is insufficient to exclude this diagnosis although the physical signs are by no means characteristic, especially in the absence of fever.

Considerable light was thrown upon the diagnosis by the demonstration of a positive Wasserman test in the blood. In view of the results of this test one must consider the possibility of an amyloid nephritis, but with the evidence before us one cannot speak more definitely. The question of

perforation of a dysenteric ulcer was considered in view of the marked localized abdominal tenderness, and but for the patient's poor general condition an exploratory excision would doubtless have been undertaken to settle this point.

Prognosis: Assuming that the diagnosis is a chronic nephritis, possibly amyloid, with a secondary colitis and severe bronchitis, the outlook would of course be grave. The patient whose nephritis is so far advanced that complications of this type are present rarely lives more than a few months; yet we were not prepared for so rapidly fatal an issue as actually occurred.

Treatment: Had the patient been able to take food by mouth we should have allowed him a liberal diet, excluding only such things as were positively indigestible; though his kidneys were presumably damaged, his general nutrition is of greater importance than any attempt to spare his kidneys. In the absence of œdema there would appear to be no reason for purging or sweating the patient, since we have no reason to believe that we can get out of the body any substance except water by this means. The idea that poisonous salts can be removed by sweating or purging seems to have no sufficient foundation. If the condition of the kidney was to improve, or if it seemed at the outset to permit, antisyphilitic treatment would be in order, although it would of course have no influence upon an organ which had reached the stage of amyloid degeneration.

For the colitis our best efforts should be directed towards improving the general nutrition of the intestinal wall, first by a highly nutritious diet, and complete rest in bed, secondly, by irrigation of the intestine with water of the body temperature. I have never been convinced that the addition of any medicament to the water that is used, renders it any more effective. Cleanliness is our main object. For the pulmonary complication no treatment at present seems necessary.

Case 56. Fireman, fifty-seven years old, had scarlet fever at nine years, apparently without ill results. Otherwise he has been always well till six months ago, when on a vacation he ate some canned oysters in the form of a stew. One-half hour afterwards his breath was suddenly shut off. No pain, vomiting, or other symptoms. Troubled with respiration ever since when in midst of fire smoke. Lost 30 pounds in three months. Four weeks ago, when turning in bed, noticed a swelling in the left loin which seemed to move with change of position. No pain or tenderness and no change in urine.

Examination: On left side two tumors are felt below the ribs; one (above and in front) feels like a spleen. The other is more rounded and deeper. Both move with respiration. The lower tumor is somewhat tender and apparently elastic. Belly otherwise negative. Lungs negative. Heart not remarkable except for a loud ringing aortic second sound. Brachials tortuous and move laterally. Urine 1018, 40 ounces in twenty-four hours. Slight trace of albumin. Few hyalin and fine granular casts, some with cells or fat on them. Blood normal, no fever.

1. What are the common causes for the appearance of slight dyspnœa in a man of fifty-seven? Arteriosclerosis and its results, emphysema, obesity.
2. What was the action of the canned oysters? Possibly dyspeptic flatulence, embarrassed cardiac action by direct pressure through the diaphragm. Probably, however, the association was accidental.
3. (a) What abdominal tumors move most freely with respiration? Those connected with the liver, stomach, and spleen. (b) What least freely? Those connected with the kidney and pancreas.
4. Enumerate some of the conditions in which such a urine is often seen. In passive congestion, fevers, and after exertion, when there is bile or sugar in the urine, in arteriosclerosis and chronic interstitial nephritis.
5. What important and simple methods of examination have been omitted? Inflation of the colon, palpation in a warm bath.
6. What questions should be asked with reference to the loss of weight? Have appetite and sleep been as good as usual?

Diagnosis: An abdominal tumor, painless, slow growing, and producing little or no disturbance of any function, is the chief feature of the case. The tumor occupies more nearly the position of the left kidney than of any other organ. It is rounded and elastic. Renal abscess, cyst, neoplasm, or hydronephrosis suggest themselves. The absence of fever, pyuria, leucocytosis, and pain are against abscess, and the absence of any pain or disturbance of micturition make hydronephrosis unlikely. Hypernephroma usually occurs in younger people and often produces hæmaturia and bone metastases. It cannot however be excluded here. The inflated colon traverses the tumor. At operation a congenital cystic kidney weighing 870 grams was found and removed. The dyspnœa, however, continued, and a year later autopsy showed general arteriosclerosis with cardiac hypertrophy and dilatation, general passive congestion, and terminal streptococcus sepsis. The remaining kidney was also cystic.

Prognosis and Treatment are sufficiently suggested in what has been said (see also Case 53).

Case 57. A woman, fifty-four years old, was seen May 19. Only an imperfect history was obtained as she spoke but little English. She had been pale for several years, and for over two years she has passed bloody urine from time to time. She has been gradually losing strength and flesh, and growing more and more short of breath on exertion. Two months ago she went to bed on account of weakness. Lately she has vomited occasionally, the vomitus containing nothing unusual.

Examination showed a very poorly-nourished woman with a marked loss of subcutaneous fat. The conjunctivæ were bluish. The mucous membranes were pale, and the skin was an extremely pale lemon yellow color. The right border of cardiac dulness was a finger's breadth and a half to the right of the parasternal line; the left extended to the nipple line. A well-marked systolic murmur was heard over the whole precordium and was transmitted upward into the vessels of the neck and outward into the axilla. The points of maximum intensity were in the third left interspace and at the apex. The second pulmonic sound was accentuated. There were a few râles at the bases of both lungs. The liver and spleen were normal. Beneath the right costal margin on full inspiration the lower portion of a somewhat irregular body, which seemed about four inches wide and three inches in thickness, could be felt on bimanual palpation. It disappeared during expiration. There was œdema of the feet and ankles. The temperature has been irregular, ranging from normal to 100°. Pulse weak, regular, 120. Respiration 26. One examination of the urine showed it to be turbid, acid, and with a specific gravity of 1013. Albumin a large trace. The sediment contained much pus, free and in clumps, considerable normal and abnormal blood, and much squamous epithelium. A second specimen was noticeably red in color, the amount of albumin was larger and there was distinctly more normal and abnormal blood in the sediment; otherwise the characteristics were the same. Examination of the blood was as follows: reds 1,280,000; whites 8000; Hgb. 10%. There was marked poikilocytosis, macro- and microcytosis, and some polychromatophilia. The differential count of the white cells was as follows:

Small mononuclears 12%; large mononuclears 37%; polynuclears 48%; eosinophiles 3%. Two normoblasts and two megaloblasts were seen in counting 100 white cells.

Diagnosis: The salient points of this case seem to be as follows: A woman past middle life begins to lose flesh and strength and to pass bloody urine. An irregular tumor is felt in the region of the right kidney. An intense anæmia complicates these symptoms. The urine contains blood and pus, but shows no distinct signs of nephritis. The anæmia is apparently of the secondary type although there is no leucocytosis and no distinct statement as to the presence or absence of achromia. With so low a hæmoglobin, however (color index less than .5), we may assume that there was a well-marked achromia. This point is of considerably more importance than the presence of megaloblasts and the low percentage of polynuclear cells. With the exclusion of pernicious anæmia, then, from consideration, we have no difficulty in deciding that we are dealing with a renal neoplasm. Statistics show that by far the commonest tumor in this region is the hypernephroma and this accordingly should be our diagnosis.

Prognosis: If operation is performed early, recovery may in rare cases be complete. In the majority of cases, however, metastases have already been sown here and there.

Treatment: Operation should be performed as soon as the diagnosis is made. There is no other justifiable treatment.

CHAPTER IV.

DISEASES OF THE CIRCULATION.

Case 58. A college student of twenty, a member of an outdoor engineering class during the summer vacation, suddenly fell while at work in the field five weeks before the time when I saw him. He was taken home and found to have a temperature of 103° and a positive Widal reaction. After this he ran a typical typhoid temperature for three weeks with a normal defervescence, but the Widal reaction was twice found negative near the end of the febrile period. There followed ten days of normal convalescence. The patient was up and able to walk about. An attempt was made to move him to his home which was fifty miles away, but after driving a short distance he suddenly collapsed with a rapid, irregular pulse, a marked dyspnœa, enlarged heart, and albuminuria.

It was then recalled that he had had headaches all his life, especially when he got nervous, and that three years ago he had had a mild case of scarlet fever.

The patient was seen October 10 at the hotel wherein his collapse had occurred. His chief complaint was then of gas which accumulated in great volume in his stomach every afternoon, and unless discharged produced palpitation, vertigo and great discomfort. He felt otherwise well but could not raise his head without palpitation and vertigo. He was lying flat in bed, breathing easily. His pupils were both very large, his color bright but changeable, going and coming on slight provocation. As soon as I began to listen to his heart there were loud rumblings and explosive sounds as if gas were being expelled from the stomach. This ceased when the chest examination was finished. No enlargement of the heart could be made out. A faint systolic murmur was audible throughout the precordia and the pulmonic second was some-

what louder than the aortic second sound. The lungs were negative, likewise the abdomen and extremities, although the knee-jerks were very active. I suggested that he should sit up. The preliminary process of getting on a dressing-gown caused the patient much fatigue, and as soon as he assumed the upright position he began to have a rapid, irregular respiration accompanied by sighs and moans with very marked vertigo and faintness. The heart rate rose to 130. No arrhythmia. He was all right as soon as he was allowed to lie down again. A specimen of urine was examined at once. It was clear, normal in color, 1025 in specific gravity, contained no albumin, no sugar. The blood was normal.

The diagnosis of the attending physician was chronic interstitial nephritis with dilated heart.

1. What suspicions should be aroused and what tests should be made owing to the manner in which the gaseous distention occurred? It is in all probability due to "cribbing." One should watch carefully, holding a feather to the lips, to see whether the gas or other air is not being sucked in previous to its expulsion.
2. What other signs suggest a neurotic basis for this patient's collapse? The large pupils, the facial blushing, the lively knee-jerks and the entire comfort of the patient in a recumbent position.
3. What further tests should be made to exclude the possibility of chronic nephritis? The blood pressure should be measured. This was done and showed a systolic pressure of 120 mm. Hg. A nephritis of three years' duration, such as was here suspected, would certainly have produced a demonstrable cardiac hypertrophy with vascular hypertension. Both were here absent.

Diagnosis: The diagnosis of cardiac neurosis seems evident when nephritis and the supposedly resultant dilatation are excluded. It is possible that a certain degree of post-febrile myocarditis may be present, but if the original infection was really typhoid this seems unlikely, since the myocardial weakness of typhoid is much more manifest during the fever than in convalescence. I have never known signs of marked myocardial weakness following typhoid.

There seemed no reason to interpret the murmur, audible all over the precordia, as evidence of endocarditis, especially

in the absence of fever and leucocytosis. Such murmurs are very common after any pyrexia.

Prognosis: The boy should be able to get up and about within a few days, though he will doubtless need considerable urging as he is thoroughly frightened about himself. The doctor's grave diagnosis had evidently become suspected by the patient, perhaps because of the constant presence of his father and mother, who had come at once from their distant home and were naturally much concerned about their only son.

Treatment: The patient should be made to sit up for increasing periods daily. The nature and mechanism of his "cribbing" should be explained to him. Within a few days he should be urged to walk, and as soon as this is easy for him he should be moved to his home.

This treatment was carried out. In ten days he was able to walk about freely, and nineteen days after the time when I saw him he made the trip to his home by train without any trouble. Convalescence was then uninterrupted.

Case 59. Mrs. J., sixty-five, an active, spare, energetic woman. Always well. For two years has noticed some dyspnœa on exertion. Two weeks ago had an attack of dyspepsia with dizziness. This evening she ate a hearty supper of chopped codfish and potatoes warmed up in pork fat. Immediately afterwards she started out for a walk. After walking about a quarter of a mile she noticed dyspnœa, which rapidly increased to great distress. On reaching a friend's house she had barely strength to enter.

When seen twenty-five minutes later, the patient was sitting up propped by pillows. Respiration was from 30 to 40 per minute, and was accompanied by a loud rattle in the throat. The larynx moved violently up and down. No pain anywhere. The face was drawn and blue, nose pinched, hands and fingers purple, skin cold and clammy. The carotids were throbbing strongly, the heart beating tempestuously — 140 times per minute. The lungs were full of coarse, medium, and fine râles up to the second rib on each side. Owing to the noisy breathing no definite information could be obtained regarding the cardiac valves.

1. Significance of the rattle in the throat? Tracheal râles occur whenever inflammatory or dropsical fluid accumulates in the trachea, owing to coma or to weakness which renders the patient unable to raise and expectorate or swallow the fluid. It is a bad sign, because it means either very deep (and therefore serious) coma, or very severe prostration.
2. Significance (a) of throbbing carotids? (b) of other cervical pulsations? (a) Throbbing carotids mean violent heart action, low arterial tension, or both. They are seen in cardiac hypertrophy from any cause, especially in aortic regurgitation, in nervous persons, and in marked anæmia. (b) Aneurism, a normal subclavian artery crossing a cervical rib, the normal (diastolic) undulation of cervical veins, and the systolic venous pulse of tricuspid leakage should be remembered.
3. What further data should be obtained at once? The strength and rhythm of the pulse (far more important than its rate), the temperature, the urine.
4. How is the prognosis influenced by the mode of onset here? Such symptoms arising without assignable cause

are more serious than their appearance after (probable) indigestion and exertion as here.

5. Evidence against pneumonia here? The onset without chill or pain; the cardiac origin of symptoms; the absence of fever, and of signs of solidified lung.

Diagnosis: The lung signs are those of acute pulmonary œdema due to weak heart action, such as is often brought on by slight indigestion and exertion in an elderly person whose myocardium is weak. Bronchial asthma might produce similar pulmonary signs, but practically never occurs at the age of sixty-five in a person previously well. Renal asthma rarely has so sudden an onset without previous evidences of uræmia, dropsy, or cardiac weakness.

Prognosis: The acute pulmonary œdema which complicated the underlying arteriosclerotic degeneration, will be discussed first. The initial attack is rarely fatal. As a rule the patient has three or four such seizures and sometimes they may pass off altogether, so that the patient dies of some other result of the underlying arteriosclerosis or of some intercurrent infection. It depends upon the patient's ability and willingness to limit his expenditures of mental and physical energy. The average attack of pulmonary œdema lasts less than twenty-four hours in its severest form, and leaves the patient weakened for five to ten days thereafter. There is, of course, a marked tendency to relapse. For the prognosis of the underlying arteriosclerosis see Case 60.

Treatment: I am not satisfied that any of the drugs enthusiastically recommended by one or another observer has any definite effect. In the recent discussion among the members of the Association of American Physicians, drugs such as adrenalin and nitroglycerin were equally praised although their effects are of course precisely opposite. From the animal analogies it would appear that the use of artificial respiration should be more effective than any other measure and in a few cases this has apparently proved of great value in the human being. It must be borne in mind, however, that the average case of genuine acute pulmonary œdema tends strongly to swift and spontaneous recovery.

Case 60. A business man, fifty-eight, with good family history and habits, had, about twenty-five years ago, a severe rheumatic fever, disabling him for several months. Ever since then his pulse has been more or less irregular; but he has suffered no inconvenience until about two years ago when he noticed that walking uphill caused dyspnœa. Since then he has lost upwards of fifty pounds in weight. For the past three months he has driven to his business for an hour a day only, and been kept awake by dyspnœa and pain in the right side of the abdomen. Appetite has been poor and digestion impaired.

Pulse irregular, intermittent, rapid, not corresponding with the heart-beat. Respiration easy when quiet, temperature 98.6°.

Complexion sallow, with yellowish tinge to sclerotics. No cyanosis. Tongue heavily coated. Moderate œdema of lower legs. Lungs clear. Cardiac apex not defined to eye or touch. Percussion shows increase in the transverse diameter of the heart, the action of which is so rapid and irregular that only a doubtful systolic apex murmur can be heard. The second sounds are clear, the pulmonic not specially accented.

The belly is flabby, the navel not flushed. Percussion dulness in the flanks shifts with changing position. No fluctuation wave. Three inches below the right costal border and across the epigastrium a solid body, tender, with a firm edge descending with inspiration, is felt.

The urine: normal in amount, specific gravity 1028, contains a large trace of albumin, 2% of sugar, 1.26% urea, no bile, acetone, or diacetic acid. Sediment: a few normal blood globules and a rare hyalin cast.

1. Common causes of sugar in the urine? Diabetes mellitus, neuroses (worry, fear, etc.), coma from any cause (including narcotics), pregnancy.
2. How do you explain the loss of weight? Poor appetite and digestion combined with arteriosclerosis and with glycosuria.
3. Commonest causes of pain in that region? Appendicitis, gall-stones, pelvic inflammation (in women).
4. What caused the pain in the right side of the abdomen? Hepatic congestion.

Diagnosis: Dyspnœa, digestive disturbance, a dilated, rapid, and irregular heart, swollen legs, ascites, enlarged liver with slight jaundice and a urine showing renal congestion, all point to an uncompensated cardiac lesion with passive congestion of the lungs, stomach, liver, peritoneal cavity, kidney and legs. The exact condition of the heart cannot be stated. Its insufficient strength may be due to mitral regurgitation produced by the old rheumatic endocarditis (see history) and compensated until two years ago. It is more likely to be a myocardial weakness (with or without mitral disease) that produces the poor heart action. He is at the age for arteriosclerosis and so for myocardial weakness, but we have no data here as to his arteries. The glycosuria will probably persist. If so it is to be classed as diabetes.

Prognosis: In the whole field of medicine I know no more difficult and uncertain prognosis than that relating to the myocardial weakness associated with arteriosclerosis. Many a patient whom some competent observer has doomed to death within a few weeks survives for years to laugh at the prophecy. On the other hand, I remember a case in which the consultant had given an excellent prognosis, yet received on his way home a telephone message stating that the patient had died within half an hour of the doctor's visit. Despite these difficulties we may say in the first place that most cases live for a number of years after their symptoms begin to be troublesome. Factors which influence the prognosis in individual cases are as follows:

1. Heredity: If the patient's father or mother has been through such an illness and has shown a tendency to weather the storm and cling to life, the patient is apt to follow a similar course. The texture and workings of the cardiovascular tissues seem to me the most clearly inherited of all physical facts.

2. Other things being equal, the age of the patient is of importance. Those who are overtaken by their malady between the fortieth and fiftieth year usually live longer than those whose symptoms begin after fifty, provided always the kidney shows no extensive or permanent lesion.

3. As in most chronic diseases the patient's ability and willingness to submit to proper treatment is a factor of the

greatest importance in the prognosis. This ability concerns in the first place his financial resources. The person who must go on trying to practice a calling that demands severe muscular work, the alternative being starvation or the almshouse, is obviously doomed to a short and painful illness. On the other hand, some patients are affected fully as much for good or for evil by their temperaments as by their financial circumstances. The man who is unable to give up his responsibilities and his business engagements without falling into depression and loneliness, will often beat his life out in fruitless endeavors to find some satisfactory occupation other than business.

4. The habits relating to alcohol and tobacco, especially to the former, are of importance here as with all chronic diseases. Those who are unable or unwilling to give up the use of alcoholic stimulants usually succumb much faster than total abstainers or those who can easily control themselves.

5. The degree of cardiac hypertrophy, as shown by the position of the apex beat and the height of the systolic blood pressure, is directly proportional to the severity of the disease. Other things being equal, the higher the blood pressure the shorter the duration of the illness.

Treatment: Two opposite dangers are to be avoided. We may overwork the patient's heart by allowing him to attempt tasks which overstrain his mind or his body, or, on the other hand, we may disturb, through enforced inactivity, that balance and compensation already worked out by nature. Absolute rest is a positive danger in many cases. The tone and sufficiency of the cardiac muscle is dependent upon a certain amount of exercise for its optimum condition. Just as baths and passive motion may improve a faulty compensation, so the lack of any such demands upon the cardiac muscle may seriously weaken it. I have seen many a patient go straight down hill after being put to bed. I do not believe that this is a coincidence in all the cases that I have observed.

By careful observation and experiment, therefore, we should try to determine how much exercise of mind and body is sufficient to keep up the heart's tone without overstraining that organ. Unless there is marked dropsy and dyspnœa

on very slight exercise, no patient should be put absolutely at rest. Even the slightest degrees of dropsy are sometimes benefited by moderate exercise. Some patients can row or paddle with much more ease than they can walk, and if it is possible this form of exercise may be distinctly beneficial. Very few patients in this class are benefited by hydrotherapeutics or passive motion. They should be strongly advised against a trip to Nauheim or any of the other "cures."

It is often best to teach the patient to sleep in a chair without attempting to go to bed. Sometimes a portion of the night may be passed in bed, provided acute dyspnoea is never called out by the attempt to lie down in the hours before midnight. Hypnotics have no value in insomnia of this type.

As regards diet, the important points are to avoid overdistention of the stomach and especially irritating substances. As a rule the patient may eat a small quantity of any of the ordinary types of food. Meat should be used very sparingly and if there is much œdema a trial of salt-free diet may be made.

As regards medication it is best to treat all the physical causes with a course of purgatives and diuretics before any cardiac stimulation is attempted. The method of giving such medication has been already described on page 147. When cardiac stimulants are begun they may be used exactly as in the primary valvular diseases of the heart although we have far less reason to be hopeful as to their efficiency. I have seen no benefit from nitroglycerin or the other nitrites, except of course in cases complicated by angina pectoris.

Case 61. A woman of forty-one, with good family history, has been married twice. The cause of the death of her first husband is unknown. During her first marriage she had two miscarriages. By her second husband, who appears healthy, she has never been pregnant. She has no rheumatic history. For ten years she has not been able to walk far without dyspnœa, but her health was good until seven years ago, when at Carlsbad she took several baths, and just after the last a sudden hemiplegia developed. For four months she could not be moved, and the left arm and leg, though useful, have never regained full power. She has always risen once in the night to urinate. Yesterday she was as well as usual. She awakened her husband about 1 A.M. to-day, and again, later, spoke to him. By 4 A.M. she was semi-conscious, could not speak, and had a right hemiparesis, most marked in the face.

Next morning the color and nutrition were good, the face not flushed, respiration easy, the breath free from odor. The tongue was slowly protruded on demand, but her comprehension was much limited. Temperature normal. The radial pulse could not be counted: the apex beat was sometimes 44, again 72 per minute. The first apex sound was excessively sharp, the pulmonic second accentuated. No murmurs, no thrill. The heart did not seem enlarged. Complete aphasia and inability to swallow. She moved the right arm somewhat, the right leg a very little. Contractures of the left fingers. The superficial reflexes were absent; no deep reflexes in the right arm or left leg; knee-jerk present on right. Abdomen negative. The urine was 1012½ in specific gravity, pale, with a slight trace of albumin, no sugar, a few hyalin and fine granular casts.

1. Types of facial paralysis? *Central* paralysis, usually appearing as part of hemiplegia; *aural* paralysis, occurring in cases of well-marked ear disease; and *peripheral* paralysis, occurring without any other lesion.
2. What odors in the breath are of diagnostic or prognostic value? Those of alcohol, acetone, and illuminating gas in diagnosis; the foul, heavy odor of many serious diseases in prognosis.

Diagnosis: The sharp first sound, accented pulmonic second with chronic dyspnoea and two attacks of hemiplegia point to mitral stenosis and cerebral embolism. The presystolic murmur has disappeared owing to cardiac weakness. Cerebral syphilis is suggested only by the history of miscarriage.

Prognosis: She may live years, but the paralysis is not likely to be recovered from wholly.

Treatment: (see Case 62).

Case 62. Patient a man fifty-five years old; rather fat; subject to frequent attacks of winter cough, with asthmatic tendency. For seven years the heart had been noticeably weak and irregular. Pulse 80; first sound valvular. Apex beat an inch and a half directly below left nipple; no murmurs. No previous rheumatism. Several years ago there was sudden and complete loss of memory, the same questions being repeated as soon as answered. The expression was at the time rather vacant; the pupils were equal and responded to light; there was no motor paralysis. The amnesia lasted all day, disappearing the following morning. The pulse remained 50 for two days. The patient had been previously very anæmic, and had had much fatigue and anxiety, with digestive disturbance. The urine always remained normal. In the following years there were occasional attacks of transient numbness in the left arm and leg, and sometimes faint turns with pallor and irregular, feeble pulse. Headache was a frequent symptom; dyspnœa on exertion, impaired appetite, and insomnia were constant. There was no apparent loss of flesh. In 1897 life was endangered for two weeks by œdema of both lungs, supervening on an attack of bronchitis. In the subsequent years the condition improved somewhat, so that the patient could walk half a mile or more and was able to attend to considerable business. In autumn of 1904, he had several attacks of bronchitis, and, finally, an attack of complete hemiplegia resulted fatally in twenty-four hours without recovery of consciousness. Respiration was of the Cheyne-Stokes type, and later stertorous.

1. Significance of stertorous respiration? Any deep coma (even deep, healthy sleep) may produce it.
2. What is meant by an asthmatic tendency — i.e., on what physical signs should such a diagnosis be based? Squeaking and groaning râles present on slight exertion or excitement, with or without typical asthmatic paroxysms at long intervals.
3. What are the relations of bronchitis and other pulmonary lesions to disease of the heart? (a) Chronic bronchitis may lead to emphysema, and this to hypertrophy, dilatation and weakening of the right ventricle with tricuspid leakage. (b) Mitral disease may favor the

occurrence of bronchitis and pneumonia of various types. Intracardiac thrombosis, occurring in weakened conditions of the heart from valvular or myocardial disease, may result in pulmonary embolism. Septic or bland emboli are occasionally washed into the lungs from vegetations on the tricuspid valve. The rare lesions of the pulmonary valves involve malnutrition of the lungs and (in one case known to me) frequent attacks of pneumonia. Phthisis and endocarditis rarely coexist.

Diagnosis: The brain and heart seem to be the organs chiefly affected. In a man of fifty-five, weak, irregular heart and pulse, with dyspnoea on exertion, but without murmurs, are usually explained as results of coronary sclerosis and myocarditis. The "asthmatic tendency," obstructing the pulmonary circulation and so increasing the work of the right ventricle, probably contributed to weaken the heart. The acme of cardiac weakness caused the pulmonary oedema in 1897. The amnesia with bradycardia, the hemiparæsthesia and faint turns, and the terminal coma of hemiplegia, are results of cerebral arteriosclerosis with final hæmorrhage. No other diagnosis is plausible, provided the urine remained normal and provided syphilis can be excluded.

The prognosis and treatment of the underlying arteriosclerosis have already been described (see pages 166 and 167). Here only the complicating apoplexy will be considered.

Prognosis: Most patients recover from their first attack of apoplexy. It is usually the second or the third shock which is fatal. Favorable indications are the early recovery of consciousness or, better still, the failure altogether to lose consciousness, an early disappearance of the severest paralytic symptoms, a relatively low blood pressure, and the absence of renal or peripheral complications. The patients may live and work for five or ten years after their first attack of apoplexy, provided the heart and kidney are in fairly good condition. As a rule, however, the second shock follows the first within one or two years and is apt to be more severe. I am referring of course throughout to the apoplexies resulting from arteriosclerosis in elderly people

whether it be due to hæmorrhage, to thrombosis, embolism, or vascular crisis.

Treatment: The main thing is to avoid doing harm. I have seen patients almost choked to death by unwise attempts to feed them. There is no danger that such a patient will starve before he recovers consciousness. If the mouth is very dry, normal saline solution may be injected under the skin or into a vein. The use of cathartics does not seem to me of any great value, but doubtless it does something to lower blood pressure. The same effect, however, can be better accomplished by venesection, which is to be recommended in all plethoric patients with very high blood pressure. As a rule there is no need of cardiac stimulation. Care must be taken to prevent bed-sores, and the patient may often need to be catheterized.

After the patient regains consciousness the accompanying paralysis is best treated by encouraging the patient in every possible way to use all the power that he has got. Other methods of treatment such as electricity and the use of Zander apparatus are of value chiefly because they help to keep up the patient's courage and stimulate his efforts at voluntary motion. Of course if there is any well-grounded suspicion of a syphilitic disease in the background, mercury and iodid of potash should be given in the usual way.

Case 63. A sub-freshman of seventeen of an extraordinarily nervous temperament, six feet two inches high, consulted me May 12, 1910, in company with his still more nervous mother. All through the previous fall and winter he was very active in competitive athletics, including sprinting, swimming, and tennis. He is now working hard for his final examination for entrance to college.

Four weeks ago he was examined by a physician who told him that his heart was enlarged and showed murmurs. Following this verdict he became excessively alarmed about himself and began for the first time to suffer from palpitation. He at once took to bed and remained there until April 22, when he was moved to Atlantic City. There he has remained until to-day, doing practically no walking, sleeping and eating poorly, and still very conscious of the irregularity of his heart.

On examination the heartbeat was excessively rapid and violent but quite regular. Its rapidity the patient explained as being due to the fact that he was being examined. The apex impulse was diffuse and wavy. By percussion it appeared to extend an inch and a half outside the nipple line in the fifth interspace. By sight and touch it seemed to be even more displaced. The sounds were loud and clear. No murmurs or accentuation were audible. The blood pressure was from 165 to 175 mm. Hg. The pulse and arterial walls not remarkable. The patient moved about easily without dyspnoea and was equally comfortable in the recumbent and in the upright positions. There was no oedema in the lungs or elsewhere, and physical examination, save as above noted, was wholly negative. The urine amounted to 60 ounces in twenty-four hours, specific gravity 1013, no albumin, no sugar. Blood was negative. Temperature constantly normal.

On further questioning it was ascertained that from March 10 to March 30 the patient had been having scarlet fever and that at the end of this attack his pulse was noted to be somewhat irregular.

Diagnosis: Cardiac overstrain due to excessive muscular effort in athletics, myocardial weakness with dilatation and

hypertrophy following scarlet fever, and chronic glomerulonephritis with resulting cardiac enlargement and weakness are the chief possibilities to be considered in this case.

As regards the first of these — a so-called athlete's heart — we must note that the period of overstrain coincided with the period of very rapid growth and hard study. On the other hand, it is notable that he experienced no discomforts of any kind during or soon after the period of excessive exertion. In favor of a post-scarlet fever myocarditis is the close sequence of the symptoms upon that disease which, as is well known, is prone to attack the heart as well as the kidney, although cardiac complications are much commoner in diphtheria.

Of nephritis we have no direct evidence. Nothing of the kind was noticed either during or after his scarlet fever. His urine is quite consistent with the diagnosis of secondary contracted kidney (chronic glomerulonephritis) but it is also just what one would expect in an excessively neurotic boy who was frightened about himself and his heart.

Leaving all these questions for the moment undecided, let us ask whether we may be dealing with a purely neurotic type of heart trouble. This is suggested by the immediate sequence of his most distressing symptoms upon the doctor's discovery of heart trouble previously unknown. It was further supported by the fact that he immediately improved under the encouragement which I felt justified in giving him. Nevertheless it seems to me impossible to explain the increased area of cardiac dulness and the notably elevated blood pressure as the result of a neurosis.

On the whole it seems to be most likely that the scarlet fever poison was the cause of his troubles. Its effect was exerted, presumably, upon the myocardium since there are no evidences either of endocarditis or pericarditis.

Prognosis and Treatment: The majority of such cases show very notable and permanent improvement after a long period of rest followed by the gradual resumption of muscular activities in a graduated scale. Under such treatment he rapidly improved until on October 25, 1910, the cardiac apex had receded to a point half an inch outside the nipple while

the blood pressure had fallen to 150. By this time he was walking three or four miles a day and doing more than the average amount of college work without any symptoms of any kind. No drugs were given.

Case 64. A bank president, seventy-four years old, of large frame, lost his father at sixty-four from apoplexy, his mother at about the same age from phthisis. Several of his sisters also died of phthisis. His health has been exceptionally good, and a daughter cannot remember his having taken to his bed before. During the past year his weight has gradually fallen from 240 to perhaps 190 pounds. His color has been poor occasionally, and it has been noticed that a sudden pull on the part of his horses while driving would make him cry out, "Oh! my stomach!" He has not been able to walk as much as formerly on account of pain in the back and dyspnoea. He has also had sleepy turns, even after breakfast, for a year or more. About four weeks ago, walking up a slight incline after a concert, he lost his breath and had to stop six times on his way home, even after he reached level ground. December 25 he sent for his physician for a "catarrhal cold." The pulse was 38, regular, the temperature subnormal; there was some oedema and eczema of the legs, and moist râles over the base of both lungs, without notable dullness or change in the quality of the respiratory murmur. He stayed indoors and three days later took to his bed. Very soon after this he had frothy, profuse, and thin, pink expectoration, with somewhat labored but not quickened respiration. The slow pulse persisted. The urine was about a quart in twenty-four hours, normal in specific gravity, with hyalin and finely granular casts.

January 13 he was seen in consultation. His chief complaint was of weakness and anorexia. Digestion fair, bowels regular; practically no cough or expectoration. Most of the time is passed in sleep. He lies by preference on the right side, with the head low. He looks less than his age; the lips are slightly cyanotic, the respiration easy, the tongue moist and clean, the mind clear when awake. The pulse is 38, regular, synchronous with the apex beat. During the last fortnight it has never been found above 40, and has been counted at 24. The radial arteries are slightly degenerated. The cardiac impulse is in the fifth space, nearly an inch beyond the left nipple; dullness seems rather increased to the right. Systolic murmurs are heard in both the aortic and

mitral areas, and the second sound is reduplicated at the apex. The lungs are clear. There is dulness below the right costal border, but palpation gives negative results in that region. Beyond slight œdema of the feet, physical examination is otherwise practically negative.

1. Common causes of loss of weight? Improper or insufficient diet, diarrhœa, arteriosclerosis, and the attendant changes of old age, loss of sleep, malignant disease.
2. Causes of bradycardia? It is important to distinguish infrequent heartbeat from infrequent pulsebeat due to failure of transmission of a weakened cardiac impulse. True bradycardia occurs after fevers, great exertion, parturition, in the toxæmia of nephritis, cirrhosis, and jaundice, in organic brain disease (tumor, abscess, meningitis). The most marked and long continued cases of bradycardia are usually associated with coronary sclerosis and myocarditis.
3. How is the frothy, pink expectoration to be explained in view of the fact that at a later examination the lungs were clear? Frothy, pink expectoration with labored respiration is in all probability due to pulmonary œdema. This condition may be temporarily produced and arrested by unknown causes, and thus at a later examination may be wholly absent.
4. What is to be suspected when epigastric pain seems to be brought on (as in this case) by exertion? Angina pectoris.
5. What physical signs should be looked for in the neck in this case? Jugular pulsation at a rate twice or thrice that of the radial pulse. This was unfortunately not recorded in this case.

Diagnosis: In a man of seventy-four, with symptoms distinctly suggesting angina pectoris, the association of sleepy turns and a pulse between 24 and 38 means in all probability Stokes-Adams syndrome with coronary sclerosis even though we have not evidence regarding the auricular systole. The dyspnœa, the "catarrhal cold," the later attack of pulmonary œdema, the urinary and digestive symptoms, and the slight œdema of the feet are all to be explained as results of myocardial weakness. The loss of weight is probably due to arteriosclerosis.

Prognosis: Nothing is more difficult than to state the probable duration of life in such a case. Recovery is impossible and death may occur at any time, yet life may be prolonged and considerable comfort secured for months or years.

Treatment: Restriction of activity, mental and physical, good hygiene, limitation of sodium chloride in the diet, and the administration of KI and nitroglycerin in small doses are the chief indications. For further detail see Case 59.

Case 65. A prominent manufacturer, sixty-two, of good habits and family history. Never previously sick. Has been much confined for a year and weight has increased from 164 to 174 pounds. Was seen February 15.

Shortly before Christmas he noticed shortness of breath on walking. His urine at that time was pronounced negative. The dyspnœa on exertion got no better and substernal pain extending over the arms was soon superadded. This pain was not very severe, and came on only during exertion. About two weeks ago, after a hearty, rapid, and rather indigestible midday dinner, he was taken at his mill, without antecedent exertion, with a very severe attack of pain as above described. When his physician reached him he was in a cold sweat and seemed alarmingly ill. Pulse 80, regular. After two hours he was driven home four miles, arriving with pulse at 80 and temperature at 97.5° . The next day the pulse was 100, temperature 100° , rising to 120° and 102° the next day. There was bloody expectoration, with signs of consolidation at the right posterior base. For the past week the pulse and temperature have been normal. When seen February 15 he stated that he felt perfectly well. He looked rather pale, lay in bed with his head low, breathing easily, not cyanotic. The pulse 80, intermitted occasionally. The artery was soft, tension not high. No œdema. The heart was not enlarged; sounds clear. A few râles without dulness over the left posterior base. Percussion was dull with resistance an inch below the right costal border, but the liver edge could not be felt. The urine, 52 to 54 ounces per diem, contained a decided trace of albumin and a few hyalin casts, specific gravity 1020, urea 2%.

1. What diseases increase weight? Obesity, cardiac and renal disease, myxœdema.
2. Causes of bloody expectoration? Phthisis, pneumonia, infarction of the lung due to congestion (as in mitral disease or from embolism), pulmonary abscess or gangrene, wounds or malignant disease of the lung, ruptured œsophageal varices (in cirrhotic liver), leaking aneurism.

Diagnosis: In a man of sixty-two, dyspnœa and substernal pain produced by exertion, extending to the arms and relieved by stopping, are symptoms almost pathognomonic of coronary sclerosis with angina pectoris. The pain of aneurism is somewhat similar, but has not the close dependence on exertion. The severe attack two weeks ago seems to have ended in pulmonary congestion and hypostatic pneumonia. The examination of February 15 adds only the evidence of an arteriosclerotic kidney. It is surprising that arterial tension appears low. Was the aortic second accentuated?

Only the prognosis and treatment of angina pectoris will be considered here. For treatment of the other elements in the clinical picture see Cases 57, 58, 59, and 62.

Prognosis: It is no longer possible sharply to distinguish the organic from the functional cases of angina pectoris. The so-called functional cases usually occur in younger people and have a distinctly better prognosis. As a rule the more widespread and constant the pain, the less ominous it is. The most serious cases are those in which the pain is sharply localized to a circumscribed area which is the same in every attack. These severe cases are usually free from suffering as soon as the acute attack is over and may feel perfectly well for days at a time. On the other hand, patients who complain of a certain amount of constant aching not only in the precordia and left arm but throughout the left chest and shoulder, usually live much longer than the more paroxysmal cases. Cases of sudden death are mostly in patients who have relatively few attacks and feel perfectly well between them, so that they are allowed to undertake vigorous work. Beyond this there is nothing to be said about the prognosis except what has already been stated regarding the underlying disease of arteriosclerosis. In this as in all of the complications of arteriosclerosis, financial standing, temperamental quality, and age are the determining factors.

Treatment: Obviously one must try to reduce the number of occasions on which exertion, emotional excitement, or sudden change of position precipitate an attack. Patients should be especially careful when they first wake in the

morning. The heart has to be gradually accustomed to the severer work demanded by waking life. Nocturnal attacks are more apt to come in those who attempt to sleep with the head low. Such attacks can sometimes be warded off by sleeping in a chair. All hill climbing and stair climbing are to be forbidden. On the other hand, rowing is often quite easily performed. If there is an accompanying obesity the reduction of the surplus fat may greatly diminish the number of attacks by diminishing the heart's load.

The patient should always carry in his pocket a box containing either nitroglycerin tablets, $\frac{1}{200}$ or $\frac{1}{100}$ grains, or the so-called pearls of amyl nitrate. Some patients like one of these preparations much better than the other; only experiment can decide this point, as well as the size of the dose.

For reasons which I am unable to explain, manipulation of the precordial tissues, sometimes of the shoulder and arm, brings about a definite improvement in some patients. A masseur or an osteopath sometimes cures or greatly relieves patients whom regular practitioners have failed to help. We are much in need of further light in this direction.

Case 66. Mr. V., a theater usher of forty-seven, unmarried, lost his voice six months ago. Since then it has gradually improved until now he speaks quite audibly. Otherwise he has been well and worked steadily and hard, — though occasionally he has felt an ache between his shoulders for one-half a day or so. On one occasion, three months ago, this pain occurred while he was walking and almost took his breath away for a few minutes. Since this time there has been no pain. Insomnia has troubled him for many years, and he gets little sleep after 4 A.M. He admits that he is of nervous temperament, and has been considerably worried. There has been no cough, no emaciation, and, so far as he knows, no fever. Appetite good, bowels regular. His regular weight is 158.

Examination shows a healthy-looking man with no fever. Weight 160. The heart's apex in the fifth space, three-quarters of an inch outside the nipple. The heart sounds are clear — the aortic second loud, low-pitched, and easily palpable. The pupils are equal and react normally. The pulses equal and synchronous. Brachials slightly tortuous and have a lateral excursion. No thrill or abnormal dulness in the front of the chest.

At the left apex behind, there is dulness, increased voice and fremitus, and whistling breathing (stridor). In the right side of the neck is a mass the size of a goose's egg; its lower portion is hard and seems connected with the clavicle. Above it pulsates strongly. The whole is smooth and not tender. Laryngoscopic examination shows the left vocal cord in the cadaveric position. The blood and urine are normal and visceral examination is negative, except for the deviations just noted.

1. Causes of accentuated aortic second sound? Increased peripheral resistance due to arteriosclerosis, nephritis with high tension pulse, severe muscular exertion, nervous excitement, aneurism.
2. Causes of hoarseness or aphonia? Laryngitis ("simple" or tuberculous), syphilis, laryngeal tumors, paralysis of a vocal cord or partial paralysis of both, hysteria.
3. What is the cervical tumor? It was at first diagnosed as aneurism (of the carotid or subclavian), but proved to be a cervical rib crossed by the subclavian.

Diagnosis: The important signs are: paralysis of the left vocal cord, arteriosclerosis with resulting cardiac hypertrophy, solidification and stridor at the apex of the left lung. An X-ray plate of the chest showed a large aneurism of the aortic arch. The puzzling things in the case were (a) the pulsating tumor in the *right* neck, which one tried naturally but unsuccessfully to associate with the paralysis of the *left* vocal cord, and (b) the absence of any signs of aneurism except the paralyzed vocal cord.

Prognosis: The average duration of life is from two to four years. Relapses are almost inevitable if temporary improvement is secured. Nevertheless a symptomatic recovery occasionally occurs. The patient must look forward to many months of inactivity as the best of the alternatives threatening him.

Treatment: The so-called Tufnell plan of management is probably the best in the majority of cases. The aim of this regime is to reduce blood pressure and promote clotting within the sac. The patient is put to bed and forbidden all unnecessary motions. It is better that he should not even feed himself. The amount of food is reduced to a minimum and the intake of liquids is also strictly limited. Just how far we are to carry this starvation process must be settled in each case with due regard to the patient's powers of resistance and of self-control. He should not be allowed to lose more than two pounds a week in weight. Such a regime may be carried out for eight or ten weeks; in exceptional cases for three months. It usually diminishes pain and promotes comfort in all respects. Projecting masses may disappear within the chest and the veins become again normal.

Since it is now generally believed that aneurism is almost invariably of syphilitic origin, it is advisable to give potassic iodid and mercury either during or following the carrying out of the Tufnell regime.

Finally, the operation of "wiring" is probably applicable to a small percentage of cases in which the aneurismal sac projects at a sharp angle from the main course of the aorta. Unfortunately it is very difficult to identify or to select such cases, and if we make a mistake in our selection, the operation is apt to be fatal. At present it can be mentioned only as a last resort or legal euthanasia.

CHAPTER V.

DISEASES OF THE RESPIRATORY TRACT.

Case 67. A female domestic, twenty-nine years old, single, lost her father, a dissipated man, from phthisis. She herself was chlorotic five years ago, but has been otherwise well. A year ago she took a severe cold, and after a few days felt a sudden intense pain in the left lower axilla. Cough followed, with little or no sputa. She was not long laid up, but has been short of breath on exertion ever since. She denies persistent cough, and states that it is present only when she takes cold: expectoration at these times is scanty, but has several times been blood-streaked. She thinks she has lost no flesh and has not been feverish. She has been and is now steadily at work. Her employer sends her to be looked at while the physician is visiting a member of the family.

The general appearance is that of health; pulse and temperature normal. She complains only of dyspnoea on exertion, dry cough, and anorexia. The chest is symmetrical; the interspaces are well defined; no cardiac impulse is visible; the left chest dilates less than the right. The heart sounds are loudest, and the impulse best felt just below the ensiform cartilage; the sounds are normal. The cardiac dulness seems to extend farther than usual to the right of the sternum. The right chest is hyperresonant throughout, with puerile respiration. The left chest, including the cardiac area, is tympanitic with very feeble respiration and absence of vocal fremitus. In the left lower axilla there is faint, amphoric breathing.

1. What pulmonary diseases cause pain? Pleurisy ("simple," tuberculous, or pneumonic), malignant disease.
2. Significance of bloody sputa? If blood appears in streaks it is usually from the throat (pharyngitis). In phthisis blood is usually in larger amount.
3. What do you infer from the fact that this patient has not felt sick enough to disable her from work and has the

appearance of health? The disease, whatever it is, must be producing chiefly local, not constitutional, effects.

4. Under what conditions is the cardiac impulse absent? Thick chest walls or emphysema may hide the heart; pleural effusion, pneumothorax, or adhesions may displace it behind the sternum. Its beat may be too weak to feel.
5. In what diseases may cardiac dulness extend more than 2 cm. beyond the right sternal margin? Whenever the right heart is distended, and whenever the heart is displaced to the right from any cause.
6. Significance of puerile respiration? Extra work done by the lung.
7. What changes in the blood and urine do you expect in this case? Normal blood, possibly a slight leucocytosis. Probably normal urine; possibly albuminuria and a few casts.

Diagnosis: Succussion produced a loud splash. Pneumohydrothorax was obvious, probably of tuberculous origin. The latency of symptoms is surprising but not unprecedented. Bacilli were later found in the sputa.

Prognosis: The prognosis is essentially that of phthisis, though the complicating pneumohydrothorax makes the outlook somewhat less favorable. Since the amount of air in the chest is not enough to depress the heart or produce any pain or dyspnœa, there seems no good reason to interfere with it by tapping. Presumably it will later be absorbed if the patient's general condition can be improved.

Treatment: That of phthisis, as already described on page 24.

Case 68. A paper hanger, forty-five years old, is seen May 17. His history obtained from the attending physician, who made his first call May 3, was as follows: The patient uses alcohol in moderation, and has had no previous illness. April 27 he had a chill followed by sharp pain in the lower right chest, some cough with bloody expectoration, and shortness of breath. He has been in bed ever since. On May 3 the right chest was dull below the fourth rib in front and below midscapula behind, with bronchovesicular respiration, increased voice, and vocal fremitus. The cardiac apex was in the fifth space just outside the nipple line. No murmurs. The second pulmonic sound was accentuated. The temperature ran between 101° and 102.5° until the morning of May 8, when it fell to 99° . Since then it has been irregular, varying between 100° and 102° . The respiration was 35 until the 8th, when it fell to 28, where it has since remained. The pulse has varied between 100 and 110. Urine negative. The patient has lost strength and weight. The signs in the lungs have gradually changed; now the right chest seems fuller than the left and moves but little with respiration. It is flat throughout on percussion, with diminished vocal resonance and fremitus. Respiration is bronchial down to the fifth rib in front, growing gradually feebler below that point until it is lost toward the base. Feeble bronchial respiration is heard over the back, with numerous medium moist râles at the angle of scapula. The heart remains as before. The smooth edge of the liver is felt two inches below the costal margin. White cells, 28,000.

A needle was introduced on the 14th in the eighth interspace in the posterior axillary line, and again to-day an inch or two farther back. It appeared to enter a solid body, and only a drop or two of blood was obtained.

1. In what diseases is bronchial breathing to be heard?
Phthisis, pneumonia, some cases of pleural effusion, malignant disease, atelectasis.
2. Why is the pulmonic second sound accentuated here?
Because of the obstruction to the pulmonary circulation due to the disease below described.
3. Is the eighth interspace a safe place to tap in a case like

this? It is safe if the diaphragm is not pushed up. In hepatic abscess I have seen the liver punctured (through the diaphragm) by a needle introduced through the eighth space in the posterior axillary line.

Diagnosis: Solidification of the whole lung, lasting eighteen days and proved by the result of puncture, might be due to tuberculosis, pneumonia (unresolved), or malignant disease. Loss of flesh and color is rare in unresolved pneumonia. Prominence of one chest is not produced by tuberculosis, and so high a leucocytosis, without evidences of cavities and purulent sputa, is almost unknown. Malignant disease was found at autopsy three months later.

Prognosis: There is no hope of recovery from malignant disease of the lung, since its surgical removal is impracticable and metastasis elsewhere is almost certain to be present. Life is not likely to be prolonged beyond a few months.

Treatment: If serum accumulates in the pleura upon the affected side, some relief to the patient's dyspnœa may be given by tapping the effusion as often as it produces distress. In the absence of better remedies it is perhaps worth while to try X-ray exposures which may have some influence in delaying the further progress of the disease. I have seen no good effects from Coley's toxins in such cases; towards the end of life morphin may be needed to relieve suffering.

Case 69. A married lady of sixty-two is seen March 1. The family and previous histories are good. Three years ago the left breast was removed by a competent surgeon for cancer. Since then her health has been good until December 15, 1902, when, for failing eyesight, she consulted an oculist, who found detachment of the retina in the left eye.

About January 1, she noticed that she was short of breath. After this she kept very quiet as exertion brought on dyspnœa. Dyspnœa has continued her main complaint, brought on by exertion, but, especially of late, often waking her from sleep. About two weeks ago she could lie on the right better than on the left side; since then there has been orthopnœa. She has a slight dry cough, no pain, fever, or vomiting. Bowels regular. The appetite is poor. Loss of weight has not been marked. The pulse is 112, regular. The right chest is dull on percussion above, flat below, with feeble respiration, diminished voice sounds and fremitus. There is puerile breathing over the left lung, and a few fine râles in the fifth interspace in front. The heart's impulse is in the sixth space, anterior axillary line. The sounds are clear. The abdomen is negative; the urine, 1016–1018 in specific gravity, contains neither albumin nor sugar; the amount is not known, but thought to be normal for one in her condition. There is no œdema.

1. Name the most important causes of dyspnœa. Cardiac weakness, emphysema, pleural effusion, pneumonia.
2. (a) Significance of orthopnœa? (b) In what diseases does it most often occur? (a) Orthopnœa means dyspnœa so great that lying down causes distress. (b) It is oftenest seen in the diseases mentioned above.
3. Causes of displacement of the apex impulse? Cardiac hypertrophy or dilatation, pressure of pleural effusion, pneumothorax, or of subdiaphragmatic tumors, contraction of a diseased lung with pleural and pericardial adhesions, *situs inversus*, thoracic deformities.
4. At what age is pleural effusion most common? Under forty.
5. Why does she prefer to lie upon the right side? Because that frees the left lung for breathing, the right being embarrassed by hydrothorax.
6. What symptoms are likely to develop later in the course of this case? Pain, œdema of the right arm and of the adjacent parts.

Diagnosis: Evidence of pleural effusion coming on in an elderly woman whose breast has been removed for cancer suggests at once a cancerous metastasis at the root of the lung. A simple pleuritic effusion might develop at this age but is rare. Hydrothorax is ruled out by the absence of notable cardiac weakness. Paracentesis will probably decide the diagnosis by revealing a heavy bloody fluid such as is common only in cancerous effusions.

Prognosis and Treatment: (see previous case).

Case 70. A heavy, middle-aged woman "took cold" on Saturday and was afterward distressed for breath. She was seen on Tuesday evening sitting up, breathing with some difficulty and with a wheeze, chiefly with expiration. The face was red but not livid. She complained of pain at the top of the sternum and side of the throat. There was expectoration of white frothy mucus and some tough brown masses. The voice was suppressed. The tonsils were not swollen, there was no exudation in the pharynx, and the epiglottis was not swollen. The pulse was rapid. The physical signs were negative with the exception of prolonged expiration. Temperature 99.9°.

1. (a) What are the commonest causes of pain referred to the sternum? (b) of sore throat? (a) Tracheitis, asthma, weakened or embarrassed heart, aneurism, mediastinal tumors. (b) Pharyngitis, tonsillitis, tonsillar abscess.
2. In what diseases do patients wheeze? Asthma, emphysema, some cases of bronchitis, bronchial or tracheal stenosis from cicatrix (syphilis), or from pressure (aneurism or tumor).
3. Significance of inspiratory and of expiratory dyspnœa? *Inspiratory* dyspnœa means obstruction in the upper air passages ("croup," diphtheria, quinsy, postpharyngeal abscess, foreign bodies in the larynx). *Expiratory* dyspnœa is seen chiefly in asthma and emphysema. Mixed forms occur in other diseases of the lungs and of the heart.
4. How might blood examination help in the diagnosis of this case? The absence of leucocytosis would help to exclude pneumonia.
5. What should you expect to find in the sputum? Nothing of any diagnostic significance.

Diagnosis: Laryngeal diphtheria, acute laryngitis with tracheitis and asthma, Ludwig's angina, aneurism, and "central" pneumonia are the most important possibilities. The temperature and the absence of any physical signs on the fourth day make pneumonia very unlikely. (This opinion was later confirmed by the finding of a normal leucocyte count — a fact which helped to exclude diphtheria and deep cervical abscess.) Ludwig's angina produces tenderness and swelling (as well as pain) at the side of the neck and throat.

Fever and leucocytosis would be high. Laryngeal diphtheria was excluded by laryngoscopic examination, which also demonstrated the presence of acute laryngitis and tracheitis. The piping râles of asthma appeared a few hours later (they are often very fugitive), and this, with the negative results of urinary examination, confirmed the diagnosis of bronchial asthma. The tough brown masses appeared to come from the region of the tracheal bifurcation.

Prognosis: The attack is not a severe one and would probably have passed in the course of a week or ten days. Such attacks often recur but are never serious.

Treatment: For the laryngitis and the wheezing nothing is more effective than the inhalation of hot steam, with or without tincture of benzoin. A large pitcher of hot water is held up to the patient's face and a towel thrown over the head so as to confine the steam somewhat. In this way a good deal of the vapor may be inhaled in the course of two or three minutes. The procedure should be repeated every few hours if it gives relief.

For the cough nothing is better than heroin, $\frac{1}{12}$ grain, given every five or six hours. The patient should remain in bed as long as there is any fever, and may be fed up to the limit of digestive power. There is no good reason for giving a cathartic, as is so often done, unless the bowels are actually constipated.

CHAPTER VI.

DISEASES OF THE NERVOUS SYSTEM.

Case 71. A sewing-woman of fifty-nine had been of a nervous temperament all her life, but for the past two years this has been much worse and she now feels "all disturbed." Her sleep is heavy but she often wakes up frightened and with both arms asleep. Though she passed the menopause ten years ago she is frequently troubled by a "rush of blood to the head" accompanied by hoarseness and a sense of impending death. These attacks are much commoner in winter. Every summer she feels much better. She was always stout and her weight has decidedly increased in the past ten years, though for the past two years it has remained unchanged. Walking easily makes her wheeze and puff and she notices that her clothes are much tighter at night than in the morning, especially if she walks. She has a constant sense of a weight upon her head and a hot room or a coal fire makes her head throb painfully. She is very subject to forgetfulness and to spells of trembling. Though she has been frequently urged by her friends to bear up and put a better face upon her troubles she has been quite unable to do so even with the aid of mental treatment. Nosebleeds have been frequent during the past winter.

Diagnosis: Prior to the physical examination this case certainly looks very much like a psychoneurosis. It is always to be remembered, however, that psychoneurosis originating at fifty-seven in a person who has never previously consulted a doctor is exceedingly rare, and that many of the symptoms which in younger people have no serious significance may indicate serious cardiovascular changes occurring in a person of fifty-nine. The important question therefore is: Can we detect in our examination any sign of arteriosclerosis or of increased vascular tension such as results from shrunken

kidneys? This patient's dyspnoea may well be an effect of her obesity. In a younger person such dyspnoea is often a feature of pure psychoneurosis but, as above hinted, there are more serious possibilities. On examining this patient I found to my chagrin that the fat layer was so thick as absolutely to prevent any estimation of the cardiac boundaries. The heart sounds were not remarkable and the arteries showed no sign of sclerosis.

What further tests remain? Fortunately we have one test of the cardiovascular apparatus which is not obscured either by the thickness of the fat layer or by the inaccessibility of the internal arteries which may be sclerotic even when those at the periphery are normal. I refer to the measurement of blood pressure. When we find, as I did in this patient, that the systolic pressure is constantly above 180 mm. Hg, we may dismiss from consideration the idea that the patient's symptoms are due to a pure neurosis or to a simple obesity. In the present case the examination of the urine revealed a nocturnal excess, a low specific gravity, and an increased amount. Albumin and casts were absent. My diagnosis was: Contracted kidneys; hypertrophy and dilatation of the heart, due to vascular hypertension; secondary disturbances of the circulation and of cerebral function.

Prognosis: This case is typical of innumerable others which have come more prominently to our notice of recent years owing to the use of instruments for measuring blood pressure. The obesity and the absence of albuminuria often throw us off the track of the cardiac and renal disease, but from a considerable experience in the post-mortem examination of cases presenting a similar picture, I feel that we can rely upon the measurements of blood pressure to guide us aright when the symptoms are similar to those above delineated. The duration of life in cases of this kind depends upon the patient's ability and willingness to curtail his expenditure of vital energy, reduce the pace of living, and take things easy for the rest of his life. If all mental and physical strain can be avoided and yet boredom and ennui escaped, such patients may live out their lives in very tolerable comfort. On the other hand, those who are subject to unavoid-

able financial or domestic worries and those who have to earn their living by muscular work usually succumb within a year or two from the time when they first consult the physician.

Treatment: The essentials have been mentioned in the previous paragraph. Those who can move to a warm climate in which the skin is kept active can probably prolong their lives thereby. I have not found that the use of nitroglycerin and potassic iodid is of any special benefit, though it is customary to give these drugs. Moderate, regular outdoor exercise is of the greatest importance, but should never be pushed to the point of getting the patient out of breath. Golf, automobiling, fishing, yachting, and rich men's amusements generally are of undoubted benefit.

Case 72. A middle-aged man was seen writhing in intense pain referred to the epigastrium. Vomiting of greenish fluid took place; there were loose discharges from the bowels, small in amount. This state of things lasted, with only short remissions, for two days, until a small dose of morphia (which, for special reasons, had been hitherto withheld, though asked for) was administered, after which there was complete relief for many days. The pupils were dilated, the pulse regular and of normal character. Nothing special had been eaten or drunk to cause irritation of the stomach. The abdominal walls were neither distended nor retracted, no intra-abdominal tumor was detected, nor was there excessive tenderness on pressure. It was afterwards learned that he had had several such attacks, that for many months or years his legs had been weak, that he had had neuralgia and numbness in them.

1. What further examinations should be made? Pupillary reactions, knee-jerks, temperature, heart, lungs, blood, and urine are the most important.
2. If you had seen such a case for the first time, what treatment of the acute symptoms should you advise? Morphia subcutaneously.
3. Significance of the vomiting of greenish fluid? Violent or prolonged vomiting from any cause, e.g., from seasickness, squeezes bile into the duodenum whence it regurgitates into the stomach and is vomited.

Diagnosis: The epigastric pain is probably *not inflammatory* in origin (peritonitis), since there is no excessive tenderness or rigidity, and a small dose of morphia gives relief for many days. *Lead colic* is not often associated with diarrhoea, while the pulse usually shows increased tension. Evidences of plumbism and the possible sources of lead should be searched for. *Biliary colic* cannot be excluded without further evidence. A history of jaundice and of radiation of pain to right scapular region should be sought for.

The weakness, pain, and numbness of the legs suggest either neuritis (perhaps due to lead) or tabes. Examination of the pupils showed no reaction to light, although the reaction to distance was normal. The knee-jerks were absent and Romberg's symptom present. The acute epigastric pain was ex-

plicable as a gastric crisis in *tabes dorsalis*. Morphia had been withheld because the patient had in previous years narrowly escaped the habit. No evidence of lead or of gallstones could be obtained. Other causes of epigastric pain of less severity than that here described are *gastric ulcer* and *hyperchlorhydria* (in which the pain has more obvious relation to food than in this case), *malaria* (periodic pain with fever), gastro-enteritis, in which the shifting of the pain and its relation to food and to bowel movements are usually obvious.

Prognosis: We can truthfully say to the patient with *tabes* that the chances are that he will never be paralyzed, for statistics show that in the majority of cases death occurs from some intercurrent disease before the spinal lesion has reached the point of absolute paralysis. This is a crumb of encouragement for which patients are usually grateful.

We may further assure the patient that at any time his disease may come to a standstill and advance no more. He is not bound to contemplate a future of steadily aggravated suffering.

There is a certain amount of evidence to show that benefits may accrue from the use of antisyphilitic treatment whenever the spinal fluid shows signs of a low-grade inflammation (lymphocytosis) and the Wassermann reaction is present. It is certainly justifiable to give such medication a trial.

The symptoms which most need treatment are the ataxia, the lightning pains, and the gastric crises. For the ataxia much can be done in intelligent and persevering patients, by the use of Fraenkel's reëducation exercises, the details of which may be found in treatises on Neurology. Really brilliant results may be obtained now and then in this way.

For the lightning pains complete rest in bed with massage and appropriate medication sometimes gives relief, though it is often impotent. The best remedies at our command are aspirin, 5 to 10 grains every four hours, and pyramidon, the average dose of which is 6 grains. It is above all important to prevent, by every means in our power, the acquisition of that morphia habit to which so many patients are driven.

For the gastric crises rest in bed with starvation is all that we can do, unless the symptoms are so severe as to call for the operation of cutting the posterior spinal nerve roots in the segment corresponding to the stomach and upper intestines.

Case 73. A manufacturer, of fifty-four, of good inheritance and habits, is seen in October, 1898. In childhood he was laid up for a time with what he thinks was rheumatism, and he has since had pains now and then, not laying him up, attributed by him to rheumatism. He has been a very active man and has ridden a wheel. Ten years ago he fell on the ice while skating, striking the back of his head. He was unconscious for a week, and in bed eleven weeks, but full recovery followed. For the past year he has been less well and strong. Last winter he went to Bermuda, gaining in every way and thirteen pounds in weight. Five weeks ago he drove a pair of pulling horses over forty miles. The next day he had severe pain in his arms, and this has since been his main complaint. The pain extends from the shoulders to the wrists, is worse at night, and often requires morphia to secure sleep. Pain and a burning sensation in the fingers come on suddenly at times, wax and wane. He has kept the bed for about four weeks, sending for his doctor first three weeks ago. He has lost some flesh. The bowels are constipated. Of late there has been some general abdominal colicky pain not attributable to laxatives. Fever has been absent. There is no cough or precordial pain; he lies indifferently on either side, with the head low. He is rather pale, with slight icteric hue of the conjunctivæ. The pulse is and has been regular, of fair strength, and rather low tension, 96. The tongue is clear and moist, the gums and teeth in good condition.

Tactile sensibility is perfect. There is weakness in the arms and hands, especially in the extensor muscles. This weakness has increased notably in the past week. He can button his undershirt and pick up a pin from a smooth surface, though with difficulty. There is no distortion of the finger joints.

The cardiac impulse is in the fifth space one inch to the left of the mammary line. Percussion corresponds with palpation and shows slight extension of dulness on the right of the sternum. In both the mitral and aortic areas soft systolic murmurs are to be heard, one transmitted into the axilla, the other into the neck. The second sounds are clear, the pulmonic sound slightly accentuated. Visceral examination is

otherwise negative. Œdema is absent. The knee-jerks are obtained, though with difficulty. The urine, 44 ounces in twenty-four hours, contains neither sugar nor albumin. The blood is normal.

1. What diseases are most often diagnosed as "rheumatism"? Osteomyelitis, neuritis, arthritis deformans, tabes, gall-stones, trichiniasis, tuberculous or syphilitic osteitis, aortic aneurism.
2. What connection can be traced between the fall and coma of ten years ago and the present symptoms? In all probability there is no connection at all.
3. (a) Common causes of muscular weakness? (b) of muscular paralysis? (a) Malnutrition (due to poverty, stomach or bowel trouble), diabetes, nephritis, anæmia, fevers, or cancer; psychic disturbances (muscular collapse from fright or sorrow; neurasthenia, hysteria). The beginning of the lesions mentioned next. (b) Neuritis (traumatic, toxic, infectious), apoplexy (usually producing hemiplegia), anterior poliomyelitis, birth palsies, dementia paralytica, myelitis (from pressure or unknown cause), hysteria.
4. (a) What information might be obtained by testing the power of the supinator longus here? (b) Describe the test. (a) Lead neuritis spares the supinator longus, while in traumatic neuritis of the arm the supinator is usually paralyzed. (b) Stand before the patient, who bends his arm at the elbow to a right angle. Grasp his hand and resist while he tries to draw his hand towards his shoulder. If the supinator is sound it will stand out obviously on the thumb-side of the arm.
5. What relations are there between joint troubles and diseases or anomalies of the nervous system? In tabes and syringomyelia painless but very destructive joint troubles may occur ("Charcot's Joint"). In many chronic joint troubles muscular atrophy is exceedingly rapid and the reflexes are increased.
6. What connection might exist between the cardiac and the peripheral symptoms? Local anæmia or toxæmia might be the cause of both.

Diagnosis: Pain, muscular weakness (extensors), diminished knee-jerks, and colic with no anæsthesia or paræsthesia suggest neuritis — especially that due to lead. There are no signs suggesting involvement of the brain, cord, or muscles

(myositis). The cardiac signs are those of a dilated heart, probably due to weakness of its muscle. An examination of the urine showed a large amount of lead, apparently derived from drinking water. The blood showed moderate secondary anæmia with an unusually large number of normoblasts and marked stippling.

Prognosis: In these days, when the diagnosis is usually made early in the course of the disease, the saturnine encephalopathy, which is sometimes fatal, is very rarely met with and the more extensive and incapacitating forms of paralysis are much less frequent. To a patient with extensive paralysis one may say truthfully that he will probably regain the most part if not the whole of his power. Permanent residual paralyses, however, affecting certain groups of muscles, result in the severest cases. If a definite nephritis has been produced by the lead, it is in all probability incurable, and the same is obviously true of the arteriosclerosis in the production of which lead may be a factor.

The colics, gum deposits, and blood changes which characterize the milder types of plumbism ought wholly to disappear under proper treatment.

Treatment: To find and remove the source of the toxic lead is often easier said than done. The habits of many painters are fixed beyond reformation. If the lead is taken in through the alimentary tract in drinking water or beer it should be comparatively easy to exclude it.

As soon as the source of lead is excluded, most patients begin to improve rapidly. Probably this improvement may be accelerated by giving half an ounce of magnesium sulphate every morning and also, as I believe, by small doses of iodid of potash. How this drug acts is not at all clear, but I am not yet convinced that it is useless in lead poisoning.

For the paralysis our chief resource is to urge and encourage the patient to use all the power that he has. Electricity and massage sometimes help towards this end.

Case 74. A mechanic forty-two years old is seen June 15. His family history is unimportant. He had pneumonia in boyhood and grip six years ago. He has had repeated attacks of gonorrhœa but denies syphilis. Four years ago he had sharp neuralgic pains in the calves of his legs which lasted a month, but his general health was good up to June, two years ago, when he had an attack of severe epigastric pain with vomiting after a supper of corned shoulder. These attacks have been frequently repeated and the intervals, which were at first two weeks or more, have been shortened until during the past month his physician has been summoned thirteen times. One-half to one-third of a grain of morphia subcutaneously is required to subdue the pain. Food has no apparent influence. The attacks usually come on before breakfast and consist of severe epigastric pain, nausea, and vomiting. There is never any food in the vomitus of the morning attack, and between attacks there are no digestive symptoms except constipation. His weight has fallen from 180 to 165 pounds.

Physical examination shows a rather pale man looking older than his years. The temporal arteries are tortuous and the radials are somewhat thickened. The pupils are unequal, the left being the larger. Sensation is everywhere normal. Knee-jerks are absent. The lower limit of the stomach, when gently inflated, extends to the umbilicus. Its upper limit is normally situated. No tumor is felt after or before inflation. The examination of the stomach contents made between the attacks and after the usual test meal of bread and water show free HCl present .05%, total acidity .22%. No mucus. Capacity 50 ounces. Urine 1020, acid, normal color, no sugar, no albumin. Temperature, pulse, and respiration normal. Careful physical examination shows no other signs of importance.

Diagnosis: So-called neuralgic pains in the legs, attacks of epigastric pain, uninfluenced by food and requiring morphia for their relief, are very significant symptoms when taken in connection with the absence of knee-jerks and the negative results of gastric examination. *Tabes dorsalis* with pains and gastric crises is at once suggested. It will be noted that

the record shows nothing about the reaction of the pupils. As a matter of fact they did not respond to light but reacted normally to distance, thus confirming the diagnosis. A great many cases of this type are mistaken for gastric or intestinal disease. I have made this mistake twice myself, yet such mistakes would almost always be avoided if we were invariably conscientious in our examinations of pupils, knee-jerks, and ankle-jerks. Within a year I have known patients operated upon for appendicitis, for pancreatitis, and for cancer of the intestine, when the diagnosis proved to be tabes.

Prognosis: We can truthfully assure the patient that the great majority of cases of tabes never become paralyzed. This is important, because one of the patient's chief fears is certain to lead in this direction. The majority of cases becomes arrested or dies of some other affection before the stage of paralysis is reached. Gastric crises are very intractable. Indeed I have never seen any treatment that seemed to me to have any marked influence upon them, but in a good many cases they spontaneously cease, or become so much milder that the patient is able to tolerate them with equanimity. The same may be said of the pains which bothered him very much four years ago but are now not troublesome.

Treatment: It is rational to give antisyphilitic treatment in all cases of tabes, provided the Wassermann reaction is positive, or whenever there is evidence in the fluid obtained by spinal puncture that a low-grade inflammatory process is still going on. Aside from the administration of mercury and potassium iodid, our treatment should be hygienic. Otherwise there is nothing to be done unless ataxia manifests itself. In that case much can be accomplished for the relief of this symptom through the reëducation exercises generally associated with the name of Fraenkel.

Case 75. The patient is a contractor of fifty. He is of heavy build, stout and red in the face. For several years he has had violent cough in the winter, accompanied by vomiting. A daughter of sixteen some years ago ran off with a man and got married. He took to his bed, cursed, cried, called for his pistols, and was going to kill the husband, but calmed down soon and the young people were sent for. His physician thinks he does not use alcohol in notable excess. Two weeks ago he began to complain of tearing and cutting pains in his legs, accompanied by slight œdema, and for several days now he has been in his bed. Fever has been absent. There has been some vomiting, not specially characteristic in any way. He has been much excited and has threatened to kill all Democrats. Sleep has been poor. The pains in the legs have continued, but less severely since he took to bed.

The pulse is 80, regular, the tongue heavily coated, thorax negative. The edge of the liver can be felt two inches below the costal border, apparently smooth of surface. Motion and tactile sensibility in the legs seem normal, but the leg muscles are tender and the knee-jerks are very slight, even on reënforcement. The urine report is negative.

1. What important facts about his early history do we need to know? Has he had syphilis? How much alcohol has he taken?
2. Why is his sleep poor? Poor sleep in an active man should always suggest alcoholism, though there are of course many other causes.
3. Why is the liver smooth? All types of enlarged liver (except those due to cancer and syphilis) are usually smooth as felt through the belly wall. The "hobnails" of cirrhosis can rarely be felt, so that smoothness does not exclude cirrhosis. Fatty infiltration seems, however, more probable.
4. What is meant by reënforcement of knee-jerks? We distract the patient's attention and concentrate brain control on the muscles of his hands by making him lock his hands together and then break them apart just when we tap on the patella tendon. This tends to "bring out" knee-jerks.
5. How is the œdema of the legs to be accounted for? (See diagnosis.)

Diagnosis: The pains and tenderness in the legs, with diminished knee-jerks and œdema, strongly suggest neuritis. The pupils must be tested. If they are normal, tabes is unlikely, especially as the pains here present are not at all characteristic of tabes. It should be pointed out that œdema is not uncommon in neuritis, not only in the epidemic form ("wet" beriberi) but in ordinary alcoholic cases. Other causes of œdema (cardiac, renal, hemic, local — e.g., varicose veins) must be excluded.

The cause of the neuritis is probably alcoholism, despite his physician's statement. This would also explain mental symptoms, vomiting, and enlarged liver. Dementia paralytica is possible but not probable in view of the local signs in the legs and liver.

Prognosis: The outlook depends upon:

- (1) The type of the disease.
- (2) Its duration.
- (3) The inheritance and character of the patient.
- (4) The spiritual and physical environment.
- (5) The presence or absence of complicating diseases.

True dipsomania, in which a paroxysm of drinking occurs from time to time, as it were out of a clear sky, without any previous desire or craving on the patient's part, is almost if not quite incurable. Some observers believe it to be a physical equivalent of epilepsy.

Excluding true dipsomania we have left the acute and the chronic types of ordinary alcoholism. That the latter is proportionately more difficult to check is obvious enough. Other things being equal, the younger the patient the better the outlook.

When the patient is a degenerate or when his family history is deeply marked with epilepsy, tuberculosis, insanity, or criminality the prognosis is much worse than in the ordinary types of alcoholism without any special hereditary taint. Besides the type of person just alluded to one sees many cases of alcoholism which are practically hopeless because the patient has no genuine desire to get well.

Excluding now the dipsomaniacs, the degenerates, and the well-satisfied drinkers we still have left a great majority of

all cases which are curable if sufficient time, energy, and money are devoted to them. It is essentially a moral and educational problem involving friendly supervision over a long period of years. Drugs have little to do with it except in the acute stages. Our task is substantially that of making the patient believe that recovery is possible, and of helping him to develop a motive and interest, personal or impersonal, which is strong enough to abolish the tendency to drink. There must be someone to whom the patient is both able and willing to come at any time of the day or night when he feels the craving for drink. The company and influence of a friend may be sufficient to enable him to tide over the hours until the craving passes by. It is also important to warn the patient against the dangers of fatigue which is very prone to transform itself into depression and a desire for the oblivion given by drink.

When attempting to break a patient of a firmly established habit, it is often well to begin with a couple of weeks in some sanatorium where the Towns-Lambert plan of treatment or some equivalent may be carried out.

The complications of alcoholism, such as the neuritis present in the case now under discussion, usually need no treatment. They get well when the alcoholism is overcome.

Case 76. A shoemaker of twenty-four, who has previously been well, has noted for six months a gradually increasing weakness of the legs. He dates the trouble from a fall from a horse car six months before, when he struck violently upon his knees and fell several times more on his way home. He kept at work till three months ago, when he took a three weeks' vacation and improved considerably, but, on returning, found himself unable to work more than half a day.

Two months ago the hands and arms began to get weak and numb, and now he can't button his collar. The hands feel rather better when he stirs about and uses them. For the past week he has felt as if something was tied tightly about his waist. In other respects he feels perfectly well. He has never used alcohol and denies venereal disease.

Examination: Pupils equal and react normally. Soft systolic murmur at the apex, transmitted two inches to the left. Pulmonic second decidedly louder than aortic. No evidences of cardiac enlargement. Chest and belly otherwise negative. Deep tenderness over calves, thighs, and buttocks. Knee-jerks absent, muscular power feeble, sensation perfect, moderate general atrophy. Faradic irritability of the muscles impaired in both arms and legs. Galvanic irritability normal. At times the tips of the fingers sweat profusely.

When seen his temperature was 99.8°, pulse 120, respiration 24.

1. What can be inferred from the mode of onset here? The fall was not the cause but only the first manifestation of his trouble.
2. What can be inferred from the atrophy? It indicates neuritis, not tabes.
3. Causes and types of atrophy? Disuse, neuritis, progressive muscular atrophy, chronic joint disease, poliomyelitis anterior, amyotrophic lateral sclerosis.
4. Causes of muscular tenderness? Neuritis, myositis (e.g., trichiniasis), œdema or inflammation of neighboring tissues.
5. What other types of tenderness are there? Cutaneous hyperæsthesia, serous membrane hyperæsthesia (as in appendicitis and other abdominal lesions), bone tenderness, as in periostitis, nerve tenderness, as in neuritis.
6. What do (a) the electrical reactions in this case teach? (b) the sweating fingers? (a) Typical reaction of degeneration is absent. (b) Vasomotor changes.

Diagnosis: Muscular weakness and tenderness with absent knee-jerks, atrophy, and partial reaction of degeneration all suggest neuritis. In tabes, there is no tenderness and muscular power is good. In progressive muscular atrophy the knee-jerk is not lost so early and sensory symptoms are usually absent. The slight fever points towards neuritis, likewise the vasomotor symptoms. The cause of the neuritis cannot be guessed from the data before us.

Prognosis: Cases of multiple neuritis, such as that here described, without any known cause, almost always get well after a tedious convalescence which is apt to last months. Relapses are rare. Presumably they are due to some infectious disease which does not recur.

Treatment: The relief of pain is our first and most difficult task. The effects of heat and cold must first be tried. Some patients can be kept comfortable by the constant application of ice-bags or of menthol. More frequently relief is obtained by poulticing or by the application of an electric pad which keeps its heat better than any poultice. I have never seen any considerable benefit from blisters or mustard.

If these measures are useless, or need to be supplemented, the application of high frequency electricity may give relief. Massage is rarely of value in the earliest and most painful stages of the disease. Sometimes it is necessary to resort to the use of morphia, but this should never be tried unless we believe that the patient is wearing out his strength as a result of unrelieved suffering and that the harm done by the morphia will be the less of two evils. Before using morphia we should always avail ourselves to the fullest extent not merely of counterirritation and electricity but of the other drugs which dull pain. Aspirin may first be tried in doses of 5 to 10 grains, every four hours. Phenacetin 10 grains, pyramidon 6 grains, or acetanilid, 2 to 5 grains, should next be tried. I have never seen any relief from cannabis indica or gelsemium.

After the pain has passed there is generally a long period when our chief task is to restore tone and power to the atrophic muscles. Massage, passive motion, and, above all, the individual's own effort, generally bring about full recovery in the long run.

Case 77. A young married woman of twenty-one had an abortion done at the third month. Immediately following this she began to vomit occasionally, and after two days could retain nothing. The lochia were sweet, temperature normal, and there was no tenderness in the pelvis. Rectal alimentation was tried for three days and the vomiting ceased, but recommenced as soon as liquids were given by mouth. Again rectal feeding was tried, but this time the vomiting did not cease. The nutrient enemata are fairly well borne, the nurse says, but the patient is very sleepless and thirsty and has four or five severe retching spells in every twenty-four hours. She is seen in consultation on the sixth day of rectal feeding.

The temperature and pulse are normal as they have been throughout; the voice clear and the patient moves strongly in bed. Examination of the chest, belly, and pelvis is entirely negative.

1. How can we determine during rectal feeding whether the enemata are being well borne and absorbed? In ideal cases, there is no thirst or insomnia, hunger is appeased by the enema, nothing comes away except with the daily cleansing enema, and little weight is lost.
2. What means should be used to control the retching in this case? (See below — Treatment.)
3. What important parts of physical examination have been omitted? Urinalysis and blood examination.
4. Significance of the normal pulse and temperature here? Prostration is not great; infection probably absent.

Diagnosis: Pelvic sepsis is excluded by the normal lochia, the absence of fever, pain, and pelvic tenderness. Retroversion of the uterus is said to produce vomiting in some cases of this type, but the pelvic examination excludes this. Can the vomiting be uræmic? To determine this, we examined the urine and found it normal. (The blood was also normal.) The rectal feeding was evidently a failure despite the nurse's assurance, and the patient's nervous system was kept irritable by semistarvation. Could this account for the vomiting? In view of the negative results of physical examination it seems the most probable diagnosis. Had the enemata been

well absorbed the nervous system would probably have been sufficiently nourished to control the vomiting center. As it is, she is getting no food and losing much sleep. Naturally the vomiting continues.

Prognosis: I shall consider here not the prognosis of the ordinary toxæmic vomiting of pregnancy, but of the neurotic type such as was exemplified in this case. Recovery depends upon our power to win the patient's nearly exhausted confidence and to switch off both her mind and her stomach onto a new track. The advent of a new personality and a new method of treatment is helpful chiefly by the novelty and only to a minor extent by actual merit.

Treatment: Since the patient vomits despite all that can be done and despite the entire absence of food in the stomach, she may as well be given a chance to vomit in a better cause — i.e., she may as well be fed. Probably not all that is given will be expelled and the little that is retained will serve to nourish her and so to check the vicious activity of the vomiting center. When we arrive at this conclusion and are prepared to resume feeding, it is very important to secure if we can, as an entering wedge, some food (no matter how outlandish or indigestible) for which the patient has a positive desire. Such a food is far more likely to be retained and so to break up the vicious circle by which the vomiting has led to malnutrition and malnutrition to vomiting. I have seen the spell broken by gratifying the patient's desire for celery, for cold sausage, for corn-meal mush, and for brandy with shaved ice. Each of these foods has been, in an individual case, the entering wedge or starting point for successful resumption of stomach feeding. It is far more important to get something that the patient really relishes than to administer a bland and chemically innocuous substance such as milk or gruel. Many a patient has begun to improve as soon as she has been taken off a diet of "slops" and given solid food with a strong taste to it.

Curiously enough, it is a fact that some people can be made to stop vomiting by being scolded or otherwise abused. A physician of my acquaintance administers in such cases a subpectoral infusion of saline solution and tells the patient

that unless she stops vomiting this painful process will have to be repeated every day. Strange though it appears this treatment works well in properly selected cases and, like other forms of corporal punishment, is doubtless justifiable.

Case 78. A contractor of fifty-three consulted me June 27, 1910, complaining of a gradual loss of weight (24 pounds in fifteen years), with a distressing palpitation at the epigastrium accompanied by a sense of weakness there, especially if he takes any stimulant.

He is also troubled by a varicocele — the result, he says, of dissipation in his youth which involved an infection with gonorrhœa, but no syphilis.

For five years he has been very sensitive to cold and has therefore felt much better in summer, but this summer people tell him that he looks sick and his head is often tired. His sleep is restless during the past six months, and he is often drowsy in the daytime. His hand is often unsteady, especially in the mornings, and he has three times dropped a glass.

His use of alcohol is very moderate, as he has noticed that it increases the abdominal pulsation above mentioned. Within the last two months his appetite has been poor, perhaps because he has had all his teeth removed and is not yet used to his plates.

He has had much treatment addressed to the stomach and bowels (which are always costive), but has seen no improvement.

1. Relation of varicocele to sexual excesses? There is none, though quacks endeavor to persuade their dupes that masturbation or venereal disease is the cause. Varicocele is rarely if ever a disease. It is a common idiosyncrasy — occasionally needing support by a suspensory, very rarely requiring excision.
2. Causes of epigastric pulsation? Negative pressure owing to the contraction of a low-placed heart, cardiac or aortic pulsation transmitted through the liver, or in rare cases through an epigastric tumor, dynamic aorta, aneurism of the abdominal aorta, local dilatation of the right ventricle in mitral stenosis.

Diagnosis: Physical examination revealed nothing wrong in the chest, urine, or blood. In the epigastrium there was a very marked and lively pulsation but no tumor.

A cylindrical mass about the size of the aorta was felt immediately beneath the abdominal wall. A thrill and sys-

toxic murmur were elicited by pressure over it. Its pulsation was distinctly expansile, i.e., lateral as well as vertical.

The patient was rather thin (weight 136) but showed no other lesions. Blood pressure 110.

Aneurism or dynamic (i.e., lively) aorta are the only probable diagnoses. Aneurism is excluded by the absence of dorsal and sciatic pain, the absence of definite, usually unsymmetrical, tumor and the duration of the symptoms.

Prognosis: Since the dynamic aorta is in itself no harm to the patient, our prognosis is wholly that of the underlying neurosis. If the patient is sensible and intelligent, a careful explanation of his symptoms and their cause often produces a rapid cure in localized neuroses of the type here described. We have reason to hope also that when this patient gets used to his false teeth and is able to eat with more comfort, the improved nutrition thereby resulting will help his nervous condition.

Treatment: (see below, Cases 79 and 82).

Case 79. A fireman of twenty-six was exercising engine horses, riding one and leading another. The led horse fell and, as he struggled to rise, wrenched severely the arm of the fireman, who had not let go the halter. He thought nothing of it at the time, but twenty-four hours later began to be distressed by a sense of weight and pressure beneath the sternum, near the attachment of the wrenched pectoral. Under medical advice he was laid off duty and treated with liniments and counterirritation, but without relief. Three weeks' vacation in the country benefited him, but on his return to work he was unable to drive or even to put on the foot brake without great exhaustion. Now he cannot walk a block fast without feeling tired out and experiencing a sense of pressure under the sternum. His wife tells him that he moans and grinds his teeth in his sleep. He has lost flesh, strength, and color.

The heart's apex is in the fifth interspace and mammary line. There is reduplication of the apex second sound, and at the fifth left costal cartilage a systolic murmur, louder in the recumbent position. The pulmonic second sound is slightly louder than the aortic.

Interrupted inspiration is detected in both fronts and both interscapular regions, also transient râles in the sixth intercostal space in the left axilla. Abdomen negative. The blood and urine are normal.

1. What is the usual significance of moaning and teeth grinding during sleep? Functional cerebral irritation; no organic disease. Common in rickets and in neurotic children. Popular fallacy that "worms" are the cause.
2. How is the loss of flesh, strength, and color to be explained? (See below under diagnosis.)
3. How are cardiac murmurs affected by change of position? All systolic murmurs are louder in the recumbent position. Presystolic murmurs are louder in the erect position, while diastolic murmurs are unaffected.

The **Diagnosis** is traumatic neurosis. Aneurism is excluded by the age, the acute onset, and the lack of evidence of mediastinal pressure. Local trauma is not important, for after the vacation the symptoms were general, not local.

Chronic latent diseases "lighted up" by the accident (phthisis, anæmia, nephritis) are excluded by the negative physical examination. Traumatic neurosis is further suggested by the interval between the accident and the onset of symptoms. (Cerebral hæmorrhage may come on many hours after a blow, but always produces physical signs of brain injury, such as coma, convulsion, paralysis or aphasia.)

Prognosis: In cases of this type the prognosis depends very much upon the treatment. If the patient is given reason to believe, as in the present case, that some important local mischief has been done, if he talks over his troubles at great length with his friends and family, and especially if the uncertainties connected with possible legal proceedings and damages weigh upon his mind, the symptoms may be prolonged and the damage very considerable. An unwise or unscrupulous physician can do an unlimited amount of injury in such a case by failing to make light of the affair, either because he does not recognize its trivial nature or because he does not wish to do so.

If, on the other hand, the patient is reassured from the start, his mind diverted by keeping him at work, and avoiding local treatment, and especially if there is no question of pecuniary damages, the symptoms may very swiftly pass off.

It is not the amount of actual injury suffered at the beginning, but largely the psychical elements introduced later by the treatment, by talks with friends, and by the expectation of damages, that produce the severest symptoms in these cases. If the physician first sees the case after mistakes have been made, such as were exemplified in the treatment of this case, the degree of his success in treating it will depend in part upon the length of time since the accident, and the fixity of the habits of invalidism which may have been acquired, in part also upon the physician's ability to win the patient's confidence in himself and in the different point of view which must be adopted if recovery is to follow.

Treatment: I have indicated in the foregoing paragraphs what seem to me the most important elements of treatment. The patient should be kept busy, if not with his original work, then with some other. He must be frequently and

effectively reassured, and urged to use the injured part despite pain. (It goes without saying that such treatment will do harm if the diagnosis is not correct.)

Drugs, such as sodium bromid, 10 grains t.i.d., or trional 10 grains at bedtime in hot water, may be needed to secure sleep. A bitter tonic, such as the tincture of gentian or nuxvomica, may be useful in starting appetite, but outdoor life and a regular routine, in which something is done at the same time each day, are more important both for sleep and for appetite than medication. I think it is well to explain to the patient the principles of your treatment and the nature of his trouble. Otherwise he will wonder why more is not done in the way of local treatment.

Case 80. A business man, single, thirty-seven, six feet two inches tall, weighing 246 pounds, states that several members of his family have had heart disease, one dying suddenly. He is seen March 3, 1903. He denies lues, but has had five or six attacks of clap, the last three months ago. Coitus is not very frequent. He drank freely until three years ago when he had phlebitis in the left leg. At this time he weighed 200, was treated at Aix-les-Bains, lost 30 pounds, and felt better for it. Since then he has taken three or four whiskeys a day. A year ago he was under medical care for a short time with indefinite symptoms, the pulse never rising above 100. Last summer he played 27 holes at golf without inconvenience. In October, 1902, he had business worries which kept him awake more or less for several weeks, and during this time he drank more freely again. He takes no regular exercise; is fat, flabby, and colorless.

Four days ago he called in his physician for vague discomfort in the upper abdomen and irregular bowels. The heart's action was then regular in force and rhythm, varying in rate from 160-180, only countable with the stethoscope over the apex. He sleeps with only one pillow, on either side, and has not been directly conscious of his heart, even on such exertion as is incidental to his life. In spite of absolute rest for four days, the heart continues rapid. Temperature normal; urine negative. He wishes to get up and attend to business. He does not seem, and says he does not feel, nervous. The appetite and digestion are good enough; the tongue clean, the gums healthy. The heartbeats are quite regular; 160 per minute, counted with the stethoscope, and the rate does not vary whether he sits, stands, or lies down. The cardiac impulse is visible and palpable only when he lies on his left side; it can then be localized about an inch to the left of the nipple, in the fifth space. Percussion yields somewhat unsatisfactory results on account of the thickness of the chest wall, but dulness seems to extend slightly beyond the nipple as he lies on his back. The sounds are clear, save in the left lateral decubitus; in that position, a slight systolic murmur is audible at the apex. The lungs and abdomen are negative. The superficial reflexes are absent; the knee-jerks slight.

There is no tremor. There is slight œdema of the legs and a corded vein (?) can be felt in the left calf. He wears Boston garters.

1. What form of alcoholic drink has most often a demonstrable and permanent effect upon the heart? Beer. A hypertrophy and subsequent dilatation often occur. Whiskey usually produces only temporary weakness.
2. What inference is suggested by the absence of arrhythmia in this case? Myocardial degeneration usually produces arrhythmia. Any disturbance of cardiac function *with* arrhythmia is more serious than a similar disturbance *without* it.
3. Among the methods of examination not yet employed in this case, which are likely and which unlikely to yield valuable information? We should ascertain whether the eyes are prominent or the thyroid enlarged. These data will help to decide for or against one cause of tachycardia — namely, Graves' disease. The urine should be examined. If it showed the evidences of chronic nephritis the heart symptoms might be thus explainable. It would be valuable to know how his heart reacts to exertion. Organic heart weakness is usually increased by slight exertion, while "functional" weakness is often lessened. If the "clap" is healed, involvement of the heart in this infection becomes unlikely. Blood-pressure measurements, if normal, would be reassuring. If he uses tobacco to excess the symptoms may be due to this cause. Blood examination would probably yield no important information.
4. Has the venereal history any relation to the present symptoms? Probably not. Gonorrhœal endocarditis or myocarditis produces fever and usually more definite evidences of valvular deformity; further, his gonorrhœa is apparently healed.
5. Causes and types of tachycardia? Any physical or emotional activity, many infectious diseases, neurotic and toxic states, cardiac weakness and dilatation from any cause, Graves' disease, "paroxysmal tachycardia."

Diagnosis: There was no exophthalmos or goiter; the urine was normal; tobacco was used to excess; the gonorrhœa was healed; blood pressure was normal and was increased (not decreased) by exertion. It should be noted that the position of the palpable apex beat was normal *for the position in which the patient lay*. The attack is rather too long to be classed as

"paroxysmal" tachycardia of the ordinary type, yet I can make no better diagnosis than "atypical paroxysmal tachycardia." There is no evidence of infection or of cardiac dilatation. A subjective "sense of well being," such as is here present, is not often seen in organic heart lesions with tachycardia.

There is no evidence of passive congestion anywhere, for in a fat man slight œdema of the legs is physiological, especially with varicose veins such as appear to be here present. Hence we have no considerable heart weakness. A combination of toxic and neurotic factors, due to the effect of an excess of tobacco (and perhaps alcohol) on an otherwise healthy but neurotic individual, seems the probable cause of the paroxysm in this case.

Prognosis: Death almost never occurs in the paroxysm. It is important that the patient should know this. The majority of people who have had one such attack will have others in the course of their lives, though this is by no means invariable. As a rule the attacks last a few hours and then cease as suddenly as they began. Occasionally they may be prolonged over several days. Beyond this the prognosis depends upon the underlying lesion, if any such lesion is present. In the cases complicating a functional neurosis, the prognosis is that of the neurosis. I have known such an attack to come on in a dentist's chair in a woman nervously unstrung by the presence of the menstrual period. Here the attack was wholly and instantaneously removed by the onset of nausea and vomiting. In another case initiated by alcoholism and domestic recriminations therefrom resulting, the attack ceased suddenly soon after the nerves of the patient and her family had been soothed. Cases which complicate organic disease of the heart are of course much more serious, and it is doubtful whether they should be classified under the heading of paroxysmal tachycardia. The case here exemplified is decidedly atypical, yet probably belongs under the general heading of paroxysmal tachycardia unusually prolonged.

Treatment: One of the most successful methods, which in a number of cases has been repeatedly and promptly effectual,

is that of lowering the patient's head and elevating his body and legs until he is practically standing on his head. A physician who experienced the trouble in his own person recently reported that brisk walking would quickly abolish the trouble in his case. I have already mentioned that the occurrence of vomiting sometimes checks the paroxysms. Heart tonics and stimulants seem to be without avail, and in many cases one has to wait for the spontaneous termination of the paroxysm.

Case 81. A judge of seventy-five consulted his physician June 10, 1910, complaining that his appetite (always rather meager) had been gradually failing all winter, although he had felt perfectly well and done his work on the bench until April 1, when his appetite absolutely left him. A week's vacation on his farm was of no apparent benefit and he resumed work, subsisting wholly on milk, eggs, and oatmeal gruel which he still manages to force down. During the period since April 1 he lost his enjoyment of tobacco, but within the last few days this has returned and he now smokes with relish.

There is no indigestion, no pain, no disturbance of the bowels or of the power to sleep. Naturally enough he feels rather weak as he takes only from three to six eggs daily with less than a pint of milk daily, and a few teaspoonfuls of oatmeal gruel.

His usual weight is 170; his present weight 155. For a month he has had cough (an unusual thing for him) with sputa. There has been no sense of fever or chilliness.

Physical examination was wholly negative save for thickening and tortuosity of the radials and a few transient râles above and below the right clavicle in front. Temperature 99°. Sputa negative. Hæmoglobin 90%. Blood pressure 160. Urine negative.

Diagnosis: Among the diseases that may produce such an anorexia are gastric cancer, anæmia of any type, tuberculosis, nephritis, arteriosclerosis, and the unknown infections known as "common colds."

Anæmia, heart trouble, and nephritis are excluded by the results of the examination above recorded. Tuberculosis was seriously considered but repeated sputum examinations were negative, and after the first visit no abnormal signs could be detected in the chest.

Gastric cancer could not be excluded although there was no tumor, no evidence of stasis, no pain or vomiting.

The course of the case made it seem probable that the moderate arteriosclerosis from which he was suffering when I first saw him was responsible for most of his symptoms. Probably his "bad cold" accounted for the rest.

Prognosis: Gradual restoration of appetite and strength is to be expected but it is probable that the anorexia will return from time to time as it not infrequently does in elderly people with or without an obvious cause.

Treatment: Outdoor life without much exercise, a bitter, and an exhortation to patience are the essentials. The patient must force down all the food he can. The appetite may be tempted by delicacies of various kinds — fruits, jellies, shellfish; the details of cooking and serving are important. In this case there has been no return of appetite up to date (November 1, 1911). In June, 1911, there was a slight "shock" with right hemiparesis and aphasia, all of which disappeared in two weeks. The patient has been steadily at work and feels in most respects very well.

Case 82. A school teacher, single, twenty-four years old, seen April 9. Family history unimportant. Never strong. Scarlet fever and measles in childhood. Brain fever at nine, pneumonia at thirteen, nervous prostration at sixteen, "congestion of the brain and spinal cord" at nineteen, from overwork at college. One year ago was laid up for two months by a "general breakdown." Last summer broke down with, she says, "every symptom of pulmonary tuberculosis." Catamenia irregular, five weeks to three or four months; appeared last ten days ago. Has taught night school in addition to her regular work since October, and since December has had a series of colds with cough and some expectoration. Has complained of general lassitude until the afternoon, when she feels fairly well. Six weeks ago was called home to nurse her mother in her last illness, apoplexy. Returned ten days ago all used up. Two days later found that she was suddenly unable to distinguish letters in the book she was reading. She rose to call for help and fell. Was conscious when found, but unable to assist herself. Had a series of convulsions during the night and was kept under ether by her attending physician. Since then she has felt tired and weak with constant headache, but has not been confined strictly to bed. No appetite. Bowels constipated. Her eyesight has returned. About half an hour ago she was found in the following condition:

A thin, delicate, half-starved looking girl, apparently unconscious, lying flat on her back in bed, motionless, except for some tremor of the eyelids. She is so rigidly extended that with the hand beneath her neck she can be lifted like a log until she rests only on her heels. Her feet are extended to the utmost with the toes in plantar flexion. Her arms and hands are rigidly extended and held close to her sides, but can be bent by persistent pressure. When released they immediately resume their former position. The fingers are extended and abducted (the "accoucheur's hand"). The acetone odor of the breath can be detected several feet away. Loud calls, pinching, pricking with a pin produce no response except an occasional flickering of the eyelids. When the hand is placed closely over her nose and mouth she struggles

until freed. The condition of the pupils, which probably react to light, is made out with difficulty as the eyelids resist attempts to open them. The eyes are turned upward. Heart, lungs, and abdominal viscera seem normal. Temperature 99°. Pulse 110, soft, easily compressed. Respiration normal. Urine, 35 ounces, normal color, acid, specific gravity 1022. Albumin, very slight trace. Sugar absent. Ferric chlorid test positive. Sediment contains a rare hyalin and finely granular cast. Hg 90%. Whites 9000.

1. What guess can we make regarding the nature of her early illnesses? As a rule, a history of this kind turns out to mean neurasthenia.
2. What is the general significance of an *improvement* of all symptoms in the afternoon? If symptoms are regularly *worse* in the afternoon, what should be suspected? Anæmic patients and neurasthenics are apt to be better in the latter part of the day. Patients who are worse in the afternoon often have fever (tuberculosis, malaria, typhoid), but simple fatigue may be the cause.
3. Significance of tremor of the eyelids? Its distinction from habit chorea and other facial spasms? Usually hysterical or neurotic. The motions are finer and more continuous than any other spasm.
4. Under what conditions is the ferric chlorid test in the urine to be obtained? (a) Whenever carbohydrate food is not adequately utilized. This may be because it is *not ingested* or *not retained* (as in starvation, prolonged vomiting, or rectal alimentation), because it is *not absorbed* (diarrhœa, tuberculous peritonitis) or *not metabolized* (diabetes). In this case the semi-starvation readily explains the reaction. (b) In a few conditions the ferric chlorid test cannot be so explained — e.g., on a salt-free diet the reaction has been found to be strongly marked.

Diagnosis: With a negative physical examination (except for the urine which yields no information of diagnostic value) the diagnosis probably lies between the following alternatives: Epilepsy, hysteria, meningitis, autointoxication.

Epilepsy is suggested by the history of convulsions; against it are all the facts of the present condition and most of those in the past history which point strongly to *hysteria*. Hysteria often follows upon just such a history of neuroses in youth,

physical and psychical exhaustion, and mistaken treatment (etherization). The tendency to opisthotonos and tonic conditions of the extremities, the tremor of the lids and rolling up of eyeballs, the fact that she can be roused to purposeful action by appropriate stimuli (covering her mouth and nose) despite anæsthesia to a pin prick — all point strongly to hysteria.

Meningitis may exist without temperature or leucocytosis (though it usually produces both), but cannot be diagnosed unless headache, retraction of the neck, changes in the spinal fluid and eye symptoms (squint, ptosis, papillary or retinal changes) are present.

Autointoxication is very possibly present in all hysteria, and, in view of the starvation that is probably an element in this case, it is not unlikely that the system is in some way poisoning itself, but such theories are not at present capable of clinical verification.

Prognosis: The outlook in this case will probably be better than in many other cases of hysteria, because there are more removable etiological factors. In the first place, she has had a great deal of physical and mental strain from which she needs to be rested. After such a thorough rest there is reason to believe that her nervous system will behave itself better, regardless of any other treatment. Then there is reason to believe that she has not been properly nourished, and a reversal of the policy that has led to her present half-starved condition may be expected to help her mental symptoms as well as her bodily condition. Thirdly, we can certainly improve upon the treatment of the convulsions. Nothing worse could be done for them, I think, than to etherize the patient. A policy of neglect is essential. The more attention paid to such manifestations, the more severe they become.

Treatment: After the removal of the three factors just mentioned, we should endeavor to find out whether there is any "ingrowing thought" or any reason for brooding. Thoroughly to talk out with someone in whom she has confidence, the most important experiences of her life, especially the painful experiences, is often an essential element at the beginning of treatment. Beyond this the treatment is essentially

that given by most physicians at the present time for the group of conditions classified as psychoneuroses, namely, hysteria, neurasthenia, psychasthenia, traumatic and visceral neuroses.

It is now generally recognized that the essential element in the treatment of these diseases is to arouse and maintain a live interest in some sort of work that will lead to regular routine and a sense of achievement. The work cure is not the whole of our treatment in such cases. We must also do something, if we can, to provide for some more satisfactory recreation than has usually come into the patient's life, and for some proper outlet for her affections. Nevertheless, work is the foundation for both of these other elements. Unless the patient can be regularly and interestingly employed, she will get comparatively little good out of recreation, while her personal relationships are not likely to be permanent or satisfactory.

Medicine has in my opinion no considerable part in the treatment of these patients. Our problem is an educational one.

Case 83. A bookkeeper of twenty-five entered the hospital March 28, 1911. The family history and past history revealed nothing of importance.

For the past year she has tired more easily than before, but has kept at work and considers herself fairly well. Sixteen days before entrance she appeared in her usual health and went to church in the morning. Soon after entering the church she fell unconscious, vomited, and had a general epileptiform convulsion lasting a few minutes. Coma and vomiting continued until 6 P.M. Next day she was conscious but weak. After a week's rest in bed, vomiting ceased and two days later she was able to go outdoors. On the eleventh day after her attack she was feeling nearly well when, on getting up from a chair, she again fell unconscious. Since that time she has been in a condition of semiconsciousness, speaking only when spoken to, vomiting frequently, and complaining of severe headache. There has been no paralysis and no disturbance of the sphincters. The vomitus has shown nothing of interest.

The patient is well-nourished and has a good color. The pupils are slightly irregular but equal and react normally. The limit of palpable cardiac impulse is in the fourth space 10 cm. to the left of the mid-sternum, 2 cm. outside of the median line. The action is regular, the sounds of good quality, and no murmurs audible. Pulse and arterial walls show nothing abnormal. There are a few scattered squeaking râles in the backs of both lungs. The abdomen is negative. Knee-jerks cannot be obtained even on reënfacement. The plantar reflex is normal.

Systolic blood pressure 140. Hæmoglobin 95%. Leucocytes 11,000, the smear showing slight polynuclear leucocytosis. Twenty-four-hour amount of urine was from 20 to 35 ounces, the specific gravity in the neighborhood of 1018, a slight trace of albumin, no sugar. Sediment shows a rare hyalin cast. Retinal examination showed choked disks.

Three days after entrance the patient had another general convulsion and both sphincters became relaxed. Soon after this a slight left facial paresis appeared and both external recti showed some insufficiency, most marked upon the left.

There was some difficulty in swallowing, though the muscles of the tongue were not disturbed. The knee-jerks continued absent and the plantars normal.

Diagnosis: Cerebral hæmorrhage, cerebral syphilis, and brain tumor are the most probable diagnoses. There is no sufficient change in the urine or the heart to make us consider uræmia seriously. In my experience, moreover, uræmia never appears out of a clear sky with such stormy symptoms as are present in this case. The absence of fever makes it possible to exclude meningitis, especially as there is no retraction of the head or no increased tension of the hamstring muscles.

Cerebral hæmorrhage is very unusual at this patient's age. In a person past fifty it would seem the obvious diagnosis, especially if the blood pressure were high. Furthermore, the changes in the optic disks are not characteristic, and the absence of paralysis would be difficult to explain. In the absence of any history or lesions pointing to syphilitic infection we have no special reason to suspect syphilis, but this disease cannot be excluded especially as no Wassermann reaction has been attempted and no spinal puncture made.

The condition of the optic disks and the age of the patient suggest brain tumor. The suddenness of onset, though not typical of that disease, is by no means uncommon in it, since the vascular forms of cerebral neoplasm may remain altogether latent and symptomless until hæmorrhage from one of the friable vessels produces a picture like that seen in this case. This was in fact the condition found somewhat later at autopsy.

Prognosis: Despite the improvements in surgical technique, it remains true that the outlook for the vast majority of cases of brain tumor is quite hopeless, since the growth is usually an infiltrating one and incapable of surgical removal. The operation of decompression may prolong a patient's life and increase his comfort for many months, but with the present state of the science of cerebral localization even decompression proves of little value in the hands of many surgeons.

Treatment: All patients should be given mercury and potassic iodid because the possibility of syphilis can rarely

be excluded. This was done in the present case and the iodid was pushed until a dermatitis appeared, but without benefit.

Otherwise than this, our only resource is surgical interference. In the present case subtentorial decompression revealed nothing. A supratentorial opening was then made upon the left. Two days later the patient's headache was much better and both optic disks showed improvement, the right returning almost to normal. The knee-jerks reappeared, though they were rather slight, especially upon the left. The patient died twenty-two days after operation.

Autopsy showed a soft vascular tumor in the right parietal lobe near the base of the brain.

Case 84. Mrs. M., fifty-one, is seen August 9, 1905. She has been in bed since July 4, suffering from "a complication of diseases," and her medical attendant has been changed several times.

She had nervous prostration fourteen years ago, and has never been well since, but except for children's diseases she has had no other definite illness. She has had eight children — the last six years ago — and, until recently, has done most of the housework for the whole family.

Her present illness began July 4 with diarrhœa, vomiting, fever, and sweating. These symptoms passed off in about three weeks, but there have been suggestions of a return of them several times, and she has not regained her full strength. Insomnia is a very troublesome symptom, and in the long, wakeful hours she sometimes has spells of "weakness," for which aromatic spirits of ammonia is taken with some relief. There are also "smothering spells" when she feels as if she must get up and walk, and is restrained only by the strict orders of her physician.

She has never been a hearty eater, but the appetite is now very fair. There is no pain and the bowels move with the aid of laxatives.

Examination showed a stout, pale woman, with a temperature of 99°. The size of the heart could not be exactly determined on account of fat, but the sounds were normal and were loudest in their normal sites. The peripheral arteries were normal. At the beginning of the examination fine crackles were heard at the base of each axilla, but they disappeared after a few deep breaths and were not heard again. Liver dulness began at the seventh rib, and the edge of the organ could be felt below the ribs. Otherwise visceral examination was negative. Hæmoglobin 90%. Urine normal.

Diagnosis: A feverish gastro-enteritis five weeks ago; now weakness, insomnia, and smothering spells, with a desire to move about — such are the main complaints. In a woman of fifty-one these symptoms suggest arteriosclerosis or myocarditis, but the physical examination gives no support to these diagnoses, and without physical signs one cannot make them. The crackles in the lungs would have been significant

had they persisted, but *transient* crackles at base of the axilla have no pathological significance. The liver is low — both the upper and the lower border — but shows no evidence of enlargement, and simple ptosis, whether of the liver or of all the abdominal organs, is not likely to explain the symptoms of this case. The main question is: Has the woman any disease at all? Are not her weakness and insomnia the result of staying in bed? This hypothesis was in fact verified by the results of getting up and to work. In a few weeks the woman was perfectly well.

Prognosis: Under judicious treatment this patient should recover more quickly than most psychoneurotics, for the origin of her troubles is comparatively simple and recent. She has got hipped upon herself by staying in bed too long. When she has got up and finds that she is able to work and enjoy herself, she should rapidly recover. Of course the underlying depression which made her have nervous prostration fourteen years earlier, and made her liable to such an attack as the present, will remain and will make it probable that in one form or another she will have to resist similar types of prostration, if she does not fall a victim to them. But for the present, under a reversal of the treatment previously pursued, she should promptly recover.

Treatment: Essentially that mentioned in the previous case.

Case 85. A tall boy of nineteen is brought to the physician's office by his mother, who states that for ten years he has had trouble with his head and with his bladder. Usually he has to pass water every two hours in the daytime. This summer while he was in the country the intervals were longer, three or four hours, and his headache did not trouble him, but since the autumn the headache has returned. It is in various parts of the head, and goes and comes.

The urine is sometimes turbid, but never hurts him during micturition. Masturbation was rather frequent six years ago, but has not been practised since, he says. His father's sister and his father's aunt died of "softening of the brain," and his mother is anxious about his mental condition. Appetite, digestion, and sleep good. Bowels regular.

Examination shows a rather shame-faced, neurotic boy, very tall for his age. Visceral examination is negative. Blood normal. Urine 1026, slightly high-colored, very acid, no shreds. No albumin, no sugar.

1. What are the bad effects of masturbation? In many cases there are no demonstrable ill effects whatever. In a few cases the youth seems to be debilitated by it. That it ever produces brain disease is very unlikely. It is a symptom, not a cause of mental enfeeblement. In many boys a neurosis is produced by the shame and remorse associated with it and by fear of its terrible consequences as they are (quite falsely) delineated in quack newspaper advertisements or by friends and parents. This neurosis entails insomnia, anorexia, constipation, emaciation, and may thus bring about a pitiable condition.
2. Common causes of frequent micturition in youth? Nervousness (especially in girls), hyperacid urine, the irritation of a phimotic foreskin or of retained smegma, gonorrhœa, cystitis, diabetes (either type).

Diagnosis: When a headache recurs in the autumn (when school begins) after disappearing in summer, eyestrain should be suspected and looked for. In this case it was found and under proper treatment greatly improved. Maternal anxiety doubtless contributed considerably to the boy's symptoms in this as in so many other cases, and by reassuring her a

good effect was produced upon the boy. The urinary trouble seemed to be due to hyperacidity; at any rate it improved rapidly under the administration of sodic bicarbonate half a drachm t.i.d. None of the other causes of frequent micturition mentioned above were found in this case.

Eyestrain, hyperacid urine, and an overanxious mother were apparently the causes of his trouble.

Prognosis: With removal of these hindrances to normal development the boy should rapidly regain his health. No doubt he has outgrown his strength and owing to this fact he will need some years to attain vigor.

Treatment: The essentials have been mentioned already. Beside correcting his eye troubles, modifying the acidity of his urine, and reassuring his mother, one should encourage him to outdoor life, early hours, and nutritious food. No drugs seem indicated.

Case 86. A clergyman, sixty years old, gave the following account of his case. Since he began to preach he has been subject to insomnia, but it is under his control unless he is excited by mental labor, the effects of which are most marked when it occupies the evening. Eyes weak for forty years, but no worse of late. Though the voice is clear, its use in lecturing or preaching is at times, when he is debilitated, somewhat painful and requires much exertion. Appetite good, but two to three hours after eating he sometimes has a kind of epigastric pain or feeling of heat, not dependent on amount or character of food, unless it be worse when he eats little. Ice water seems to touch a raw spot. Bowels tend to constipation since early childhood. For many years has been troubled, especially when he is debilitated, by a sensation over the whole body as if pricked by innumerable needles.

Four years ago, while much exhausted by mental labor, went to a watering place, where he was put on low diet, reducing remedies, and frequent baths. At the end of four months, while at breakfast, was attacked with vertigo and began to talk with great volubility but incoherently. For three days, which were a blank to him, his condition excited much alarm, but at the end of that time his mind became clear and there has been no return of symptoms since. There was numbness of the hands and feet at time of the attack.

In the two last years has had five attacks of pain in upper abdomen, without known cause, very severe and accompanied by distention and general perspiration. One of these came on after conducting an examination four hours long, another after eating hastily. Otherwise no cause known. Pain generally began at 9 P.M., and lasted till midnight. No other symptoms noticed before, during, or after the attack of pain.

1. For what should one search especially in making a physical examination of this patient? The stigmata of hysteria, arteriosclerosis, the signs of tabes or dementia paralytica (pupils, knee-jerks, speech-writing, mental condition).
2. What gastric anomaly do the digestive symptoms suggest? Hyperchlorhydria.

3. If his gastric symptoms had appeared for the first time within a year what diagnoses should be considered? Gastric cancer, gall-stones.
4. Name the most important causes of paroxysmal epigastric pain. Peptic ulcer, gall-stones, appendicitis, plumbism, tabes, malaria, uræmia, and pancreatitis.

Diagnosis: Since physical examination was negative and the patient was able to work hard despite his many symptoms, the diagnosis of neurasthenia was made; the improvement under treatment suited to that condition confirmed the diagnosis. The attack at the watering-place was apparently due to cerebral anæmia, the result of wrong treatment.

Prognosis: This patient is not much sick but one cannot promise with any certainty that he will be much better. The habits of mind and body which he has acquired in the course of his sixty years are not likely to be very far modified. An attempt, however, may be made along the lines indicated in the next paragraph.

Treatment: To check the attacks of epigastric pain is our chief task, since most of his other symptoms are either trivial or matters of past history. He should be advised to eat small meals at intervals of about two hours, avoiding meat and salt, and never allowing his stomach to become empty or his hunger excessive. He should be ordered to eat slowly and chew his food well, also to avoid such strains as are mentioned in the last paragraph of his own account. At his age evening work should be avoided, both on account of its tendency to produce insomnia, and because his stomach is more likely to get upset at this time of the day.

CHAPTER VII.

DISEASES OF LYMPHATIC AND DUCTLESS GLANDS.

Case 87. A married woman of fifty has had three children, the youngest seventeen, no miscarriage, and has passed the menopause without disturbance. Soon after the birth of her second child she became unconscious with dilated pupils, had convulsions, right hemiplegia and aphasia, but recovered entirely. Her domestic life has not been happy for some years. During the eighteen months that she has been under the care of her present attendant she has had emotional attacks, periods of mental depression and insomnia, goes to bed, refuses food, and if crossed becomes hysterical. Passed last summer in the country with benefit. In the autumn she went to the office of her physician for swelling of the face and puffiness of the eyelids, and complained that the skin was dry and perspiration deficient. Nine months later these symptoms persist. She denies special sensitiveness to cold. Several examinations of the urine have been made with negative results. The twenty-four-hour quantity is not known. The pulse is 72, regular; the temperature normal; the blood negative; the tongue clear. The complexion is somewhat waxy; the eyelids are rather baggy and translucent; the whole face has a puffy look. The skin — on a warm day, June 17 — is slightly moist. Visceral examination is negative except for a mobile right kidney. No motor paralysis; reflexes and sensibility normal.

1. What is the significance of the mobile right kidney in relation to the other symptoms of this case? It is insignificant and the physician should on no account mention its presence, which may give rise to great alarm.
2. What was the cause of the hemiplegia and aphasia? The toxæmia known as eclampsia seems to account for them. A small cerebral hæmorrhage is possible.
3. What test would make the diagnosis easier? (See diagnosis.)

Diagnosis: The age and sex, the mental symptoms, the dry skin and puffy, waxy face, with negative urine and heart, strongly suggest myxœdema. The therapeutic test (see question 3) confirmed this suggestion. Thyroid extract produced a rapid improvement and final cessation of all the symptoms. The only atypical features of the case are the absence of subnormal temperature and of sensitiveness to cold. The apparently eclamptic seizure in early life is interesting in view of the possible connection between eclampsia and deficient thyroid activity which various writers have recently suggested.

Prognosis: If there are no serious complications, the prognosis of myxœdema under proper treatment should be entirely favorable. The patient, however, must continue the treatment with occasional intermissions for life. Any prolonged attempt to do without medicines brings relapse in practically every case.

Treatment: Since we possess a specific for this disease, the only discussable question is as to the preparation and the dose. In my own experience the tablets prepared by Burroughs & Welcome have been more reliable than those of any American firm. Nevertheless, excellent results are also to be obtained by the use of any one of the better-known American preparations. Our main task is to get in the thyroid in an effective dose without producing toxic symptoms. It is well to begin with a two-grain tablet once or twice a day, and increase this gradually until the patient is taking 5 grains three times a day, or until toxic symptoms show themselves. The earliest toxic symptom in most cases is the moderate increase in the rapidity of the pulse and this should be watched for by putting the patient upon a two-hourly pulse chart as soon as the drug is begun. If the pulse rises more than ten beats without any special reason, such as bodily or mental excitement, drugs should be taken away and begun later with a smaller dose after the pulse has resumed its normal rate. By a little experimenting, a dose may be found which will keep the symptoms in abeyance without poisoning the patient. At this dose the patient should continue with occasional intermission, perhaps one month in three, or one week in three, as experiment may prove to be wise.

Case 88. Single lady, fifty-seven years old, always more or less of a nervous invalid, consults a physician for palpitation and dyspnœa on exertion. The menopause occurred five years ago, and since then she has been getting very stout and disinclined to exertion. She is thirsty and her skin is dry and perspires very little. Of late, the feet have been swelling and her face seems puffy all the time, not especially under the eyes. She is troubled a great deal with headaches, worse at night, and her hair has been coming out of late. No sore throat, but the shin bones are tender and the tissues over them pit slightly on pressure. The bowels are very costive, appetite capricious, sleep disturbed by headache. Her memory is very poor and she takes little interest in anything.

Physical examination: Heart's area cannot be marked out on account of the great thickness of the fat layer. The apex is not seen or felt; best heard in sixth space, one inch outside nipple. Sounds heard feebly, action irregular. Pulmonic second sound accentuated; no murmur. Lungs and abdomen negative. Temperature 97.8° , pulse 100. Urine 1018, acid, large trace of albumin, no sugar. Amount two quarts. Sediment: hyalin, granular casts, small diameter, some with cells adherent. Blood: Red 6,000,000; white 12,000. Œdema of ankles. Hands and feet cold.

1. Cause of feeble heart sounds in this case? The thick fat layer.
2. What are the common causes of tenderness over the shins? Œdema, periostitis.
3. Why is the number of red cells so large? This number is often found in perfect health. Here it is probably due to weak circulation and peripheral stasis.
4. What causes of chronic headache are common at fifty-seven? Uræmia is the only cause commonly found at this age.
5. What further tests are important for diagnosis? Measurement of the day and the night urine. The effects of thyroid extract.

Diagnosis: (a) Obesity and its results, (b) arteriosclerosis with involution psychosis, and (c) myxœdema should be considered. Neither of the first two often produces dry skin nor loss of hair. In favor of myxœdema are the age and sex,

the cutaneous, facial, and mental changes, and the sub-normal temperature. The administration of thyroid extract was followed by a rapid and permanent amelioration of all the symptoms (including those referable to the heart and kidney), and the diagnosis of myxœdema was thus confirmed.

Prognosis and Treatment : (see previous case).

Case 89. Man, sixty-six years old, has had pain for fifteen months; for the first month it was referred to the right hip and buttock. Later, it was felt in the small of the back and in both scapular regions; for six months, pain has been felt in the other hip and occasionally in both legs.

For a month he has had considerable cough, with sputum, occasionally blood-streaked. He has always been finicky about his food, but complained of no special digestive disturbance, except loss of appetite and constipation, which have been continuous and accompanied by loss of flesh. He was previously very fat. For several weeks he has been in bed. Of late has had several attacks of retention of urine, needing catheterization.

Examination: Spare, but by no means emaciated; arcus senilis marked. Heart negative, so also the lungs except for scattered patches of râles in both backs and in the right axilla. Abdomen negative. Knee-jerks normal; no tenderness or loss of sensation. Spine straight and not tender.

Urine 1016, alkaline, trace of albumin, considerable pus and squamous cells. Blood: Red cells 3,810,000; white cells 17,000; hæmoglobin 55%. In the stained specimen polynuclear leucocytes were abnormally increased and three normoblasts were seen during a differential count of 500 leucocytes. Temperature 99°, pulse 90, respiration 22.

1. What is the significance of the temperature in this case? If it continues at or below that point, infections (e.g., phthisis or sepsis) are very unlikely.
2. What all-important diagnostic data are here lacking? Pupillary reactions, sputum examination, the twenty-four-hour amount of urine.
3. If the knee-jerks had been absent, what other disease should be considered? Tabes dorsalis.
4. How are the lung signs to be interpreted? Localized bronchitis or œdema.
5. What further knowledge do we wish regarding the spine? Is it everywhere normally flexible?

Diagnosis: The spine was found to be stiff in the lumbar region and spondylitis was considered. But the loss of appetite, the anæmia, and the leucocytosis pointed to something less purely local in its effects. Sputum examination,

four times repeated, was negative and practically excluded phthisis. Abdominal aneurism would account for some of the pains, but should produce a palpable tumor. The pains are such as would be produced by pressure on the spinal nerve roots. Malignant disease of the prævertebral glands would explain the pains, the anæmia, and the loss of appetite. Autopsy confirmed this diagnosis and showed in addition numerous metastases in each lung — accounting for the pulmonary signs and symptoms. Hypertrophied prostate with slight cystitis explained the bladder symptoms.

Prognosis: There is no hope of saving life since the growth is irremovable. Death will probably occur within a few months. The treatment is essentially symptomatic.

Case 90. Called to see a young girl of twenty-one, single, who is said to have had, twelve hours before, a large pulmonary hæmorrhage — a pint after a few days' cough. Previously well, but nervous; easily startled and frequently troubled with food "going the wrong way," and causing symptoms of temporary spasm of the glottis.

When seen, could only speak in a whisper; throat examination was impossible on account of gagging. Lungs entirely negative, except slight dulness and prolonged expiration at right apex. Heart somewhat rapid; systolic murmur at base of the heart, loudest in pulmonary area. At the root of the neck, in front, a swelling size of a hen's egg, smooth, soft, not tender. Abdomen negative. Face very pale, lips less so. Slight œdema of ankles.

Urine pale, acid 1018; albumin, slightest possible trace; 1% of sugar; amount, $2\frac{1}{2}$ quarts. Sediment, mostly squamous and neck of bladder cells. Few small hyalin casts.

Blood: Reds 4,800,000; whites 10,000; Hg. 60%.

1. What further information is needed about the hæmorrhage here? Did anyone see the blood come up? She may be a malingerer. Was the blood mixed with air or food?
2. If hæmorrhage were due in this case to phthisis, what physical signs should one expect to find twelve hours after? None. The earliest physical signs usually appear months later.
3. What else may cause such hæmorrhage? Gastric ulcer, œsophageal varices in cirrhosis, leaking aneurism.
4. How is the œdema of the ankles to be accounted for? Probably anæmia; possibly nephritis.
5. What other causes of œdema can you name? Cardiac weakness, obesity, neuritis, thrombosis, varicose veins, or other local causes of venous obstruction.
6. Significance of the lung signs in this case? They are within physiological limits.
7. By what further methods of examination could their significance be more definitely determined? Sputum examination after administration of KI. Temperature records, tuberculin reaction.
8. Name three causes of systolic murmurs loudest in the pulmonary area. "Functional" changes, aneurism, pulmonary stenosis.

9. Can the neck tumor be connected in any way with the glottic spasm? Why or why not? No, because the tumor is too small and too far from the glottis.
10. From the data given about the blood, what should one expect to find in the stained blood film? Small, pale red cells, not otherwise abnormal. Normal leucocyte percentages.
11. What conclusions should be drawn from the urine in this case? None that are definite. The causes of the albuminuria and of the glycosuria should be sought.

Diagnosis: Goiter and tachycardia suggest Graves' disease. We do not know whether or not the eyes protruded or whether there was tremor. Pulmonary bleedings, glycosuria, albuminuria, and anæmia have repeatedly occurred without known cause in Graves' disease. Phthisis and malingering must be excluded by the methods suggested under questions one and seven. Aneurism causes aphonia and (if it leaks) bleeding. There are none of the other physical signs of aneurism in this case, but an X-ray may be needed to exclude it. The glottic spasm and aphonia occur in many neuroses and are characteristic of none. Exophthalmic goiter turned out the true diagnosis, other alternatives being excluded.

Prognosis: A great majority of cases tend to spontaneous improvement which may be prolonged for weeks and months and may be of any degree from a slight amelioration to almost total recovery. This fact is of the greatest importance in estimating the effects of any particular plan of treatment. The great majority of cases run a chronic course with periods of improvement such as have already been suggested. Occasionally malignant types of the disease are met with and patients succumb either to cardiac failure with dilatation, or to toxic symptoms such as diarrhœa, vomiting, fever, insomnia, and profuse sweating. It should be remembered that many cases are aggravated by the conditions following childbirth. During the pregnancy the symptoms may be greatly improved.

In any given case prognosis is worse if the patient is emaciated, the pulse is persistently above 120, if diarrhœa, fever, sweating, or insomnia are present.

Treatment: On the whole the most effective method of attacking the disease is by surgery. Whenever the symptoms are enough to disable a patient from her ordinary occupations, operation should be advised, provided one can get the services of a surgeon who has had considerable experience and shows considerable proficiency in dealing with this particular disease. The cases in which operation is inadvisable are those at the two extremes, the mildest and the severest; however, even the severest case may sometimes be sufficiently ameliorated by some of the milder methods presently to be mentioned so that operation becomes safe and practicable, especially if the psychic elements of the case are not lost sight of.

As regards nonsurgical treatment, it is clear in the first place that general hygiene such as we provide for the tuberculous or the epileptic is of very distinct value. In this regime the elements of improvement are rest in the open air, hypernutrition to combat the tendency to emaciation, freedom from all emotional and physical strain. The problem of occupying a patient who cannot take part in any of the ordinary activities of life is here, as in tuberculosis, a difficult one, yet it is important that something should be devised whereby the patient may not fret and worry more than is inevitable in so tedious and disappointing a disease.

As regards medicinal treatment I have seen little that convinces me of its value. In my hands the Rogers-Beebe serum has not produced any results striking enough to convince one of its value; that is, the percentage of definite improvement does not seem to me much greater than is to be expected under hygienic management alone. The neutral bromid of quinin so strongly recommended by Forscheimer and by J. M. Jackson has, I think, some effect in diminishing the nervousness and excitability of the patient, but it is by no means a brilliant remedy. Other drugs have been quite powerless in my hands. As a rule I give the neutral bromid of quinin in doses of 5 grains three times a day, diminishing the dose if the ears ring disagreeably.

The use of X-ray exposures over the thyroid gland has been recommended by the Mayos as a preliminary and auxiliary treatment in connection with operative interference. G. W.

Crile has laid stress upon the importance of eliminating so far as possible the psychic factors in connection with operative treatment. He believes that terror excited by the anticipations of operation and of anæsthesia has much to do with the high operative mortality of some surgeons, and consequently he has worked out a technique whereby the patient scarcely suspects that any operation is to be performed until it is over.

Even in the successful cases a regime similar to that above suggested has to be carried out more or less strictly after operation.

To discuss the various types of operation for hyperthyroidism performed by different surgeons is beyond the scope of this book.

Case 91. A boy, fourteen years old, of gouty family history, complains for a year of frontal headache, not very severe but persistent and wearing. Appetite excellent, but digestion not as good as it has been. Has grown suddenly very irritable, having been previously sweet-tempered. He has lost flesh during the year and seems listless and weak. Sleeps well. Bowels somewhat costive. Getting pale. Heart, lungs, and abdomen negative. Knee-jerks not easily obtained, but gait shows only weakness. Urine normal color, acid, 1028, no albumin. Sediment negative. Temperature 98°, pulse 96. No œdema. Blood negative.

1. What possible causes for the change in disposition? Masturbation, psychosis of puberty, brain tumor, diabetes.
2. Causes of frontal headache commonest at fourteen? Eyestrain, adenoids, frontal sinus disease, malaria, pubescence.
3. Significance of pallor both in general and in this case? Pallor may mean anæmia, but often does not. Deficient skin circulation, congenital or acquired (stokers, residents in the tropics), is a more frequent cause. Many consumptives and many neurasthenics are pale, but few are anæmic. Nausea and faintness produce local anæmia, and of course without blood change. No diagnosis of anæmia is justified until the physician has seen the color of a drop of blood on filter paper (Talquist scale) or on a handkerchief. In this case no anæmia was present.

Diagnosis: The careful student of this case will notice first of all the *loss of flesh despite good appetite*. Emaciation with persistent headache and diminished knee-jerks, are the obvious physical signs. Eyestrain, adenoids, malaria, masturbation were easily excluded by examination and watching. Further questions revealed the fact that micturition was frequent and copious. This, with the loss of flesh despite good appetite, suggested diabetes, and the urine was found on examination to contain sugar — a point omitted in the examination of the attending physician and therefore omitted in the above description of the case. As the glycosuria proved persistent, the diagnosis of diabetes mellitus was made. No acetone or diacetic acid was found in the urine at

this time. The sugar was 5%; urine, three quarts in twenty-four hours.

Prognosis: As regards the outlook in diabetes, we may divide cases into two groups: the fat, old patients in whom the disease may be mild or almost trifling in severity; and the young, thin patients in whom it is as a rule fatal within a few years. Patients occupying intermediate positions between these two groups have a correspondingly intermediate prognosis. I have seen stout, elderly patients who got along without any decided inconvenience for ten years or more, although they did not modify their ordinary diet in the least. Probably cases so mild as this are rare, yet there are many in this group whose symptoms are very slight if they will submit to short periods of treatment once or twice a year.

Under these conditions patients may live for many years and often die of some other malady.

Among the young, thin cases the longest that I have ever known occurred in a young man whose first symptoms appeared at the age of twenty, and who lived and worked for eleven years thereafter, being most of that time upon strict diabetic diet. As a rule one cannot prolong life beyond four or five years in young, thin patients.

Acute cases occur especially in children and young adults, and may prove fatal within a few months.

An important factor in prognosis is the patient's ability and willingness to submit to proper treatment. Many are able but not willing; some are willing but not able, owing to poverty or other conditions. The amount of determination necessary to stick to a strict diabetic diet through months and years is possessed by but very few people, hence very few patients are successfully treated except in sanatoria where their diet can be rigidly controlled without regard to their wishes.

Cases benefited by antisiphilitic treatment are said to give a better prognosis than any others, but these are exceedingly rare. I have never seen one. In many cases the prognosis is rendered more serious owing to the presence of a complicating disease such as arteriosclerosis, nephritis, or valvular heart disease.

Treatment: In the treatment of diabetes the physician should be constantly guided by *three sets of data*. He must watch the urine, not only for the presence and the amount of *sugar*, but for the presence and amount of *organic acids*, and he must always keep track of the patient's *weight*. By reference to these three factors, sugar, acids, and weight, we attempt to steer the best course we can in the management of the disease. It is not enough to free the urine from sugar, we must free it from sugar without making the patient lose weight after the first week or two, and without poisoning his system with organic acid.

To accomplish these ends simultaneously it is essential to remember that what we add to the ordinary diet is as important as what we take away from it. To increase the fats in the foods is as important as to cut off the carbohydrates; otherwise we starve our patient.

At the beginning of treatment the carbohydrates should be gradually reduced so that in the course of a week they are practically excluded. During this week the patient should be given bicarbonate of soda in doses sufficient to keep the urine neutral. The amount necessary to accomplish this varies greatly in different cases. One should begin with a teaspoonful of bicarbonate of soda every two hours, and then increase or diminish as may be necessary to keep the urine neutral. Besides the proteid foods such as meat, fish, and eggs in their various forms, we should see that the patient takes an increased amount of cream, butter, cheese, fat meat such as bacon, and olive oil in the form of salad. The amount of these fats should be such as will maintain or increase the patient's weight. If this is carefully watched it is not necessary to calculate the calory values of the food.

Diabetic breads should be excluded altogether. There are none upon the market which can be relied upon. Milk is not to be allowed while the patient is on strict diet. It is one of the foods to be permitted as soon as the diabetics begin to relax their regimen. Saccharin may be used in unlimited amounts to sweeten tea, coffee, jellies, and anything else in which the patient desires a sweet taste.

A strict diet should be continued for several months, provided the patient holds his weight or gains, and does not show a dangerous amount of organic acid in the urine. At the end of that time one may gradually relax the diet provided the urine has become sugar-free. Bread is the substance which the patient most craves, and he may be given at first a slice a day, later two or three slices, provided he can assimilate it without passing sugar. At any time it may be necessary to add carbohydrates to the diet if the patient loses weight or shows a large quantity of organic acid in the urine.

If, on the other hand, despite the exclusion of carbohydrates, we cannot free the urine from sugar, the following manœuvres may be tried. (1) We may cut down the amount of proteid food by one-third or two-fifths, allowing the patient not more than 50 or 60 grams of proteid a day. This sometimes results in freeing the urine from sugar when strict exclusion of carbohydrates has not been sufficient to produce this result. (2) We may prescribe what the Germans call a "green day," — that is, we may exclude for twenty-four hours all carbohydrates and all proteid food, allowing only green vegetables and fats. (3) If this measure is not sufficient we may try twenty-four hours of starvation, allowing only clear soups and water.

I remember one case in which strict diet had been wholly ineffective in freeing the urine from sugar, yet in which the urine after a period of thirty-six hours' starvation remained sugar-free for several months on a diet free from carbohydrates.

There are patients who can bear some one form of starch far better than others. Some have a remarkable tolerance for oatmeal, others for milk-sugar, for lævulose, or for potato starch. One should experiment in each case with these carbohydrates, to see whether the patient can get the benefit of them without passing sugar.

In the milder cases a month of strict diet once or twice a year may suffice to keep the patient in good condition and nearly or quite sugar-free. In the severer cases one must persist with diet practically all the time.

Aside from diet there is nothing to be said as to treatment

except that exercise in moderation, sleeping in the open air, unusual attention to cleanliness of the skin, and the use of such a regime as will keep up the patient's courage are valuable adjuvants. Drugs have in my experience no power over the disease. Opium does fully as much harm as good.

Case 92. A widow of fifty-three noticed five years ago a swelling of the left leg extending from the hip to the toes and lasting about six months. After that she had no symptoms of any kind until a year ago when a bunch appeared in the left groin. There has been slight if any increase in its size since that time and she has noticed nothing else wrong until five weeks ago when she began to have pain in the left hip, in the left buttock, and down the back of the leg. This pain has never been severe and has never prevented sleep. Indeed she scarcely notices it except when she walks. This pain has been accompanied, however, by a moderate degree of swelling of the whole leg. In other respects she feels perfectly well. She has a good appetite and has lost no weight.

Physical examination is negative except for a moderate swelling of the whole left leg and a hard, irregular mass the size of half a lemon in the left groin. Nothing abnormal is felt by vagina. The hæmoglobin is 75%, urine normal.

1. What are the common causes for swelling of the whole leg?
Phlebitis; inflammatory œdema accompanying a septic wound with or without a demonstrable lymphangitis; elephantiasis; passive congestion due to the pressure of tumors in or about the pelvis.

Diagnosis: We have no evidence of phlebitis, no tender, indurated cord over the site of the pain, no fever or leucocytosis. There is no sign of lymphangitis or acute sepsis. Elephantiasis would not account for the mass in the groin nor for the sciatic pain, although elephantiasis may be accompanied by some subcutaneous œdema such as is here present. It is natural, therefore, to assume that the mass in the left groin is connected with some deeper growth which produces the pain and œdema through pressure on nerves and veins. The only thing to give us pause is the history of an attack five years ago apparently of similar nature. Is it possible that malignant disease can have existed so long and produced no symptoms during intervals of nearly four years? We cannot deny the possibility, and the diagnosis of neoplasm with pressure symptoms seems therefore the most reasonable. Only by the excision of a portion of the glandular mass can we arrive at any further certainty.

Prognosis: Since there is no considerable possibility of extirpating a growth such as may be assumed to be here present, deep in the pelvis, we can offer no hope of recovery. Life will probably not be many months prolonged.

Treatment must be purely palliative.

Case 93. A plumber of forty, of good family and previous history and good habits, had clap many years ago with good recovery.

One year ago he had an obstinate cough with expectoration (not examined) and a "patch" in his right lower front chest. He went to Florida and recovered entirely. About two months ago he noticed swelling of the face and neck, especially in the morning, and had to enlarge his collars. Stooping caused headache, a slight choking sensation, and swelling of the veins of his face and neck. After some weeks he had fever, malaise, and swollen tender glands (?) in the neck, especially on the left side. In the course of a week he was so much better that he resumed work. Recently the swelling of the face and neck have returned and are more marked in the morning. The left arm has also swollen, without pain or tenderness. He has had several nosebleeds, with relief to his head. Yesterday his temperature was 101.4° , to-day 99.6° . Pulse 80, regular. The appetite, digestion, bowels, sleep, and respiration are normal. The eyelids have been puffy, but are not so now. The face, neck, and upper part of the thorax are swollen and hyperæmic. The veins of the arms and their valves are very distinct, especially on the left side, and are markedly dilated in the left lower axillary region and along the right diaphragmatic attachment. Visceral examination, the blood, and the urine are negative, also the throat. The voice is clear. No glands in either axilla or groin.

1. What are the possible causes of swelling of one arm?
Venous thrombosis or pressure on a venous trunk between the arm and the heart; inflammatory exudation (sepsis); arterial thrombosis. Occasionally drop-sical œdema may settle in one arm if the patient has been lying long on one side.
2. What are the common causes of swelling of the face?
Nephritis, cardiac disease, inflammatory œdema (as in erysipelas), angioneurotic œdema. In the early morning many persons have swelling of the face off and on without known cause or sequelæ.
3. What can be inferred from the increase of the swelling in the early morning? All types of facial œdema

(whether of known or unknown origin) are apt to be more marked in the morning. Hence this change has no diagnostic value.

Diagnosis: Œdema and hyperæmia of face, neck, upper thorax, and left arm, with dilated veins in these areas and lumps in the neck (later disappearing), point to mediastinal pressure on venous trunks. There are no signs of aneurism. New growth is the only alternative. The thymus is a possible site of origin for the tumor. The other facts in the case are consistent with this diagnosis — which was confirmed at autopsy — cancer of the thymus with metastases.

Prognosis: The outlook is hopeless and only a few months of life can be expected.

Treatment: Since it is presumably impossible to excise the growth, we can do nothing except carry out a purely palliative and symptomatic regime including the use of X-ray exposures.

CHAPTER VIII.

DISEASES OF UNKNOWN ORIGIN.

Case 94. A medical student of twenty-five has been troubled with his joints for ten years. Attacks of pain and stiffness lay him up whenever he is subjected to any strain, mental or physical. He has had little or no fever, he thinks, in any of the attacks, but the pain and swelling have been considerable. He has, as a rule, one or two bad attacks each year, with a week or two in bed.

The knees, ankles, hips, hands, wrists, and elbows have been affected, and in every case some stiffness and more or less swelling have remained after the pain left. Both sides are affected nearly alike.

Of late years the attacks have grown less severe, especially since his family has grown more prosperous and more harmonious. He is now able to attend to most of his medical work.

Examination shows no motion in the left wrist and very little in either ring finger. The range of motion in the knees and elbows is also considerably limited. The fingers are cold, mottled, and damp. Some of the finger joints and both wrists are doughy and semifluctuant. There is no evidence of bony enlargement anywhere.

The heart and internal viscera are negative, but the boy is pale and rather thin. Blood and urine normal.

1. Types and causes of arthritis? Infectious (including acute "rheumatism"), atrophic, hypertrophic, gouty, neuropathic, hæmophilic.
2. What varieties of arthritis are often associated with cardiac disease? Only the infectious types: e.g., "rheumatic," septic, gonorrhœal, scarlatinal, pneumococcal. Tuberculous and syphilitic infections of joints are rarely associated with endocarditis.
3. What important data are not mentioned in the above description? X-ray examination, data regarding gonorrhœa and regarding muscular atrophy.

Diagnosis: X-ray examination showed notable atrophy of the articular ends of the bones. There was marked muscular atrophy. No history of gonorrhœa or of any other infection. The absence of any known infection, the long progressive course in a young person, the symmetrical involvement of joints, the vasomotor signs, the absence of marked fever, and the X-ray evidence all point to *atrophic arthritis* and serve (with the negative condition of the viscera, blood, and urine) to exclude other varieties.

Prognosis: The majority of cases slowly progress, joint after joint being attacked, the amount of stiffness steadily increasing. As a rule pain is most severe in the early years of the disease, but any strain or jar may produce acute suffering in the affected joints. On the other hand, it is always possible for the disease to cease its activity and progress no farther. The crippled joints never recover, but if their number is not large, the patient may get used to them and get along very fairly well in spite of his handicap.

The worst cases are those coming on in early life in patients already debilitated and scantily provided with courage and interest in the world around them.

Treatment: The best results are obtained by abandoning all attempts at local treatment and prescribing a regimen practically identical with that used in tuberculosis, in order that everything may be done to increase the patient's resistance to the inroads of the unknown cause of the disease. In the acute attacks when the joints are painful and fever is present, the measures used in other acute joint troubles are of some value, i.e., complete rest, friction, local applications of heat, and aspirin or salicylate of sodium internally. At other times the patient should endeavor to live his life despite the limitations enforced by his joint troubles. Anything that hampers and depresses the patient will make the joints worse. He must occupy himself and keep busy. I have one friend, a physician, who despite a very advanced and painful stage of the disease, has successfully practiced medicine for the last seven years. I am sure that his sufferings have been less because he has forced himself to work.

When the disease is especially troublesome in a single joint and when ankylosis has occurred in that joint, some relief may be obtained by a surgical excision.

Case 95. Mrs. M., thirty years old, is seen in consultation October 10, 1905. She had her first baby five months ago, and following delivery a severe albuminuria ($\frac{1}{4}$ to $\frac{1}{2}\%$) without any urinary abnormality in amount, specific gravity, or color. The attending physician found very scanty hyalin casts, otherwise nothing pathological in the sediment. With rest in bed and exclusive milk diet the urine became normal in the course of five weeks, but after a return to ordinary diet albumin reappeared and she was again on milk diet for a period of seven weeks. In neither of these attacks was there any œdema or any uræmic manifestation.

While convalescent from this trouble (but after solid food had been begun) the patient began, eight days ago, to have bleeding from the gums, from the rectum, and subcutaneously. The spots under the skin were of various sizes, perhaps twenty in all, and occurred mostly on the arms and legs. The bleeding ceased in two days; it was not accompanied by subjective symptoms of any kind, and the patient now feels quite well though rather weak. She is still in bed.

She looks the picture of health. Her color is bright, there is no emaciation. There is a loud, harsh, systolic murmur audible all over the precordia, but best heard in the third left interspace near the sternum. The pulmonic second sound is slightly louder than the aortic. The heart is not enlarged. The other viscera show nothing abnormal. The gums are entirely normal, as they have been throughout. A few "black and blue" spots still remain upon the extremities. The urine is $2\frac{1}{2}$ pints in twenty-four hours. Specific gravity 1030, no albumin, no sugar.

Blood: Red cells 3,552,000; white cells 8000. Hæmoglobin 55%. The stained film shows achromia and moderate poikilocytosis, but is otherwise normal. The temperature ranges between 97° and 99.4° . Twice in the last fortnight it has reached 100° .

- I. Causes of albuminuria? Passive congestion of the kidney, infectious fevers, the "irritation" of bile or sugar in the urine, nephritis, renal arteriosclerosis, hæmaturia, and pyuria from any cause, the intermixture of vaginal discharges. In many cases (orthostatic, adolescent) no cause can be found.

2. Causes of subcutaneous hæmorrhage? Traumatism, infections (such as meningitis, typhus, sepsis, and the exanthemata), toxic, cachectic, scurvy, arthritic purpura, unknown causes ("simple" purpura, purpura hæmorrhagica).
3. Causes of anæmia such as is here described? Hæmorrhage, malaria, typhoid (rarely), malignant disease, dysentery, chronic suppurations, nephritis, cirrhosis, chlorosis, intestinal parasites.

Diagnosis: Puerperal nephritis and the long ensuing milk diet account for the anæmia. The heart murmur has the characteristics of a "hemic" or "functional" affair. The purpura is probably of the "simple" type, i.e., it is not severe or dependent on any known cause. The fever is easily accounted for by the anæmia and confinement to bed. The harshness of the cardiac murmur might suggest fears that septic endocarditis was present and responsible for the fever and hæmorrhages, but the position of the murmur, the absence of chills, leucocytosis, or marked pyrexia make this fear groundless.

Prognosis: The outlook depends almost wholly upon the cause of the anæmia, very little upon its degree. When the cause has ceased to act, or can be removed as in posthæmorrhagic or postmalarial anæmia, recovery is almost always prompt and permanent. On the other hand, when a chronic nephritis, a neoplasm, or a cirrhotic liver is in the background, we can have little hope of permanent improvement of anæmia as the result of any treatment whatsoever.

Probably the best prognosis of all the types of secondary anæmia should be given in the type ordinarily known as chlorosis, which in fact is a secondary anæmia of unknown cause. Aside from this disease we may say that the prognosis of a secondary anæmia is wholly the prognosis of whatever disease underlies it. If that disease is curable, the anæmia will take care of itself. If it is incurable, we cannot help the anæmia. Relapse does not occur in any of the types of secondary anæmia except those in which the cause itself recurs, as, for example, the posthæmorrhagic anæmias due to hæmophilia or hæmorrhage from gastric ulcer. Chlorosis shows a certain tendency to relapse in all cases, presumably because its unknown cause becomes again active.

Treatment: Obviously we must try to remove the cause whenever that is possible. Syphilitic or malarial infection, if combatted by the ordinary methods, soon cease to be complicated by any considerable degree of anæmia, provided nutrition is good. In other types of disease, when the cause cannot be removed, the most that we can do in combatting the anæmia is to nourish the patient. Iron and arsenic are rarely of value in these cases. I have never seen any improvement following the use of the time-honored Basham's Mixture in the anæmia of nephritis, and I have seen no results from internal medication in anæmias resulting from cirrhosis of the liver, malignant disease, or any other incurable organic lesion.

The direct transfusion of blood is a measure of the greatest importance in the treatment of the rather rare cases of grave posthæmorrhagic anæmia which show no considerable tendency to spontaneous improvement after the hæmorrhage has ceased. Some of these cases are complicated by such extreme weakness of the stomach, manifested as vomiting or constant nausea, that we cannot nourish the patient properly until his anæmia has been relieved by the transfusion. In such cases direct transfusion may be a life-saving operation. In my experience the operation is much more easily performed if a vein is attached to another vein rather than to an artery. The blood can always be made to flow freely from the vein if its ordinary channel of return is obstructed. Transfusion is also of value in the anæmias accompanied by continuous oozing as from an ulcerated intestine or ulcerative stomatitis. Occasionally the prolonged oozing which complicates diseases associated with jaundice may be also checked by transfusion. The patient usually gets the full benefit of the blood transfused and does not lose any of it by hæmolysis if we are dealing with the types of anæmia just mentioned.

On the other hand, in the hæmolytic types of anæmia, such as pernicious anæmia, transfusion is not only valueless but harmful.

Despite the firm and widely-spread belief that iron is of value in all types of secondary anæmia, I cannot say that I have ever been able to witness any benefit from its use except

in chlorosis. In the other types of anæmia, secondary to curable organic diseases, the deficiency of blood is made up as soon as adequate nutrition is secured and maintained. Whenever iron is given, whether for chlorosis or for some of the other types of secondary anæmia, freshly prepared Bland's Mass should be given in 10-grain doses three times a day after meals. After a week's time this dose should be increased to 15 grains three times a day. Doses of this size are much more effective than the smaller ones usually given. The modern so-called organic preparations of iron have no advantage except their expense, which renders them attractive to a certain type of patient. Out of many thousand patients treated with preparations of iron I have known but one or two who had any difficulty in taking the 5-grain pills of Bland's Mass in the method just suggested. These few cases have always been able to take the drug in the form of reduced iron, 1 or 2 grains after each meal, in pill form.

Foreign observers are enthusiastic over the results of high altitude, in the treatment of anæmia. Whether the altitude itself has any effect aside from the stimulus to the whole organism resulting from the change of climate which high altitude usually involves, it is very difficult to determine.

Drugs have considerable value in the treatment of some of the minor symptoms of anæmia, such as anorexia, insomnia, and constipation. The ordinary stomachics, laxatives, and hypnotics have no better field of action than in such cases.

For the purpura which complicates these cases no treatment is necessary. The hæmorrhages will cease as soon as the patient's general condition improves. They are in themselves of no harm to the patient.

Case 96. A married woman, forty-three years old, is seen April 9. Family history negative. Has had three children, the youngest now twenty years old, and no miscarriages. Eighteen years ago she began to suffer from profuse menstruation which became so excessive and exhausting that eighteen months ago the uterus and appendages were removed. In spite of the cessation of the hæmorrhages she says that she has lost ground and grown paler more rapidly since the operation. For the past six months nosebleeds have been frequent and at times so excessive that the nares have been plugged. She has had "feverish turns," lasting several days at a time, but her chief complaint has been of weakness, great dyspnœa, palpitation, and attacks of faintness. Micturition has been more frequent for the past few years, but without any polyuria. Her legs and ankles have been considerably swollen, but this has been much less apparent lately. About a month ago she had a copious epistaxis, followed, four days later, by a second, less severe, and has remained in bed ever since. Her temperature was first taken March 28, when it was found to be slightly above normal. Without discoverable local cause, it rose steadily till it reached 103° six days later. It fell to normal two days later, but the evening record has since been several times as high as 99.4° . With the rise in her temperature, her color, previously very pale, became like that of parchment, but the conjunctivæ remained white. She was greatly exhausted and somewhat delirious, vomiting occasionally either food or bile-stained mucus. A very grave prognosis was at this time given by the attending physician.

When seen April 9, patient reported herself as feeling very well, and her mental condition was bright. She was markedly anæmic, but with only a slight yellow tinge remaining. The tongue and mucous membranes were very pale. There was a deep ulceration on the left side of the nasal septum and several crusts were seen on the right. A systolic murmur was heard in the vessels of the neck. The heart's apex was in the fifth space in the nipple line. The cardiac dulness extended a finger's breadth and a half to the right of sternum. A systolic murmur was heard all over the precordia, rough over

the base, but becoming softer as the apex was approached and transmitted a short distance into the axilla. The pulmonic second was slightly accentuated. The upper border of the liver was at the fifth rib, and its smooth edge could be felt two fingers' breadth below the costal margin. The edge of the spleen was readily palpated. The ankles were slightly oedematous. The ophthalmoscope showed a normal fundus. Physical examination was otherwise negative.

Urine, specific gravity 1012, pale, acid, contains the slightest possible trace of albumin. Sediment slight, consisting of leucocytes, and a rare normal red cell; no casts. A blood count on April 3 showed 300,000 reds, 5400 whites, Hgb. 10%. A differential count of 400 whites showed polymorphonuclear 72%, large mononuclear 12%, small mononuclear 15%, eosinophiles 1%. Ten megaloblasts, 5 normoblasts, and 3 microblasts were seen. Poikilocytosis, macrocytosis, and polychromatophilia were present. A second count made to-day showed 1,000,000 reds, 5800 whites, Hgb. 25%. A differential count of 300 white cells showed no special change in the proportions. Four megaloblasts, 11 normoblasts, and 2 microblasts were found.

1. What are the common causes of frequent micturition in women and in men? In women, (a) nervousness and debility from any cause; (b) less often cystitis ("simple," gonorrhœal, tuberculous, or calculous); (c) the pressure of the pregnant uterus or other tumors; (d) pyelitis (tuberculous or septic). In men, (a) prostatic obstruction and its results; (b) cystitis (gonorrhœal, tuberculous, etc.); (c) pyelitis (as in women). Occasionally, in either sex, chronic nephritis may produce frequent as well as profuse micturition.
2. What are the possible causes of a systolic murmur like that here described? (a) Arteriosclerotic roughening of the aortic arch or of the aortic valves; (b) Anæmia and other causes of insufficient muscular contraction of the valve orifices (but such murmurs are usually louder in the pulmonary area). (c) Aneurism of the aorta; (d) aortic stenosis (*provided always* that other signs of that lesion are present, thrill and plateau pulse especially).
3. How are the "feverish turns" to be explained in this

case? Fever in chronic anæmia, especially pernicious anæmia, is not uncommon. After any profuse hæmorrhage it may occur especially in neurotic persons.

Diagnosis: The blood is characteristic of pernicious anæmia. The hæmorrhages are probably symptoms, not causes, of the anæmia, for such a blood picture rarely if ever results from hæmorrhage of the type here described. The respiratory, cardiac, and digestive symptoms, as well as the œdema, weakness and fever can be explained by the anæmia. Other diseases are excluded by the absence of physical signs pointing to them.

Prognosis: Of 700 cases of pernicious anæmia studied by the writer, through private practice and in literature, 298 were known to have lived less than one year, 258 lived from one to three years, and 143 lived over three years. Of the latter group 10 lived more than seven years, 4 more than eight years, 6 lived nine years, and 17 lived ten years or more. Since relapse had been known to occur even after the interval of seventeen years, we can scarcely venture to speak of any case as having been cured. I have known 3 cases which relapsed after four years or more of perfect health. Probably the average duration is less than two years, but it is difficult to be quite certain on this point, since the beginning of the disease can rarely be fixed.

Periods of improvement sometimes so striking as to seem almost miraculous, occur in about 85% of all the cases. Among 524 cases which I have studied in detail, there was one such wave of improvement in 296, two waves in 118, three in 65, four in 21, and five in 24. There may be great improvement in the patient's feelings and symptoms without a corresponding change in the blood picture, or, more rarely, the conditions may be reversed. These remissions usually last from three to twelve months and may occur at any period in the year, having no special preference for the warmer season.

Treatment: Rest seems to be of undoubted benefit. Many patients have gone on steadily from bad to worse so long as they continued at work, but showed evidence of improvement soon after they had given up and taken to bed.

Good hygiene, including abundance of nourishing foods of all types, and a life lived as much as possible in the open air, has, I believe, some favorable influence upon the course of the disease. Special limitations of diet, such as have been suggested by Herter and others, have not proved of any definite value.

Most physicians believe that arsenic has a distinctly favorable influence upon the disease in that it delays the fatal issue and promotes the occurrence of temporary remissions. Though I have given the drug in several hundred cases and shall continue to do so until some better treatment is suggested, I am by no means confident that it has any distinct action, since the tendency to spontaneous improvement is so very marked in most cases. There seems to be no advantage in any of the more recent synthetic preparations of arsenic, such as atoxyl, salvarsan, or sodium cacodylate. Bone marrow and oxygen are certainly useless and transfusion of blood does harm. Arsenic is best given in the form of Fowler's Solution, beginning with 2 drops well diluted after meals, and increasing 1 drop a day (not 1 drop after each meal) until the limit of toleration has been reached. Few patients can get past 15 drops three times a day, but the few who can exceed this dose are those who are most likely to see an apparent benefit.

Case 97. A girl of fifteen, seen February 15, 1905, had typhoid a year ago, was five weeks in bed, had a fine post-typhoid appetite and seemed splendidly through the summer and the autumn. In the middle of January, 1905, it was noticed that she was very white, especially after gymnasium classes which took away her appetite for supper. Her menstruation, previously regular since the age of thirteen, now became irregular and she lost some flesh. The urine, examined January 25, was found to contain a slight trace of albumin and a few granular casts. Similar findings were obtained February 6. She was taken out of school three weeks ago and has improved since that time. She has no headache and no other pains, her appetite is now good and there has been no œdema. Bowels tend to be costive. Her best weight, 114; present weight 109. She has grown an inch and a half in the last six months.

On February 19 the urine passed just after rising in the morning contained no albumin but the evening specimen was albuminous. A small number of hyalin casts were found. July 19 there was no albumin either night or morning. October 21, 1905, there was no albumin in the morning but a slight trace at night. On neither occasion were there any casts. The examination of the heart and the other internal viscera as well as of the blood was at all times wholly negative.

1. What considerations should influence us in estimating the significance of this albuminuria? We must make sure, in the first place, that the albumin is not due to any admixture of vaginal discharge. This can be done by securing catheter specimens. If these still show albumin we have to distinguish chiefly between the albuminuria of adolescence and that due to some type of nephritis. Experience shows that albumin appearing near the time of puberty often disappears within a few years without the occurrence of any other symptoms of the disease. This is especially true when it is of the so-called orthostatic type appearing after the patient has been for some time in the upright position — i.e., in the afternoon and evening — and disappearing during recumbency.

The presence of casts does not prove that any nephritis exists, though in many of the orthostatic albuminurias we find no casts. Most important of all is the condition of the heart and peripheral vessels. If there is no hypertrophy and no hypertension after at least six weeks of albuminuria, we may usually conclude that no considerable damage has been done to the kidney.

The patient was seen in January, 1906, and had then no albumin. February, 1907, no albumin. October, 1907, no albumin. January, 1909, no albumin. Evidently, therefore, this alarming symptom passed off with the period of adolescence.

Prognosis: Experience seems to show that we can give a wholly favorable prognosis when the conditions are as above described.

Treatment: There is no reason for restricting the diet or for administering any drug. As with any other child who shows the stress of adolescence either in mind or body, we should let up upon the load, diminish the amount of effort in school or out of school and allow the child to catch up with nature.

Case 98. A Syrian girl, aged 14, was seen January 21, 1911. The family history and past history were negative. She has been sick for five months. During the first two months of this time she had diarrhœa with ten or eleven movements a day. No blood was seen in the discharges. After the diarrhœa ceased she was unable to walk on account of weakness; this has been so great for the past six weeks that she has been obliged to remain in bed. For the past eight days she has had an increasingly sore throat. Except for this, her only complaint during the past three months has been of weakness. Before this illness she weighed 100 pounds. At Christmas, 1910, she weighed 90 pounds, now 80 pounds.

On examination the girl was very pale and sallow. The pupils were normal. There was no glandular enlargement. The left tonsil was covered by a dirty whitish membrane which also extended down the uvula and a short distance on the soft palate. The heart's dulness extended 1 cm. outside the nipple line in the fifth space, corresponding with the limit of the palpable apex impulse. A systolic murmur, loudest in the pulmonary area, was audible over the whole precordia. Over the lower half of the sternum a high-pitched diastolic murmur was also heard. The systolic murmur was clearly audible in the right back. Visceral examination was otherwise negative. The urine averaged 30 ounces in 24 hours, with a gravity between 1012 and 1014, slightest possible trace of albumin, no casts. For three weeks the patient ran a continuous fever averaging 103° the first, 102° the second, 101° the third. The pulse ranged throughout in the neighborhood of 120.

At the beginning of the illness the red cells numbered 1,200,000; two weeks later they had fallen to 750,000. The white cells were in the neighborhood of 2000; hæmoglobin at first 30%, later 20%. The polynuclear cells were persistently diminished in number; 40% were found at entrance and 25% in the latter portion of the illness. The absolute number of lymphocytes was never far from normal. The blood-plates numbered 50,000 on the 23d of January, 60,000 on the 29th. The stained smear showed practically normal red cells without any achromia and with but slight deformities.

In three out of four examinations during three weeks no nucleated red cells were found. At the fourth examination two normoblasts were seen. The throat showed invariably negative cultures for Klebs-Löffler and for the organism of Vincent's angina. The prevailing germ was the staphylococcus. The Wassermann reaction was negative. In the third week of the illness the membrane grew smaller and smaller and finally disappeared, leaving a dark colored excavation.

Diagnosis: Clearly we are dealing with a profound anæmia, the cause of which is very obscure. It does not appear that the prolonged diarrhœa with which her illness began was itself the cause of the anæmia, since the latter has persisted and advanced although the bowels have been regular for the past three months. Probably the diarrhœa was a symptom of an already existing anæmia. A hæmolytic anæmia due to septic absorption from the throat was also considered, but on more careful study it appeared that this local inflammation in the throat did not show itself until the patient had been suffering for some weeks from a disease which in all probability was anæmia. The throat membrane, like the diarrhœa, is best explained as the result rather than the cause. The age of the patient, the rapid progress of the symptoms, and the character of the blood all point to the type of anæmia known as aplastic.

Prognosis and Treatment: Aplastic anæmia carries a worse prognosis than the ordinary types of pernicious anæmia. There are rarely any periods of remission, as in the latter disease, and the duration of life is rarely more than six months. Treatment has so far proved unavailing. This little girl died on the 11th of February and autopsy showed a bone marrow almost pure white with marked fatty degeneration of the heart, and some hypertrophy and dilatation of that organ.

Case 99. A banker, fifty-eight years old, of good family and previous history, of good habits except for very rapid eating, is seen May 1. About a year ago his remaining teeth, which were few and inefficient, were extracted. False teeth were procured, but he has not been able to wear them on account of sore mouth, apparently subjective rather than objective. His wife states that for at least a year he has not been as vigorous as formerly. He says that during the summer his sleep was poor, without apparent cause. In June he took a vacation, but returned weaker than when he went, complaining of poor appetite and digestion, nausea, and occasional vomiting. The vomitus was not characteristic. He did not gain in the summer and his complexion became sallow. November 15, after drinking moderately of cider, diarrhœa came on; and between this date and February he lost fifty-one pounds in weight. Soon after this the diarrhœa was checked, and since the last of February loss in weight has been trifling, though his color and strength have continued to fail. His digestion is better, and he takes a fair amount of food. His main complaint at present is of weakness, lassitude, and shortness of breath on slight exertion. No fever has been noted. Several examinations of the urine have been made, all negative until a week ago when a single specimen showed specific gravity 1008, albumin $\frac{1}{10}\%$, some pus — not enough, it was thought, to account for the albumin — and a few hyalin casts. The twenty-four-hour amount is not known, but is believed by the attending physician to be increased. Pulse 84, regular, feeble, and of low tension. Temperature 99.6°. Marked pallor of skin and mucous membranes, with a yellowish tinge. Soft systolic murmurs are heard in the mitral and pulmonic areas; the heart is not enlarged. There is slight œdema of the ankles. Visceral examination is otherwise negative.

1. What chronic diseases are most prone to appear at fifty-eight? Cancer, pernicious anæmia, arteriosclerosis and its results.
2. What seems to account for the diarrhœa? (See diagnosis.)
3. What is the significance of a urine of low specific gravity? Profuse ingestion of fluid, nervousness, chronic interstitial nephritis, diabetes insipidus.

Diagnosis: Yellowish pallor, weakness, and dyspnœa, with no obvious disease of the heart or lungs, suggest grave anæmia. The urinary abnormalities are too recent to account for the symptoms. Gastro-intestinal symptoms such as are here described often occur in anæmia. The cider had probably no effect. Blood examination revealed typical pernicious anæmia.

Prognosis and Treatment: (see above, Case 96).

Case 100. A business man of twenty-six, of good family history, habits, and previous health, is seen in November, 1900. In the latter part of July, after golf, which he plays with the left hand down, he suffered during part of the night from severe pain throughout the left arm. A month later he had a similar attack, not following golf, and the pain then recurred nightly after 1 A.M. During the daytime the pain was only occasional. About eight weeks ago he began to have "indigestion" — i.e., a sensation as if food was arrested on its way to the stomach, which, apparently, managed it well enough after its arrival. About two weeks later a dry, harassing cough came on, troubling him most when on his back or right side, but also excited by taking food. Soon after this he noticed that the veins in his neck swelled up when he stooped over, and he had to have his head higher at night. Lately he has had severe night sweats. Pain, especially in his left arm, dysphagia, and dry cough are now the most prominent symptoms. There has been some loss of weight, more of strength.

He is pale, nervous, and excited. The pulse and respiration are normal in the erect position. Lying down causes marked dyspnoea. Toward the root of the neck on the left side discrete, nontender lumps can be felt, without attachment to or reddening of the skin. Percussion is dull over the upper sternum, without prominence or pulsation. The radials are synchronous and equal in volume; the pupils are equal; there is no tracheal tug. Thoracic and abdominal exploration is otherwise negative. So also the urine. The axillary and inguinal glands are not enlarged. Hæmoglobin 70%; reds 4,500,000; whites 22,300.

1. What is the significance of pain which is worse at night? Congestive pain, such as tooth-ache, the pain of certain headaches, and of syphilitic periostitis, is increased by a position that brings more blood to the part. Any relatively mild pain is felt more severely at night because of the absence of distraction.
2. What temperature should you expect in this case? Slight, irregular fever.
3. What importance has the age of this patient? Cancer and aneurism are unlikely at twenty-six.

Diagnosis: Pain in the left arm, dysphagia, dyspnoea, dry cough, lumps in the neck, dulness behind the sternum, marked increase of leucocytes are the important data here, and all suggest aneurism or mediastinal tumor. Aneurism is rare at twenty-six years and does not produce leucocytosis or lumps in the neck. Hodgkins' disease and leucæmia are identical but for the blood. In this case the blood showed lymphocytes 65.2%, polynuclears 34%, eosinophiles and myelocytes each 4%. Lymphatic leucæmia is accordingly the diagnosis. Most of the lymphocytes were of the small type.

Prognosis: The prognosis of the small cell type of lymphoid leucæmia is distinctly more favorable since the introduction of the X-ray treatment. But even without that, I have known patients to live two years or more in entire comfort and actively at work. Probably the majority even of the so-called chronic cases terminate within two years. As a rule the lymphoid type of the disease tends to run a much shorter course than the myeloid. Cases of acute lymphoid leucæmia are not uncommon, while cases of the acute myeloid form of the disease are very rare.

Spontaneous improvement without any treatment whatever has been repeatedly observed and may bring the patient back apparently to perfect health with a normal blood picture. Such waves of improvement, however, are never lasting and occur only in a small minority of cases without treatment. Improvement is much more likely to occur following the administration either of arsenic or of X-ray treatment. If arsenic is given, it may be administered precisely in the manner suggested under the treatment of pernicious anæmia.

X-ray exposures are of the greatest value in delaying the course of the disease, though no cures have occurred, and we have no good reason to expect any, since the X-ray acts only by destroying the leucocytes in the spleen, marrow, and elsewhere, and has, so far as we know, no action upon the unknown cause which brings about the over-production of cells. Much more satisfactory results are obtained if we can secure the services of an experienced operator, practiced in the application of X-rays to this particular disease. Daily

exposures are in my experience most likely to produce improvement. As to the details of the type of tube and methods of protecting the skin, I do not feel competent to speak. Each operator has his own methods in these respects. Treatment should be continued until the blood picture is markedly improved. It may then be given less frequently and finally discontinued, but as a rule must be kept up at least once a week during the patient's lifetime. The portions to be exposed are the spleen when this is enlarged, the superficial lymph glands if these are hypertrophied, and in all cases the marrow of the long bones.

CHAPTER IX.

NOTES ON DRUG THERAPY.

I HAVE neither time, space, nor knowledge for anything like adequate treatment of the subject of drug therapeutics. I wish to comment briefly on the following topics:

- (1) The present outlook for drug therapy.
- (2) Placebos.
- (3) The homœopathic principle and modern dosage.
- (4) The existing use of drugs at the Massachusetts General Hospital.

I.

A new era in clinical therapeutics dawned with the researches of Ehrlich, which culminated in the appearance of salvarsan. Great as is the importance of this drug as a cure for syphilis, it seems to me still more important as a triumph of systematic experimental work. Salvarsan was not discovered by accident; on the contrary, it represents the result of the 606th attempt to make synthetically just such a substance. Atoxyl was a much earlier link in the same chain of constructive endeavors.

Pretty much all of the drugs in the pharmacopœia were stumbled upon more or less accidentally. Not one, so far as I know, was elaborated as the result of pure synthetic chemistry searching for a substance that would kill a particular microörganism without injuring the other tissues of the body. This is apparently what salvarsan does.

It has a part that kills — “a business end” — a part that fatally fits (like a key in a lock) into the vitals of the *Treponema pallidum* (and certain allied organisms), but not into any one of the normal cells of the human body. Its poisonous arsenic passes by every cell in the body except the organism of syphilis; for that it is fatal, for the rest harmless.

Now it certainly seems reasonable to believe that a scientific method that can build up *one* such compound can elaborate others of something like equal efficiency in other diseases. Already (as Dr. Flexner announced last May, at the Association of American Physicians) attempts are being made to graft onto hexamethylentetramine (which seems to penetrate into the tissues where the poison of poliomyelitis abides) some complex which will do for infantile paralysis what salvarsan does for syphilis. Vistas loom up of pure chemical therapy, scientific, rational, free from harmful by-effects.

Most of the powerful germicides, such as mercury, have disagreeable, sometimes serious, by-effects. The organic preparations, such as thyroid extract and diphtheria antitoxin, are not chemically pure, and the ill effects which they sometimes produce will doubtless continue to plague us until we can isolate some crystallizable substance as the "active principle" of the mass.

Up to the epoch opened by salvarsan, all of the most valuable remedies discovered during the last thirty years were derived from the animal body and were therefore biological rather than purely chemical products. Salvarsan is free from most of the defects of these substances, and our knowledge of its structure and properties is far more complete.

I look for a great increase in the number of such drugs within the next twenty years, and consequently for a rebirth of our waning faith in the pharmacopœia. Never, I believe, has the outlook for purely chemical therapy (as opposed to surgery and other mechanical types of cure) been as good as at the present time.

II.

Placebos — inert or harmless drugs used for their mental effect, as a means of suggestion — are doubtless destined to be extensively employed by the medical profession in the future as in the past. Their value consists, of course, in the fact that through them the physician can fool the patient, often for his own good. But whether one objects (as I do) to this form of lying or not, one cannot but see a gain in the fact that these placebos no longer fool as many physicians

as was once the case. When a doctor uses a useless drug he is far more apt nowadays to know just what he is doing than he was twenty years ago. He knows his placebos from his physiologically active drugs. He knows just when he is lying and when he is playing a straightforward part.

Some are even more sanguine than this and venture to believe that placebos are not only recognized but repudiated by physicians. Thus the Journal of the American Medical Association states (September 16, 1911, page 990), presumably through its Council of Pharmacy:

“The specious argument that the public ‘calls’ for worthless things and that it is legitimate to supply this want, was long ago repudiated by the medical profession.”

Obviously the argument — that the public demands to be drugged — is the only respectable argument for the use of placebos, and if the medical profession has repudiated it in theory, perhaps before long it will repudiate it in practice and give no more placebos. In the revision of the present year 154 such useless articles were dropped from the pharmacopœia (*American Druggist*, August 28, 1911), leaving only about 850 in the approved list. When several hundred more have been dropped, we shall begin to get down towards the level of genuine efficiency and sober science in the field of drug therapy.

Meantime it is, as I believe, a great gain that doctors are beginning themselves to distinguish between useful and useless drugs, avoiding the extremes of nihilistic or expectant treatment on the one side and credulous over-drugging on the other.

III.

The homœopathic principle “*similia similibus curentur*” and the minute doses still used by a minority of homœopathic practitioners, are paralleled closely by the vaccine therapy (especially tuberculin therapy) which has come into vogue in the past decade. It is agreed, as it seems to me, by most of those who have considered these facts, that the homœopathic dogma is *sometimes* true. On the other hand, most honest homœopaths admit that, since in many instances they can find no way to apply their principle, they must often

fall back on the use of ordinary drugs in ordinary doses used as the rest of us use them — independent of any dogma.

This clears the ground and points, I hope, to the ultimate extinction of *sectarianism* in medicine. *Specialism* even in therapeutics is always legitimate, but since we all admit nowadays that homœopathy sometimes works and all admit that it doesn't always work, we can get down to business. We can proceed with open minds to determine when treatment based on the principle of vaccine therapy (and of homœopathy) is effective and when it fails. Having no prejudice either for or against any special method of using drugs, we can impartially examine all methods.

Meantime there is, of course, no sense in pretending that "alkaloids" and "alkaloidal therapy" have any superiority over methods. Castor oil, digitalis, thyroid extract, diphtheria, antitoxin, mercury, aspirin, iron are no worse for not being alkaloids.

Dosage: As I see cases with other physicians and ask them about their treatment, I often hear that they are giving "a little" of half a dozen drugs in some tablet supplied by a well-known drug firm — a little iron, a little arsenic, a little nux vomica, a little digitalis, diuretin, and what not. As a rule the dosage is so small that the remedy cannot possibly have any effect. To give small doses because they are small is as stupid as to give large doses because they are large. The only sensible dose is the dose which is found to accomplish the desired result. If you are giving a diuretic you should give enough to produce diuresis or to prove that you cannot get diuresis with that drug and had better try some other. Drugs should be given with definite indications, such as pain or constipation, and pushed till the symptom is alleviated or the remedy proved useless.

It is difficult to accomplish this when we are giving from three to six drugs at once. Hence the disadvantages of polypharmacy. To find out whether you are getting good from a certain drug it is usually necessary to avoid giving simultaneously another drug intended for the same purpose. To combine digitalis and strophanthus, iron and arsenic, makes effective dosage very difficult.

I have no doubt that certain drugs — especially hypnotics and anodynes — act better in combination, but I believe that no one should use them in combination until he has had extensive experience with the individual members of the combination, used separately.

To use one drug for one purpose, to increase the dose until you have accomplished that purpose or satisfied yourself that you cannot accomplish it with that drug, and then to stop it — such methods make, I believe, for better results in therapy.

IV.

Some years ago I asked two of my neighbors at a dinner of the Association of American Physicians to write on their dinner cards a list of the drugs which they personally believed to be valuable, excluding placebos. Their list and the one which I wrote at the same time were so nearly identical that I became interested to ask other physicians whether their working list of remedies was approximately the same and equally small.

Accordingly I have prepared the following list which contains the drugs actually used by the internists connected with the Massachusetts General Hospital in the treatment of their patients during the last four years. It includes the ingredients of about 50,000 prescriptions.

I find that the drugs of this particular list divide themselves conveniently into the following groups:

- (I) Specifics.
- (II) Drugs used for cardiac weakness and to combat dropsy.
- (III) Drugs used for pain.
- (IV) Drugs used for sleep.
- (V) Purgatives and laxatives.
- (VI) Drugs used in diarrhoea and enteritis.
- (VII) Drugs used for their supposed effect on gastric function.
- (VIII) Miscellaneous.

I have omitted all the drugs used as general or local anæsthetics, antiseptics, and local disinfectants in the surgical wards (e.g., ether, corrosive sublimate, aristol, zinc oxide), all those used for their local action as emetics or in diseases of the skin or mucous membranes (e.g., lanolin, Dobell's solution, starch, talc powder, ichthyol, chrysarobin, etc.), or for local action in the genito-urinary tract, the eye, the nose, etc.

Leaving these out of account I have listed *those drugs which seem to be of special value in internal medicine.*

DRUGS USED IN THE MEDICAL WARDS OF THE MASSACHUSETTS GENERAL HOSPITAL.¹

- | | |
|---|--|
| <p>I. <i>Drugs Believed to Have Each a Specific Action in Relation to a Particular Disease.</i></p> <ol style="list-style-type: none"> 1. Quinin in malaria. 2. Salvarsan in syphilis. 3. Mercury in syphilis. 4. Potassic iodid² in syphilis. 5. Iron in chlorosis.³ 6. Diphtheria antitoxin. 7. Tetanus antitoxin. 8. Antimeningococcus serum. 9. Staphylococcus vaccine (in certain local infections). 10. Typhoid vaccine (prophylactic action only). 11. Small-pox vaccine (prophylactic action only). 12. Thyroid extract in myxœdema. 13. Pancreatic extract in certain types of pancreatic disease. <p>II. <i>Drugs Used to Improve Circulation and Remove Œdema.</i></p> <ol style="list-style-type: none"> 1. Tincture of digitalis⁴ (prepared with 70% alcohol and physiologically tested). | <ol style="list-style-type: none"> 2. Digipuratum. 3. Strophanthin (crystallized) (occasionally). 4. Strychnin (and nux vomica). 5. Nitrites (nitroglycerin, amyl nitrite, and erythrol tetranitrate). 6. Aromatic spirits of ammonia (occasionally used). 7. Camphorated oil (subcutaneously) (occasionally used). 8. Squills and apocynum (occasionally used). 9. Adrenalin (occasionally used). 10. Atropin (occasionally used). 11. Theobromin sodiosalicylate, caffein sodiosalicylate. 12. Calomel (as diuretic). 13. Theocin. 14. Caffein (or theobromin). 15. Pilocarpin. 16. Magnesium sulphate.⁵ <p>III. <i>Drugs Used to Relieve Pain.</i></p> <ol style="list-style-type: none"> 1. Opium (morphin, heroin, codein, Dover's powder, etc.). 2. Phenacetin (usually with caffein). |
|---|--|

¹ This list represents only the usage of the last few years. Certain drugs used but a few times, or for purposes chiefly of experiment, are omitted. No one but myself is responsible for the omissions or the inclusions.

² Not against the Treponema but against the products of the disease (gummata, etc.)

³ Iron in various forms is also used for other kinds of anæmia by some members of the staff.

⁴ Certain other preparations are occasionally used.

⁵ In saturated solution, as derivative.

3. Sodium salicylate (also aspirin and novaspirin).
4. Cocain.
5. Acetanilid.
6. Pyramidon.

IV. *Sedatives and Hypnotics.*

1. Veronal (and veronal sodium).
2. Trional.
3. Bromid (sodium and potassium chiefly).
4. Alcohol.
5. Chloral (and chloralamid).
6. Hyoscin hydrobromate.
7. Paraldehyde (occasionally used).
8. Sulphonal (occasionally used).
9. Amylene hydrate (occasionally used)
10. Tincture of hyoscyamus (occasionally used).
11. Apomorphine (also used as emetic).

V. *Laxatives and Purgatives.*¹

1. Sodium phosphate.
2. Cascara.
3. Calomel.
4. Magnesium sulphate.
5. Aloes, strychnin, and belladonna.
6. Castor oil.
7. Carlsbad salts (artificial).
8. Compound cathartic pill.
9. Compound licorice powder.
10. Elaterium.
11. Sodium and potassium bitartrate. (Seidlitz powder).
12. Croton oil.
13. Compound jalap powder.
14. Agar-agar.
15. Senna.
16. Rhubarb.
17. Podophyllum.
18. Vichy.
19. Magnesium citrate.

VI. *Drugs Used to Check Diarrhœa and Alleviate Intestinal Ulceration.*

1. Bismuth salts.
2. Camphor, opium and tannin pill.
3. Tannigen and tannalbin.
4. Silver nitrate (as injection).
5. Ipecac (for amœbic dysentery).
6. Salol.

VII. *Drugs Used for Supposed Gastric Action.*

1. Sodid bicarbonate.²
2. Lime water.
3. Dilute hydrochloric acid.
4. Gentian (often with nux and other bitters).
5. Peppermint.
6. Ginger.
7. Red pepper.
8. Olive oil.
9. Orthoform.
10. Milk of magnesia (occasionally used).
11. Tannate of orexin (occasionally used).
12. Beta-naphthol (occasionally used).
13. Bismuth salts (occasionally used).
14. Resorcin (occasionally used).

Miscellaneous.

1. Arsenic (Fowler's solution).
2. Ergot.
3. Ox-bile.
4. Oxygen.
5. Urotropin.
6. Thymol.
7. Pelletierin, aspidium, etc.
8. Hydrastis (occasionally used).
9. Valerian (occasionally used).
10. Asafœtida.
11. Terpin hydrate.
12. Calcium lactate.
13. Sweet spirits of nitre.
14. Benzoate of sodium.
15. Hypophosphites (rarely).

¹ Arranged approximately in order of the frequency of their use.

² Also used extensively to combat acidosis in diabetes, etc.

COMMENTS.

1. On the specifics I have little to say. Some would include here the use of ipecac in amœbic dysentery, of pollantin in pollen fever, of urotropin in the bacteriuria of typhoid and antivenene in snake poisoning. The latter is omitted because I have no personal experience with it; the others because I do not believe their action strictly specific.

2. In the digitalis group, I believe that the preparations called "digitalin," "digalen," and "digitoxin" are of very limited value because their action is so uncertain. The same is true of most infusions and tinctures. Standardized tinctures (70% alcohol) and standardized solid extracts such as digipuratum are the best members of this group.

There seems to me no good reason for using the tincture of strophanthus or any strophanthus preparation except strophanthin, since this is by far the purest and most reliable preparation. Convallaria, Apocynum, and Euonymus should, I think, be dropped from use. The same is true of spartein.

Strychnin, though doubtless used too much, has (in my hands) stood the test of time as the best heart tonic in fevers and in neurasthenic states. The nitrites are of use (in my experience) solely in angina pectoris and spasmodic dyspnœa. They ought not to be used for lowering arterial tension or as a cardiac stimulant, though many give them with these purposes in view.

Among the diuretics I have found diuretin more reliable than theocin, caffein, or any other officinal diuretic. It should be given in doses larger than most practitioners use, 15 to 30 grains every four hours.

Calomel (2 or 3 grains every four hours for three days) is a most valuable diuretic, far too much neglected and second only to diuretin. The potassium diuretics are too mild to be worth trying in dropsical states. Regarding magnesium sulphate as a remedy for dropsy, it should be unnecessary to repeat the long known fact that *only in concentrated solution is it of value*. To give it with abundant

water (as for constipation) spoils its water-sucking property in dropsy.

Pilocarpin and hot-air baths remove practically nothing but water and are therefore properly included in this group.

3. Of the drugs used for pain, insomnia, constipation, and diarrhoea I have nothing special to say. Of the drugs supposed to help stomach troubles I have very little confidence in any but the alkalis (such as sodic bicarbonate) which relieve the pain of peptic ulcer and hyperchlorhydria, carminatives (pepper, ginger, peppermint) which bring up "wind," and bitters which stimulate appetite.

Pepsin I believe to be useless and hydrochloric acid nearly so. The drugs formerly used to check fermentation are falling into disrepute, since we have begun to realize that "gas" and "wind" in the stomach are generally due to cribbing, rarely to fermentation. In genuine fermentation such as complicates gastric stasis from any cause, lavage is far better than any drug.

4. I have rarely been sure of any benefit from *arsenic* in the diseases usually treated with it (chorea, asthma, leucæmia, pernicious anæmia, secondary anæmia). In chlorosis iron is almost invariably better.

Ergot's great usefulness after parturition has led many to use it to check hæmorrhage in general. But ergot stops bleeding only through its action on the uterus, and other drugs check hæmorrhage only when we can apply them directly (adrenalin in nosebleed). Pulmonary, gastric, intestinal and vesical bleeding are not in my opinion helped by any internal medication.

Oxygen has had an enormous use in my field of work. At one time hardly a case was allowed to die in the Massachusetts General Hospital without an attempt to stave off death through "inhalations" of oxygen. I have never seen it do any good except in a single case of moribund phthisis; there the agonizing dyspnœa was promptly and completely relieved. In pneumonia it is, I think, valueless.

INDEX.

	PAGE
Abdominal aneurism	241
Abdominal distention	76
Abdominal tumors	156
in children	151
Abdominal relaxation, how secured	81
Abolition of reflexes	56
Abscess, amœbic, of liver	46
cervical	78, 191
of brain	49
of lung	84
of spleen	27
Acne	89
Acute gastro-enteritis	104
Adenoids	246
Adolescence, albuminuria of	265
Age, in myocardial weakness	166
Albuminuria, causes of	257
of adolescence	265
Alcohol	56
cause of fever	58
Alcoholic mania	204
neuritis	204
Alcoholism	58, 204
Alkalies	282
Alkaloids	277
Altitude, high, in secondary anæmia	260
Amœbic abscess of liver	46
Amœbic dysentery	54
Amyl nitrate	182
Amyloid kidney	153
Anæmia	221
aplastic	267
arsenic in	264
high altitude in secondary	260
iron in secondary	260
pernicious	159, 261, 269
secondary	257
Anæsthesia, risks of	29
Aneurism	114, 181, 183, 191, 213, 214, 254, 272, 283
abdominal	241
Angina, Ludwig's	78, 191
pectoris	128, 178, 180

	PAGE
Anti-syphilitic treatment in tabes.....	197, 203
Antivenene.....	281
Aorta, dynamic.....	212
Aortitis, syphilitic.....	41
Apex, impulse, displacement of.....	189
Aphonia.....	183
Aplastic anæmia.....	267
Apoplexy.....	56
Appendicitis.....	72, 73, 133
fear of.....	104
Apprehension.....	139, 230
Arm, swelling of.....	253
Arsenic.....	282
in anæmia.....	264
Arteriosclerosis.....	128, 156, 165, 171, 184, 221, 234
cerebral.....	193
general.....	180
(shock).....	221
with involution psychosis.....	238
Arthritis, atrophic.....	255
Arythmia, significance of.....	137
Asthma.....	191
bronchial.....	164, 191
renal.....	164
Asthmatic tendency.....	171
Athlete's heart.....	174
Atrophy.....	207
progressive muscular.....	208
Atrophic arthritis.....	255
Autointoxication.....	225
Babinski's reaction.....	51
Bathing in typhoid.....	13
Bed-sores.....	14, 40
Biliary colic.....	196
Bismuth, subcarbonate of.....	30
Blood pressure, measurement.....	194
to reduce.....	147
Blood, transfusion of.....	29, 259
Bradycardia.....	178
Brain abscess.....	49
tumor.....	49, 227
Bronchial asthma.....	191
breathing.....	187
Bronchitis, in relation to disease of heart.....	171
Bronchus, empyema rupturing into a.....	83
Cachectic purpura.....	257
Caffein.....	281
Calcic oxalate.....	138
Calomel.....	218

	PAGE
Cancer.....	117, 119, 120, 125, 139
gastric.....	29, 97, 221
hepatic.....	91
of colon.....	29
of duodenal papilla.....	111
of hepatic flexure of colon.....	106
of lung.....	189
of pancreas.....	123
of splenic flexure of colon.....	109
Cardiac attacks, defective conductivity in.....	37
hypertrophy and dilatation.....	149
impulse, absent.....	186
impulse, displaced.....	44
lesion, uncompensated.....	166
overstrain.....	174
stimulation in nephritis.....	148
weakness in nephritis.....	146
Carminatives.....	282
Carotids, significance of throbbing.....	163
Catarrhal jaundice.....	119, 120, 125
Cellulitis.....	35
Cerebral arteriosclerosis.....	193
embolism.....	169
hæmorrhage.....	171, 215, 228
syphilis.....	51, 56, 228
Cervical abscess.....	191
glands, tuberculosis of.....	79
tumors.....	49
Cheyne-Stokes breathing.....	86
Chicken-pox.....	89
Chills, causes of.....	68
Cholecystitis.....	133
perforative.....	121
Chronic nephritis.....	35
glomerulo-nephritis.....	145
interstitial nephritis.....	149
Circulation, drugs used to improve.....	279
Circumstances, in myocardial weakness.....	167
Cirrhosis, anti-syphilitic treatment in.....	114
Cirrhotic liver.....	113, 124, 128
Climate, in phthisis.....	28
Coley's toxins.....	188
Colic, biliary.....	196
lead.....	196
varieties of.....	111
Colitis, ulcerative.....	154
Colon, cancer of.....	27, 106, 109
ulcer of.....	29
Coma.....	34, 56
Common colds.....	221
Compression, cerebral.....	56

	PAGE
Concussion, cerebral.....	56
Congenital cystic kidney.....	156
Congestion, pulmonary.....	181
Constipation.....	139
Constitutional symptoms, importance of, in phthisis.....	25
Contracted stomach in gastric ulcer.....	135
Convalescence in phthisis.....	25
Convallaria.....	281
Coronary sclerosis.....	177, 180
Cough, causes of.....	64
Crile, G. W.....	245
Crises, vascular.....	52
Cyanosis, causes of.....	70
Cystic kidney, congenital.....	156
Cystitis.....	37, 241
Delirium.....	79
Dementia paralytica.....	205, 234
Diabetes, mellitus.....	56, 166, 246
Diarrhœa, drugs used to check.....	280
Diazo reaction.....	44
Diet.....	126
in diabetes.....	248
in peptic ulcer.....	30
in pneumonia.....	17
in typhoid.....	13
Digestion, in phthisis.....	253
Digipuratum.....	281
Digitalis group.....	281
Dilatation of heart, acute.....	163
Diphtheria, laryngeal.....	191
Dipsomania.....	205
Diseases wrongly diagnosed as "grippe".....	101
Distention, gaseous.....	161
Diuretics, in nephritis.....	147
Diuretin.....	281
Dosage.....	277
Drugs, having specific action.....	279
in neurosis.....	142
in phthisis.....	28
in traumatic neurosis.....	216
of special value in internal medicine.....	279
used at Mass. General Hospital.....	279
used for gastric action.....	280
used to check diarrhœa, etc.....	280
used to improve circulation.....	279
used to relieve pain.....	279
Duodenal ulcer.....	114, 127
Dynamic aorta.....	212
Dysentery, amœbic.....	54
Dyspœna, causes of.....	189
inspiratory and expiratory.....	191

	PAGE
Eczema	89
Effusion, pleuritic	190
Egophony	83
Ehrlich, Paul	274
Elephantiasis	251
Emaciation, with jaundice	97
Embolism, cerebral	169
pulmonary	70
Empyema	66
rupturing into a bronchus	83
tuberculous	84
Encephalopathy, lead	49
Endocarditis, malignant	17, 37, 63, 68
septic	258
Enemata	29, 209
Enteritis, acute gastro-	71, 104
tuberculous	21
Eosinophiles	79
Epidemic cerebrospinal meningitis	86
Epigastric pain	128
Epilepsy	56, 224
Ergot	282
Eruptions, generalized pustular	89
Erysipelas	36
Examination, methods of	218
sputum	44
Exophthalmic goitre	243
Expectoration, bloody	180
Eyelids, tremor of	224
Eyestrain	232, 246
Face, swelling of	253
Facies, significance of peritoneal	129
Family history, importance in phthisis	24
Fatty cirrhotic liver	119
Fecal impaction	137
Ferric chlorid test	224
Fever, causes of continued	22
Fibroid, uterine, suppuration in	81
Flexner, Simon	275
Flexner's serum	87
Foci of tuberculosis, significance of	25
Forchheimer	244
Functional heart, after typhoid	160
tachycardia	217
Furunculosis	89
Gall-bladder, inflammation of	121
Gall-stones	116, 119, 124, 125, 133
Gas poisoning	56
Gaseous distention	161

	PAGE
Gastric cancer	97, 221
crisis	196, 202
disease	203
neurosis	135
ulcer	114
ulcer, perforation of	129, 133, 135
Gastro-enteritis, acute	71
Generalized tuberculosis	43
General miliary tuberculosis	39
peritonitis	72, 76
Gout	128
Graves's disease	54, 242
Grippe	14
diseases wrongly diagnosed as	101
Hands, painless swelling of	149
Hæmaturia	144
Hæmorrhage, cause of	242
cerebral	171, 228, 215
from œsophageal varices	113
pulmonary, significance of	25
subcutaneous	258
Headache, causes of	49
Heart, acute dilatation of	163
athlete's	174
bronchitis in relation to disease of	171
functional, after typhoid	160
trouble, neurotic type	175
Hepatic cancer	91
cirrhosis	128
enlargement	97
toxæmia	56
Heredity in myocardial weakness	166
Hodgkins' disease	272
Homeopathic principle	276
Hookworm disease	54
Hydrochloric acid, free	101
Hydrothorax	190
Hyperacidity, urinal	232
Hyperchlorhydria	197, 234
Hypernephroma	151, 158
Hypnotics	280
Hysteria	56, 105, 223, 234
Icterus	123
Impetigo contagiosa	89
Impulse, cardiac, absent	186
displacement of apex	189
Income, importance in phthisis	24
Infections, pyogenic	94
Inguinal neoplasm	251

	PAGE
Insomnia, causes of	58
Intestinal disease	203
obstruction	121, 133
Intracranial trauma	11
Iodid, administration of potassic	60
Ipecac	281
Iron	282
in secondary anæmia	260
Jackson, J. M.	244
Jaundice, catarrhal	119, 120, 125
with emaciation	97
Jugular pulsation	178
Kernig's sign	52, 79
Kidney, amyloid	153
congenital cystic disease of	151, 156
floating	133
mobile right	236
tumors of	151
Knee-jerks	92
reinforcement of	204
Laryngitis, acute	191
Laxatives	280
Lead neuritis	199
colic	196
encephalopathy	50
Leg, swelling of	251
Lenharz treatment	31
Leucæmia, lymphoid	54, 271
Leucocytosis	83
Leucocyte count, significance of	19
Libman	65
Liver, amœbic abscess of	46
cirrhotic	113, 119
smooth	119, 204
syphilis of	124
Ludwig's angina	78, 191
Lumbar puncture	40
Lung, abscess of	84
amount involved	25
cancer of	187, 189
signs in phthisis	24
tuberculosis of	79
Lymphangitis	251
Lymphoid leucæmia	54, 271
Macular rash	59
Magnesium sulphate	281
Malaria	19, 22, 49, 94, 129, 197, 246

	PAGE
Malignant disease of the lung	187
of thymus gland	253
Malignant endocarditis	37, 63, 68
Malingering	243
Mania, alcoholic	204
Manipulation in angina pectoris	182
Massage, dangers of in phlebitis	72
Masturbation	246
effects of	232
Maternal anxiety	232
Mayo clinic	98, 107
Meat, in nephritis	147
Mediastinal tumor	272
Meningismus	50
Meningitis	34, 43, 52, 87, 105, 225
epidemic cerebrospinal	86
tuberculous	48, 79
Mercury, administration of	60
Micturition, causes of frequent	232, 262
significance of nocturnal	149
Migraine	145
Mitral stenosis	169
Mode of onset, significance of	51
Morphia, producing fecal movement	109
Mortality in appendicitis	73
Moving sick patients	37
Mucus in stomach content	102
Murmurs, causes of presystolic	68
Muscular irritability	207
tenderness	44
weakness	200
Myocardial weakness	163, 165, 172, 174, 178
Myositis	201
Myxœdema	236, 238
Neoplasm, inguinal	251
Nephritis	54, 105, 221, 226
acute	16
chronic	35
chronic glomerulo-	145, 175
chronic interstitial	149, 161
puerperal	258
Neurasthenia	54, 234
Neuritis	196, 204, 207
lead	199
Neurosis	135
fear	139
traumatic	214
Neurotic vomiting	209
Night sweats	64
Nitroglycerin	182
Nutrition in phthisis	27

	PAGE
Obesity	238
Obstruction, intestinal	121, 133
Occupation in phthisis	27
Œdema	242
pulmonary	163, 178
Odors in the breath	169
Oliguria, causes of	72
Onset, significance of mode of	51
Opium poisoning	56
Order of symptoms, significance of	34
Orthopnœa	189
Otitis media	19
Overeating	131
Overstrain, cardiac	174
Pain, after meals	131
epigastric	128
in chest	19
in hepatic enlargement	119
in left axilla	18
in pulmonary diseases	185
in sternum	191
in trunk and limbs	92
paroxysmal epigastric	234
substernal	131
thoracic, drugs used to relieve	279
worse at night	271
Pallor, significance of	246
Pancreas, cancer of	123
Pancreatitis	133
Paralysis, types of facial	169
Parotitis	16
Pectoral muscle, irritability of	44
Pelvic sepsis	209
Pepsin	282
Peptic ulcer	121, 122, 133
diet in	32
duration of	30
medical treatment	31
operation in	30
relapse in	30
transformed into cancer	30
Perforated gastric ulcer	29
Perforative cholecystitis	121
Periostitis	42
Peritoneal facies, significance of	129
Peritonitis	71, 104
general	72, 76
tuberculous	18, 64
Pernicious anæmia	261, 269
Phlebitis	251
left femoral	70

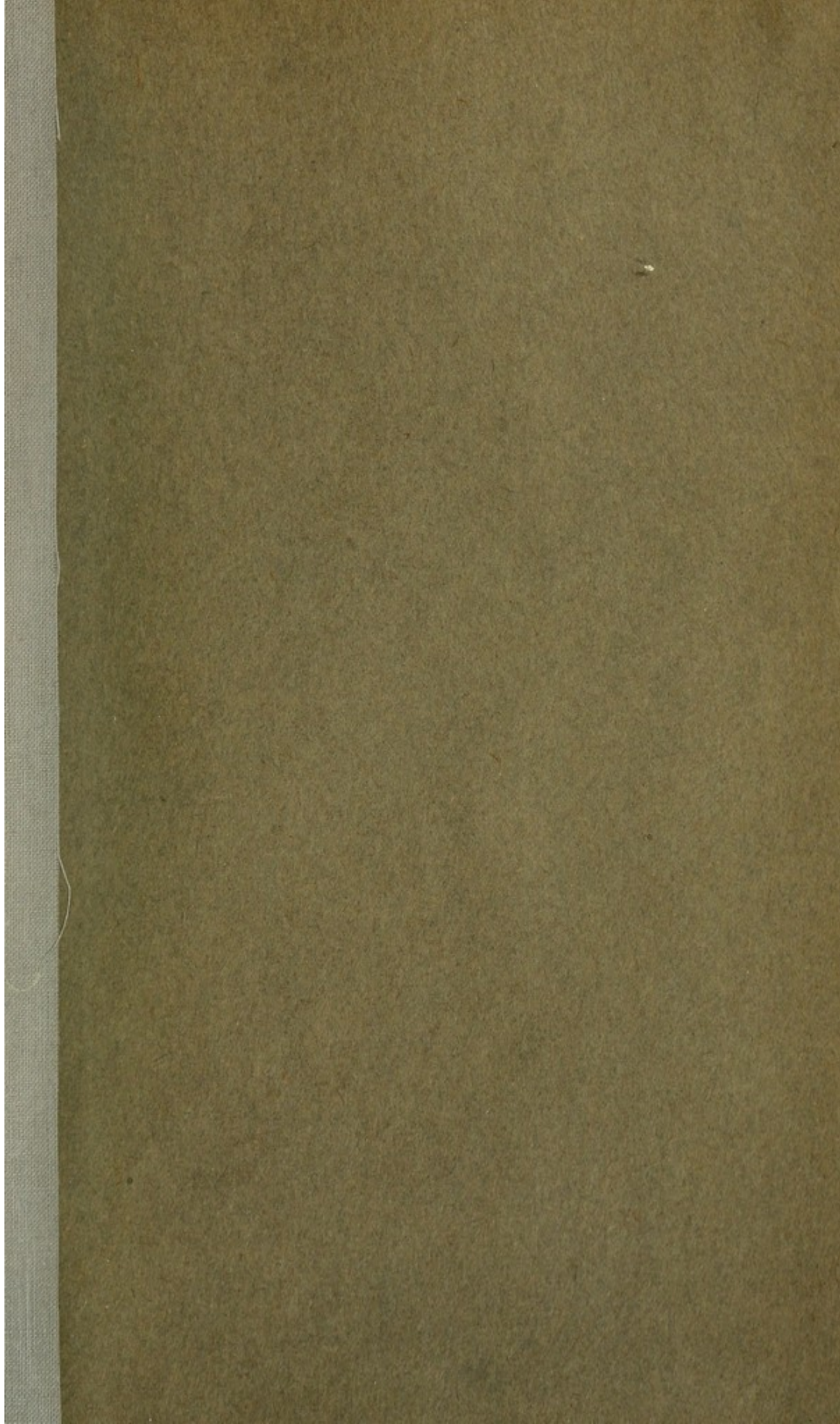
	PAGE
Phthisis	21, 27, 54, 84, 241, 243
climate in	26
cure of	26
drugs in	28
nutrition in	27
occupation in	27
Pilocarpin	282
Placebos	275
dropped from pharmacopœia	276
Pleuritic effusion	190
Plumbism	72, 129, 130
Pneumohydrothorax	185
Pneumonia	15, 58, 164, 188
central	191
diet in	17
hypostatic	181
unresolved	84
Poisoning, gas	56
opium	56
ptomaine	87
Pollantin	281
Polypharmacy	277
Potassic iodid, administration of	60
Prævertebral glands, sarcoma of	240
Pressure, measurement of blood	194
Prostate, irritable	143
Psychoneurosis	193
Psychosis, involution, with arteriosclerosis	238
Ptomaine poisoning	87
Puerperal nephritis	258
Pulmonary congestion	181
embolism	70
hæmorrhage, significance of	25
œdema	163
signs, importance of	44
Pulmonic second sound, accentuated	187
Pulsation, epigastric	212
jugular	178
significance of cervical	163
Puncture, lumbar	40
Pupils, indications of	49
Purgatives	280
Purpura, cachectic	257
Pyogenic infections	94
Pyrexia, causes of	106
Rash, macular	59
Rattle in throat, significance of	163
Reflexes, abolition of	56
Relapse in peptic ulcer	30
Respiration, causes of diminished	149
significance of sterterous	171

	PAGE
Rest cure	142
Retinal changes, in nephritis	146
Retroversion of uterus	209
Rheumatism, diseases diagnosed as	200
Risks of anæsthesia	29
Rogers-Beebe serum	244
Rose spots	68
Salvarsan	62, 274
Sarcoma of prævertebral glands	240
Sclerosis, coronary	172, 177, 180
Secondary anæmia	257
Sectarianism in medicine	277
Sedatives	280
Sepsis, acute	251
general	22
pelvic	209
streptococcous	34
urinary	36
Septicæmia	64
Septic endocarditis	258
Serum, Flexner's	87
Rogers-Beebe	244
Sodic bicarbonate	32, 282
Sparteïn	281
Specific action, drugs having	279, 281
Spleen, abscess of	29
Splenic enlargement, causes of	114
Spondylitis	240
Sputa, significance of bloody	185
Sputum examination	44
Starvation	209
Sternum, pain in	191
Stokes-Adams syndrome	177
Stomach, cancer of	29
contracted, in gastric ulcer	136
trouble in elderly persons	128
tube	129
ulcer of	29
Stools, causes of tarry	114
Strabismus, causes of	39
Streptococcous sepsis	34
Strophanthin	281
Strychnin	281
Sunstroke	56
Supinator longus test	200
Symptoms, significance of order of	34
afternoon	224
Syncope	56
Syphilis	20, 54, 58, 98, 119, 120, 172
cerebral	51, 56, 228

	PAGE
Syphilis, general condition in.....	59
of liver.....	124
Syphilitic aortitis.....	41
Tabes.....	129, 133, 196, 202, 205, 208, 234
Tachycardia, functional.....	217
Temperament in phthisis.....	24
Temperature, causes of subnormal.....	106
Tenderness, causes of muscular.....	207
other types.....	207
over shins.....	238
Tertian malaria.....	94
Theocin.....	281
Thrombosis.....	68
venous.....	80
Thymus gland, malignant disease of.....	253
Tongue, significance of, in disease.....	107
Towns-Lambert treatment.....	206
Toxæmia, hepatic.....	56
Toxins, Coley's.....	188
Tracheitis.....	191
Transfusion of blood.....	29, 259
Trauma, intracranial.....	13
Traumatic neurosis.....	214
Tremor of eyelids.....	224
Trichiniasis.....	91
Tuberculosis.....	15, 20, 43, 64, 154, 188, 221
foci, significance of.....	25
general miliary.....	39
generalized.....	43
medical or surgical treatment in.....	20
of lung, meninges, and cervical glands.....	79
Tuberculous empyema.....	84
enteritis.....	23
meningitis.....	48
peritonitis.....	64
Tumors, abdominal.....	156
abdominal, in children.....	151
cerebral.....	49, 227
cervical.....	49
mediastinal.....	272
renal.....	151
Typhoid.....	13, 19, 23, 45, 52, 58, 64, 83
bathing in.....	15
diet in.....	15
Ulcer, duodenal.....	114, 121, 122, 127
gastric.....	29, 114, 197
gastric, perforation.....	27, 129, 133, 135
of colon.....	29
Ulceration, drugs used to alleviate intestinal.....	280

	PAGE
Ulcerative colitis	154
Uræmia	52, 56, 81, 133, 145, 228
Urinal hyperacidity	232
Urinary sepsis	36
Urine, causes of sugar in	165
of low specific gravity	269
Urotropin	281
Uterine fibroid, suppuration in	81
Uterus, retroversion of	209
Varicella	89
Varices, œsophageal, hæmorrhage from	113
Varicocele, relation to sexual excesses	212
Varicose veins	205
Variola	89
Vascular crises	52
Vomiting, causes of stercoraceous	107
neurotic	209
of greenish fluid	196
Wassermann reaction	59
Weakness	163
muscular, causes of	200
myocardial	165, 178
Weight, cause of loss of	178
increase in	180
Wheezing	191
"Wiring" in aneurism	184
X-ray exposure	272

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