On Certain Features in the Prognosis of Pneumonia.

BY

WILLIAM OSLER, M.D.,
PROFESSOR OF MEDICINE, JOHNS HOPKINS UNIVERSITY, BALTIMORE, MD.

FROM

THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES,

JANUARY, 1897.
ON CERTAIN FEATURES IN THE PROGNOSIS OF PNEUMONIA.

BY WILLIAM OSLEB, M.D.,
PROFESSOR OF MEDICINE, JOHNS HOPKINS UNIVERSITY, BALTIMORE, MD.

The higher the mortality the more difficult is it to estimate in any disease the value of the various elements of prognosis. Pneumonia is certainly the most fatal of the acute infections of adults in temperate climates. No other disease kills from one-fourth to one-third of all persons attacked. Very elaborate statistics have been collected showing the death-rate of the disease. These have been grouped together by Wells,¹ of Chicago, in one of his excellent papers on pneumonia. Of 233,730 cases the mortality was 18.1 per cent.

Unfortunately it is chiefly from hospitals that we have to gather our facts. S. H. Dickson, whose essay on "Pneumonia" is a storehouse of valuable information, comments on "the remarkable equality of this proportional mortality in peace and all comfort, in hospitals of wealthy communities, in the field of destructive war, and in hospitals and barracks the emphatic seats of destitution, privation, exposure, and neglect."

A few years ago I collected the statistics of mortality from some of the leading hospitals of this country. In the Montreal General Hospital the death-rate was 20.4 per cent.; at the Charité Hospital, New Orleans, 38 per cent.; at the Pennsylvania Hospital, Philadelphia, 29.1 per cent.; at the Boston City Hospital, 29.1 per cent.; at the Massachusetts General Hospital, 25 per cent. These figures are very much the same as those in the large English hospitals, given recently by Dr. Leech.² Thus at St. Thomas's for eleven years the mortality was 20 per cent.; at St. Bartholomew's Hospital for fifteen years the mortality was 18.6 per cent.; at the Edinburgh Royal Infirmary, 27.1 per cent.; at the Manchester Royal Infirmary, 28.8 per cent.

Of the first 124 cases of croupous pneumonia admitted to or developing in the Johns Hopkins Hospital, 37 died, a mortality of 29.8 per cent.

The mortality in private practice, though high, does not reach the figures which I have just given. The only large statistics available on this point are those in the "Report of the Collective Investigation Committee of the British Medical Association," which was drawn chiefly

¹ Journal of the American Medical Association, 1892.
² Medical Chronicle, September, 1894.
from private practice. The mortality was only 12 per cent. I wish there could be a collective investigation on this point from the practices of eight or ten of the leading family physicians in New York, Philadelphia, Boston, and Baltimore. I feel sure that the figures in adults would show a very high death-rate. It would scarcely be fair to ask consultants to speak of their figures, as they see only the more severe forms. I should say the mortality among the cases which I see with physicians is at least 50 per cent.

Among the circumstances influencing the prognosis some are general, as age, race, and habits; others special, as the degree of involvement of the lung, the fever, complications, etc.

Age is a very important factor. As Sturges remarks, the old are likely to die, the young to recover. Series of cases are quoted in Wells's paper in which the mortality in children has ranged from 1.9 to only 3.3 per cent. On the other hand, above sixty years of age the death-rate is very high, reaching 50 to 60, or even 80 per cent. So fatal is it that to die of pneumonia in this country is said to be the natural end of elderly people.

The disease appears to be much more fatal in the negro than in the white. The very high rate of mortality from the disease in the South is stated to be due to this cause, but of the first 124 cases at the Johns Hopkins Hospital 23 were in colored patients, with 6 deaths, a mortality of 26 per cent., against 101 whites, with 31 deaths, a mortality of 30.6 per cent.

Previous habits of life and the condition of bodily health at the time of the attack form the most important factors in the prognosis of pneumonia. In analyzing a series of fatal cases one is very much impressed with the number of cases in which the organs show signs of degeneration. In 25 of my 100 autopsies at the Montreal General Hospital the kidneys showed extensive interstitial changes. Individuals debilitated from sickness or poor food, hard drinkers, and that large class of hospital patients, composed of robust-looking laborers between the ages of forty-five and sixty, whose organs show signs of wear and tear, and who have by excesses in alcohol weakened the reserve power, fall an easy prey to the disease. Very few fatal cases occur in robust, healthy adults. Some of the statistics given by army surgeons show better than any others the low mortality from pneumonia in healthy picked men. The death-rate in the German army in over 40,000 cases was only 3.6 per cent.

Apart from certain complications the fatal event in pneumonia may result from a gradual toxæmia, or from mechanical interference with the respiration and circulation.

The toxæmia is the important element in the disorder, to which in the majority of cases the degree of pyrexia and the consolidation are
entirely subsidiary. The poisonous features may develop early and cause from the outset severe cerebral symptoms, and they are not necessarily proportionate to the degree of lung involved. There may be severe and fatal toxæmia with consolidation of only one-half a lobe, while a patient with complete solidification of one lobe or of a whole lung may from beginning to close of the attack have no delirium. Many of the cases which show the most profound toxæmia present variations from the typical picture; thus there may be no cough, no expectoration, very slight fever, and no leucocytosis. In the following cases the clinical features were rather those of a profound intoxication than of any local disorder:

*Pneumonia beginning with very acute delirium simulating insanity.*

November 7th, 8.15 p.m., I was sent for to see E. H., aged twenty-eight years, a large, able-bodied man, who had been brought by his family from Pittsburg, Pa., where he had been in the West Penn Hospital for eight days. He had been in Chicago at the World’s Fair and had seemed quite well. He left Chicago on Monday evening, October 30th. On the train he was noticed to be behaving strangely, and had delusions that there were numerous train-robbers, and that there were a number of persons following him. His conduct disturbed the passengers so much that at Pittsburg he was taken in a patrol-wagon to the West Penn Hospital. There he became actively delirious and was placed in a strait-jacket, after having made a futile attempt to cut his throat. He was evidently very ill, though he had no cough, and there was not much fever, though he complained a good deal of pain in the side. His relatives removed him yesterday. He stood the journey well. When I saw him he seemed rational; respirations were very hurried, 55 to the minute. The color was bad; the pulse was 120, and feeble. He had just been carried up and was in a condition of a good deal of excitement. He told a very pitiful story of his capture, as he called it, at Pittsburg, and how the people had conspired to put him in the hospital. The temperature was 99.5°. It really seemed as if the condition was some form of acute insanity, which opinion was strengthened, of course, by the fact that on a former occasion he had had some slight mental aberration. He begged me not to examine the chest, as he was quite exhausted.

8th. The patient had a fairly good night; morning temperature was 100.2°, pulse 128; the finger-tips a little cyanosed. Examination of the chest revealed to my surprise almost complete consolidation of the left lung, with dry, intense tubular breathing. The only resonance was in the infraclavicular region, where the note was Skodaic in character. He was very much quieter, the delirium had entirely disappeared, and he took his medicine and food well. He complained of a great deal of pain, and he had a quarter of a grain of morphine at night. He was given whiskey and Dover’s powder.

9th. The patient seemed to be doing fairly well. There was no delirium. The temperature in the morning was a little over 100°, and in the evening 101.2°, the first time that it had registered above 101°. The lung was completely consolidated to the top; intense blowing breathing everywhere. He had no cough, and no expectoration. The pulse was a little
more rapid in the evening, 130; respiration at 60. The tongue was not dry, and in the evening he expressed himself as feeling more comfortable.

10th. This morning, at 8.15, the temperature was 99.5°; the pulse 118, and of rather better volume. He had dozed at intervals through the night, but not having as much sleep as he wished, and he still complained of a good deal of pain. He seemed, however, quite rational. He had taken his food very well. There was no cough. The color of the lips was good; that of the finger-nails a little livid. Respiration 60 per minute. He had not taken the ammonia during the night, and he was ordered full doses of strychnine. His condition, on the whole, though still critical, seemed more comfortable, and he said that the pain was much less. About eleven o'clock he became a little more delirious, the nurse was called, and he was found perspiring profusely, and had become very cyanosed. The respirations became more rapid, he became unconscious, and within a little more than an hour from the onset of the serious symptoms death took place.

Toxic pneumonia, without cough, expectoration, or high fever. Mr. G., aged about sixty-six years, seen February 8, 1894, with Dr. Alan P. Smith. The patient was a very vigorous, healthy man, who, during the winter, had been somewhat overworked. On the evening of February 3rd he attended a concert at the Peabody Institute, which was rather long, and he complained a good deal of being tired. On Sunday, February 4th, he did not take his breakfast as usual, and toward the middle of the day he had a chill, not, however, of long duration or of great severity. He complained of a good deal of pain in the back and aching in the joints and in the legs, so that it was regarded as possibly a case of influenza. He had no cough, no shortness of breath, and the fever was very moderate. He had pain across the lower part of the back, which was exaggerated on deep inspiration.

On Tuesday and Wednesday he was weak and prostrated, complaining a good deal of the muscular pains. The temperature was not above 100.5°; the pulse was good; there was neither cough nor expectoration. The lungs were examined, but no changes were found. He seemed, however, very ill, and he had occasionally a little wandering.

On the morning of Thursday, the 8th, Dr. Smith discovered dulness at the base of the right lung. Throughout the day he became much worse, more delirious, and the pulse feeble. When I saw him late in the afternoon the pulse was 132, the beats irregular in volume and intermittent. The heart-sounds were clear, but had a somewhat foetal rhythm. The skin was moist and he was sweating profusely. The tongue was dry. He had been wandering a good deal, but he talked to me rationally. The lungs were clear in front; behind over the middle of the scapula there was flatness which extended as far as the posterior axillary fold, with tubular breathing and numerous râles. There were no râles at the base of the other lung, and the respirations were only 28. There was not, nor had there been, any respiratory distress.

The abdomen was not distended, the spleen not enlarged. There had been from the start neither cough, nor expectoration, nor had there been any special dyspnea. The patient had had an objection to stimulants, but he was ordered at once whiskey and brandy in full doses, ammonia, and for twenty-four hours moderate doses of digitalis.

Throughout the night his condition improved materially and on the morning of the 9th the pulse was 98, regular, full, and of fair tension.
He had had some delirium, but seemed altogether better, and he had taken his nourishment and stimulants well. The temperature was 100.5°. In the evening he did not seem quite so well; the temperature rose to 101.8°, the highest point it had reached; the pulse was more rapid; he had had more delirium; the tongue was dry; and he looked badly; still no cough, no expectoration. The consolidation had extended a little further into the axilla.

10th. Patient had a bad night, and had refused to take his food. The pulse had again become very rapid and irregular, and he seemed much more prostrated. Dr. Smith stayed the night with him, as he would only take the medicines from him. The pulse this morning is better, 116, of good volume, but occasionally drops a beat. He is rather drowsy, the respirations are 32, tongue dry, and he looks like a man in a condition of profound toxaemia. He sank gradually and died in the evening.

These two cases illustrate a type of pneumonia in which the general toxic symptoms overshadow entirely the local and more usual features of the disorder. These severer types are seen particularly in the epidemic form and in old people, and the toxaemia may be out of all proportion to the local disease.

Probably, too, the sudden and unexpected death in pneumonia may be attributed to the action of the specific toxins on the heart-centres, rather than on the muscular substance of the organ itself. This seems more reasonable than the former idea that it was the action of the high fever upon the myocardium. These cases are by no means uncommon, and one has always to be on the lookout. I have notes of three cases which I have seen within the past few years. In the first, massive pneumonia with great obscuration of the physical signs, owing to blocking of the bronchial tubes, death occurred quite unexpectedly on the sixth day; in the second, death occurred suddenly on the fourth day; and in the third case the patient died in collapse on the third day.

**Massive pneumonia; death on the sixth day.** Benjamin M., aged thirty-eight years, colored, hod-carrier, was admitted December 14, 1894, complaining of pain in the right side of the chest and cough.

He had been strong and well, with the exception of rheumatism at twenty-five years; he had a chancre in 1884.

On December 5th he caught cold, but kept at work for the two following days; on Monday, the 10th, he had a headache, and while still in bed was seized with severe pain in the right chest, followed almost immediately by a severe chill. The pain, which was sharp and stabbing, grew steadily worse and was aggravated by coughing. The expectoration was profuse. He had been in bed since the onset of the pain.

On admission the temperature was 104°, the pulse 130, the respirations 40. He was a large, powerfully built man, propped up in bed on his back; respirations shallow; no marked cyanosis. The mind was clear. Pulse was full, bounding, and slightly dicrotic; the tension was low. The expiration was interrupted by a slight jerking
cough. The percussion-sound on the right side of the chest in front was clear to the fourth rib; below this and over the left back it was dull. There was a distinct friction-rub heard in the right axilla and at the base. The breathing was nowhere typically tubular, but in the infrascapular space behind there was modified bronchial breathing. After coughing a few moist râles were heard. Tactile fremitus was present; the voice-sounds were nasal. The other lung was clear. The leucocytes were 10,200 per c.cm. The sputum was viscid, slightly rusty.

15th. The temperature kept uniformly between 103° and 104°; he was delirious; the pulse was about 120, respirations 48 to 50. The cough was very frequent and distressing. There was a tympanitic note at the right apex, shading into dulness, which extended over the whole of the rest of the lung. The friction-rub was loud in the axilla, where the respiration was distinctly tubular. At the base the breathing was feeble, and distinct tubular breath-sounds could be heard, except at one small spot just below the angle of the scapula. On the left side the breath-sounds were clear, with the exception of a few fine râles at the end of inspiration. The patient seemed to be doing very well. The leucocytes sank on the 15th to 6000 per c.cm. There was albumin in the urine in considerable amount, and a large number of granular casts.

On the morning of the 16th, at 8 o'clock, there were urgent dyspnœa, great rapidity of the heart's action, and liquid râles everywhere over the left lung and in front upper lobe of the right lung. He sank and died in a few hours.

Abstract of Autopsy (No. 602). Anatomical diagnosis: massive pneumonia affecting right lung; occlusion of bronchus (by fibrinous plug) going to the lower lobe; acute serofibrinous pleurisy; fresh patch of pneumonia in left lung; general pneumococcus-infection.

The right lung, with the exception of the anterior edge, extending backward a quarter of extent of the entire lung and the apex, was consolidated. The solidified portions were granular, reddish; the apex much oedematous. The main bronchus going to the lower lobe of the lung was filled with a fibrinous plug which completely obliterated the lumen. The pleura was covered with a fibrinous exudate.

In the left lung there was a small area of consolidation in the lower lobe. There was no endocarditis. The heart-flesh was friable. The kidneys looked a little swollen and the cortices were coarse. Cultures from the organs and from the blood of the heart showed colonies of the miccrococcus lanceolatus.

In the following case death occurred suddenly on the fourth day:

Lobar pneumonia; sudden death on fourth day. A. P., aged twenty-two years, colored, driver, admitted May 21, 1894, complaining of cough. The family and personal history was very good.

Three weeks ago he was struck on the back of the ear with a glass bottle. The wound bled profusely. A week later he had fever and headache, and was cupped on the back of the neck.

He was seen at the dispensary two days ago, at which time he had no fever, and the examination was negative.

Yesterday, the 20th, about 6 P.M., he had a shaking chill, followed by fever and a sharp pain in the left side. The pain was very severe through the night, and was much worse when he drew a deep breath. He had a cough with blood-tinged expectoration.
The temperature on admission was 103° and rose at 2 p.m. to 104°; the respirations were 56 and shallow; the pulse 128, soft, full, and regular.

The examination showed dulness in the lower lobe of the left lung, with distant but not distinctly tubular breathing. The heart-sounds were clear. The sputum was rusty and contained numerous diplococci. There were albumin in the urine and a few granular and hyaline casts. The leucocytes on the 21st were 50,000. He was ordered ice poultices and Dover's powder at night.

22d. The temperature had been remarkably uniform, scarcely varying half a degree from 104°. The signs of consolidation in the lower lobe of the left lung were more marked. The heart-sounds were clear; the first a little reduplicated, and the second pulmonic was accentuated. There was a soft, systolic murmur in the pulmonary area. The spleen was not palpable. The urine was a little smoky, and a few blood-cells were seen, but no tube-casts. The sputum was mucopurulent. The leucocytes were 20,000 per c.cm.

On the 23d the temperature had risen nearly to 105°; the pulse was 116, regular. At the time of the morning visit he seemed doing very well. On the evening before, he had an attack of hicouche and had been very restless. The mind was clear, and there did not appear to be any extension of the local condition. I noted, however, that Skoda's resonance was very marked at the apex in front. He had been taking small quantities of whiskey and aromatic spirits of ammonia. In the evening, without any warning, or without any special aggravation of his symptoms, the nurse noticed that he was gasping for breath, and in a few moments he died before the house-physician could be summoned.

Abstract of Autopsy (No. 521). Anatomical diagnosis: croupous pneumonia; acute nephritis; fatty degeneration of heart-muscle.

The left lung was voluminous; the pleura of the lower lobe was covered with fibrin. The lower lobe was consolidated throughout, finely granular, and on section grayish-red in color. The upper lobe was also consolidated, particularly in the anterior half.

The right lung was voluminous; the upper and lower lobes emphysematous. The lower lobe is slightly granular, on section red, and in a condition of beginning hepatization. The heart-muscle showed microscopically much fat. The kidneys were swollen, mottled on the surface, and microscopically showed signs of acute nephritis.

Quite serious collapse-symptoms may occur early in the disease, even within twenty-four hours. The following is one of the most striking cases I have seen, in which the patient had three attacks of cardiac syncope, the last of which proved fatal on the third day of the disease. I give the notes just as I dictated them to my secretary on returning from the consultation:

Pneumonia; fatal collapse on the third day. June 27, 1893, 12.45 a.m., I saw, with Dr. King, Mrs. S., aged forty-four years, a healthy, well-nourished woman, who had a severe chill on Saturday night, 24th, and who since has had signs of pneumonia at the right base, with high fever, reaching at times to 106°. There has been no albumin in the urine, the respirations have not been above 48, she has had very little cough, and her general symptoms have not been alarming; but on three occasions she has had serious collapse-symptoms, the
first on Sunday night, which lasted for only a short time, the second early this morning, at about 3.30, and the other about an hour ago. I found her in the following condition:

She lay on her back with the eyes open and fixed; the pupils small, and did not react well to light. The color of the face was fairly good; the lips red, not cyanotic. She did not reply to questions and seemed completely oblivious to her surroundings. The respirations were hurried, 40 to the minute. The appearance was rather that of a nervous or hysterical attack than of severe collapse. At first she did not look very ill, except that the sockets of the eyes were rather dark and a little sunken. The face, however, was not at all pinched. The pulse was 132, small, and easily compressible; when first felt it was quite regular. She had just been given a hypodermic injection of a drachm of brandy, and she was ordered hypodermics at once of ether and strychnine. I remained about half an hour, during which time she changed remarkably. The unconsciousness persisted; she moved the mouth somewhat, and it twitched a little. The limbs were motionless. The heart-sounds at first were perfectly clear and distinct, without murmur. Gradually they became feeble; the pulse rose to 140, was small, and beats were occasionally dropped. The color of the hands was at first good, the nails alone perhaps a little cyanosed. Gradually there was a suffusion of the fingers and then of the hands, and within less than half an hour after I saw her the pulse could not be felt at the wrist, and the heart-sounds were extremely feeble—only just audible. The respirations did not materially increase, but they became a little noisy, and her face changed somewhat in expression. It really looked as if the end was imminent.

P. S.—It was; she died at 2.30 P.M.

Mechanical interference with respiration or circulation is a very much less frequent cause of death. The interference may be the gradual exclusion of the air, by the filling up of the follicles, or the capillaries in extensive territories may be compressed. These factors occur together, and the depressing element of great loss of blood-serum, upon which Bollinger lays stress, must also be taken into account.

Very large areas of the breathing-surface may be cut off without seriously disturbing the cardio-respiratory mechanism. In no way is this more strikingly shown than by the condition of the patient after the crisis. On one day with a lung consolidated from apex to base, the respirations at 60 to 65, the pulse 120, and the temperature between 104° and 105°, the patient may seem in a truly desperate condition, and it would appear rational to attribute the urgent dyspnoea and the slight cyanosis to the mechanical interference with the interchange of gases in the lungs. But on the following day the dyspnoea and the cyanosis may have disappeared, the temperature is normal, and the pulse-rate greatly lessened, and yet the physical condition of the lungs remains unchanged. We witness no more striking phenomenon than this in the whole range of clinical work, and its lesson is of prime importance in this very question, showing that the fever and the toxins rather than
the solid exudate are the essential agents in causing the cardio-respiratory symptoms.

Of course, there are cases in which the exit of air is gradually and effectually shut off by progressive consolidation until ultimately a point is reached in which the patient is simply smothered, and literally dies from want of breath. It is difficult to say how much breathing-area is needed to maintain life. That a man can get along with very little, if the removal takes place gradually, is shown by cases of progressive tuberculosis of the lungs. In pneumonia recovery is not infrequently seen after consolidation of one lung; rarely after consolidation of one lung with one lobe of the other. One occasionally meets with cases in which both lungs are almost completely solidified. In Case 49 of my series of autopsies the left lung, with the exception of the anterior border, was in a state of uniform red hepatization; while the right was in a state of gray hepatization, with the exception of a still smaller portion of the anterior margin. In these cases the dyspnoea is usually urgent and distressing, and the cyanosis early and pronounced; while the cerebral features of the disease may be completely absent. But even here we must be on our guard against a too mechanical conception of the process. While theoretically we may suppose great obstruction to the pulmonary circulation to exist in consequence of the compression of the alveolar capillaries by the exudate, it has been shown by the well-known experiments of Welch that it is exceedingly difficult to raise the blood-pressure in the pulmonary artery by cutting off territories of the circulation in reality much more extensive than are ever involved in pneumonia.

As I have already mentioned, in speaking of the remarkable phenomena associated with the crisis, additional factors must be considered, namely, the weakening influence of the fever on the heart-muscle and the depressing effect of the toxins on the cardio-respiratory centres. This explains in part, too, why we do not get such satisfactory results from venesection in pneumonia as in similar conditions of dilatation of the heart with cyanosis, in emphysema, arteriosclerosis, and valvular disease. While it is rare in the one to see even copious venesection followed by relief, in the others the good effects are often most striking. The toxæmia outweigths all other elements in the prognosis of pneumonia; to it (in a gradual failure of strength or more rarely in a sudden death, as in the cases here given) is due in great part the terrible mortality from this common disease, and unhappily against it we have as yet no reliable measures at our disposal.
The American Journal of the Medical Sciences.
MONTHLY, $4.00 PER ANNUM.

With 1897 the American Journal of the Medical Sciences enters upon its seventy-eighth year, still the leader of American medical magazines. In its long career it has developed to perfection the features of usefulness in its department of literature, and presents them in unrivaled attractiveness. It is the medium chosen by the leading minds of the profession on both sides of the Atlantic for the presentation of elaborate Original Articles; its Reviews are noted for discernment and absolute candor, and its Classified Summaries of Progress each month present an epitome of medical advances gleaned by specialists in the various departments. According to unquestionable authority, "It contains many original papers of the highest value; nearly all the real criticisms and reviews which we possess, and such carefully prepared summaries of the progress of medical science and notices of foreign works that from this file alone, were all other publications of the press for the last fifty years destroyed, it would be possible to reproduce the great majority of the real contributions of the world to medical science during that period."

The Medical News.
WEEKLY, $4.00 PER ANNUM.

By keeping closely in touch with the needs of the active practitioner, The News has achieved a reputation for utility so extensive as to render practicable its reduction in price from five to Four Dollars per annum. It is now by far the cheapest as well as the best large weekly medical journal published in America. Employing all the recognized resources of modern journalism, such as the cable, telegraph, resident correspondents, special reporters, etc., The News furnishes in the 28 quarto pages of each issue the latest and best information on subjects of importance and value to practitioners in all branches of medicine. Its numerous departments are designed to subdivide and present its material in the most attractive and convenient manner.

In a word The Medical News is a crisp, fresh, weekly newspaper, and as such occupies a well-marked sphere of usefulness, distinct and complementary to the ideal monthly magazine, The American Journal of the Medical Sciences.

The Year-Book of Treatment for 1897
Gives a classified summary and review of the real advances in treatment made during 1894 in all departments of the science of medicine. Price, $1.50; or in combination with either or both the above journals, 75 cents. Ready early in 1897.

The Medical News Visiting List for 1897
Published in four styles: Weekly, dated, for 30 patients; Monthly, undated, for 120 patients per month; Perpetual, undated, for 30 patients weekly per year; Perpetual, for 60 patients weekly per year. The first three styles contain 32 pages of important data and 160 pages of assorted blanks; the 60-patient perpetual consists of 250 pages of blanks. Price, each, $1.25. In combination with either or both above periodicals, 75 cents. Or, Journal, News, Visiting List and Year-Book, $8.50. Thumb-letter index for Visiting List, 25 cents extra.

Lea Brothers & Co., Publishers, 706, 708 & 710 Sansom St., Phila. (11th Fifth Ave., cor. 18th St.), N. Y.
Clinical Lecture.

MITRAL STENOSIS—SUDDEN DEATH—BALL THROMBUS IN THE LEFT AURICLE.

(Clinical Remarks, Johns Hopkins Hospital, Jan. 13th, 1896.)

BY

WILLIAM OSLER, M.D.

Professor of Medicine, Johns Hopkins University.

Sudden death in mitral stenosis is very much less frequent than in aortic valve disease, and the cause which carried off the little girl of whose case I shall speak to-day is among the rarest of the complications of chronic valve lesions. I will ask Mr. Day, the Clinical Clerk in Ward G., to first read an abstract of the history.

"Mabel M., aged 20, was admitted Dec. 15th, complaining of swelling of the legs and shortness of breath. She knows nothing of her family history.

"Personal history. She had diphtheria and scarlet fever when nine years of age. She had a discharge from the ears when she was about thirteen, and ever since has had "catarrh of the head," as she calls it. She began to menstruate at her thirteenth year. She was always well and strong, but for a year or more she had been short of breath on exertion. For the past two years she had been employed in a book-bindery, where part of her occupation was working a machine with her feet.

"Present illness. About two months ago, while wearing a pair of tight shoes, she noticed a swelling beginning at the shoe tops. This gradually ascended to her hips. Then the back began to ache, and there was slight swelling in the lower part of the spine. On close inquiry she confesses that she has been for a long time short of breath on any such exertion as climbing the stairs or walking fast, and she has sometimes felt faint. The dyspnoea has been growing worse for the past few months, and in walking a square she would have to stop and rest. Lately she has had headache, and on waking in the morning the eyes are puffy. She has had loss of appetite and the bowels are irregular.

"Present condition. Patient does not look more than fourteen or fifteen years of age. She is well nourished, has a rather high colour, the cheeks are red, and the lips a little cyanotic. The facies is distinctly luetic—saddle nose, projecting forehead. There is cloudiness
of the right cornea, and the upper central incisors are somewhat peg-shaped.

"Inspection of the chest showed a heart impulse in the fourth and fifth interspaces, the maximum in the fifth, 11 cm., from the mid-sternal line. The relative dulness was at the upper border of the third rib. On palpation there was a thrill at the apex, which varied a good deal in intensity. On auscultation the first sound was very snapping at the apex, and preceded by a rough, harsh, pre-systolic murmur, and there was a soft blowing systolic murmur passing towards the axilla. The first sound had a very sharp valvular character. The pre-systolic murmur was lost at the mid-axilla. There was a good deal of echoing over a limited area in the fifth space. In the second and third left intercostal spaces the second sound was very much accentuated. The second aortic sound was relatively feeble.

"The liver was enlarged, and could be felt 6 cm., below the ribs in the mid-sternal line. The legs were a good deal swollen. The urine contained a small quantity of albumin and a few hyaline casts."

During her stay in hospital she improved somewhat; the dropsy disappeared, the heart's action became slower, and she became very much more comfortable, though she still had the flushed suffused facies.

I saw her on Jan. 7th, and she seemed very well. The pulse was regular, and the heart's action seemed quite natural. At 4.30 A.M., on the 8th the nurse found her very cyanotic; she gave a gasp or two and died in a few moments.

Let me first call your attention to this drawing, which was made by Mr. Broedel, of the heart in situ, in which you see that almost the entire exposed portion was made up of the right auricle and ventricle; only a small portion of the apex of the left ventricle is apparent. It was noted particularly, too, that the auricular appendix of the left auricle was not visible. The heart, as you see, presents the usual anatomical features associated with an extreme grade of mitral stenosis. The mitral valve segments are thickened and adherent, the chordae tendineae greatly shortened, and the orifice just admits the tip of my index finger. There is no fresh endocarditis. The left ventricle is relatively small, the right ventricle very large, and the walls greatly hypertrophied. The right auricle, too, is a very capacious chamber with relatively thick walls. The left auricle is also very large, the endocardium very opaque, and the walls greatly thickened.

The most remarkable feature in the case is this firm ball-thrombus, which lay loose in the left auricle, occupying the funnel-shaped space leading to the mitral orifice. It is ovoid, measuring about 3 cm., in
length and at one end is roughened, indicating an area of attachment. Beyond the venous engorgement of the viscera there were no other features of special interest. There were no lesions of congenital syphilis.

There can be but little doubt, I think, that the sudden death in this case was due to the dislodgement of the thrombus and the plugging by it of the narrowed mitral orifice, so that she really died of embolism of the left auriculo-ventricular orifice.

I call to mind another instance of sudden death due to embolism of one of the cardiac orifices. In a child aged three and a half years, (whose case I reported in the *Journal of Anatomy and Physiology*, 1880,) there was a striated myo-sarcoma of the left kidney, which had extended into the renal vein and inferior vena cava; portions of the sarcomatous thrombus had become detached, and a mass 2.5 by 1.2 cm., had plugged the tricuspid orifice, and a mass the size of a hazel-nut the orifice of the pulmonary artery.

These free thrombi in the cardiac chambers are very rare. The only other case I have met with, which is reported in Vol. II., of the *Johns Hopkins Hospital Reports*, occurred in a woman, aged 55, with mitral stenosis, who died in the Montreal General Hospital. In her case the death was not sudden. The thrombus was the size of a small egg, 3.5 by 2.5 cm. In the article referred to I have dealt briefly with the forms of cardiac thrombi, and particularly with the cases which had been reported up to that date, only five in number. I have not looked over the literature recently, and no doubt many additional cases have since been added.

I will refresh your memory by enumerating the various forms of thrombi met with in the heart chambers.

1. Globular thrombi, with sub-trabecular ramifications, which are common in the auricular appendices and in the apices of the ventricles in cases of extreme dilatation.

2. Mural thrombi, usually laminated, which occur in the dilated auricles, particularly their appendices, in the ventricles in cases of fibrous myocarditis, and in aneurism of the heart.

3. The pedunculated polyp-like thrombus—a very rare form—met with usually in the auricles.

4. The ball-thrombus, free in the auricle, which constitutes the rarest form of cardiac thrombus.

In all probability in this case the ball-thrombus had previously been attached in the auricular appendix, and sudden death followed its dislodgement.
THE DIAGNOSIS OF MALARIAL FEVER.

BY

WILLIAM OSLER, M.D.,
OF BALTIMORE;
PROFESSOR OF MEDICINE IN THE JOHNS HOPKINS UNIVERSITY.

FROM
THE MEDICAL NEWS,
March 6, 1897.
THE DIAGNOSIS OF MALARIAL FEVER.¹

BY WILLIAM OSLER, M.D.,
OF BALTIMORE;
PROFESSOR OF MEDICINE IN THE JOHNS HOPKINS UNIVERSITY.

Among, a multitude of points of great interest in malarial fever the following may be emphasized:

1. It was the disease best known to the old Greek and Roman physicians, some of whom gave very clear clinical pictures of the chief varieties.

2. It remains, after two hundred years, the only acute infectious disease for which we have a positive specific.

3. It is the most important known disease due to protozoon parasites.

4. North of Mason and Dixon's line physicians are prone to diagnose malaria for other diseases; south of the line they are more prone to diagnose other diseases for malaria; in both regions it is a source of greater errors in vital statistics than any other affection.

It is not my intention to bore you with any detailed account of the hematozoon malariae, but I would remind you that there are three well recognized varieties. (1) The tertian organism, which matures in forty-eight hours and produces quotidian paroxysms if two groups are present, tertian if there be only one. This is the common parasite of the simple intermittent of the spring and early autumn. (2) The quartan parasite, which has a cycle of develop-

¹ Read before the Medical Society of the County of New York, February 22, 1897.
ment of seventy-two hours, and, if only one group of organisms is present, causes the regular quartan intermittent; if two or more groups are present, the paroxysms may be daily or every other day. The quartan parasite is a rare form. There have been only about fifteen cases among 1000 examined at my clinic. (3) The parasite of the irregular malarial fevers (estivo-autumnal form)—the remittent, continued, and pernicious types. This variety is smaller, less easily recognized, is not so abundant in the peripheral circulation, and, in the pernicious forms, may have curious seats of election, as in the brain or intestines. It is further characterized by the development of the crescents, a distinctive and characteristic form of great moment in diagnosis.

The recognition of the invariable association of these parasites with all forms of malarial fevers, of their etiological relation to the disease, and of their importance in diagnosis, has resulted from the labors of Laveran, and of his followers in Italy, and in this country. I cannot forbear a word of warm commendation of the way in which our Italian colleagues have persistently followed, and with such success, the many problems connected with the life history of the parasite. Anyone who wishes to keep abreast of the world's work on malaria must know the Italian literature. Much remains to be worked out—the relations of these varieties to each other, the significance of the crescents and of the flagellate form, the life history outside the body, and the mode of infection. Is it a facultative parasite? Is it possible that in infected districts persons may harbor it and show no symptoms, as is the case with the filaria and
the anchylostoma? How long may it lie *perdu,* so to speak, in the body?—surely questions enough to satisfy the cravings of the younger generation of workers.

A word before I pass on to the subject in hand. To obtain a correct knowledge of the forms of the malarial parasite requires months of careful study, with plenty of material. There have been papers published in this country and in India which bear ample evidence that the authors have approached the problem without due technical preparation. Two educational points are particularly to be noted: the changes which the red corpuscles undergo on a slide after twenty-four hours on the warm stage, and the irregular forms of vacuoles which are not infrequent in the red corpuscles in some fevers, particularly scarlet fever and measles. I would urge particularly as a *sine qua non* in all doubtful cases, and especially in supposed mixed infections, as with malaria and typhoid fever, that cover slip specimens of the blood be preserved, which, if necessary, could be submitted to the judgment of an acknowledged expert.

The recognition of malaria is fortunately in a large majority of all cases a very easy matter. The subject for discussion may be indicated under three headings: 1. The diagnosis of the regular malarial intermittent fevers. 2. The diagnosis of the irregular remittent and pernicious forms. 3. The spurious malaria of the Health Boards.

**I. THE SIMPLE INTERMITTENTS.**

The tertian infection, the only common one in this country, is characterized by a paroxysm developing
at the end of forty-eight hours, if a single group of parasites is present; at the end of twenty-four hours, if two groups exist, one of which maturates every day. There are three features by which an ague can be recognized:

(a) The character of the febrile paroxysms. Take any large series of carefully recorded temperature charts, such as have been made in my wards during the past seven years, and it is found that the duration of the pyrexia from the rise above $99^\circ$ F. to the fall to normal is from eleven to twelve hours, rarely shorter, still more rarely longer.

(b) The blood shows the hematozoa in all stages of development. Practically they are never absent in uncinchonized individuals. There is no leucocytosis.

(c) The administration of quinin checks the further development of paroxysms and causes a rapid disappearance of the parasites.

During last year I saw in private, or there were brought to my wards, cases with intermittent paroxysms of fever believed to be due to malaria, but which subsequently proved to be the following conditions: abscess of the liver, tuberculosis, influenza, gonorrhea, endocarditis, otitis media, gall-stone fever, post-partum anemia, typhoid fever, and septicemia. There are other affections, such as syphilis and many obscure septic infections, with which recurring chills may be associated. There are also remarkable cases of cryptogenetic septicemia with daily chills—cases

1See the Monograph by Thayer and Hewetson, "Johns Hopkins Hospital Reports," vol. v., and Dr. Thayer's article in vol. i. of the recently issued "American System of Medicine," by Loomis and Thompson.
in which tuberculosis and malaria can be almost positively excluded. Dreschfeld of Manchester has described a form of this as idiopathic intermittent fever of pyemic character. It must be confessed that the regularity of the chills, often of a quotidian or tertian type, and the obscurity of the cause, make the disguise very complete. The three points just referred to suffice, as a rule, to clear up the diagnosis. The length of the paroxysm in septic cases is rarely so long and not so fixed in recurring attacks. Shorter periods of pyrexia, six to eight hours, are the rule; occasionally they are longer, eighteen to twenty-four hours. This point, together with the presence of a leucocytosis, the great increase in the blood plates, the absence of the hematozoa, and the resistance to quinin, serve to exclude malarial infection. To one or two of these conditions I may refer briefly.

It is not sufficiently recognized in the profession, particularly in malarious regions, that pulmonary tuberculosis very frequently sets in with chills and fever. In Baltimore I not infrequently see cases in which the patient has been treated persistently with quinin, until the aggravation of the cough, or the occurrence of hemoptysis has aroused the suspicion that the lungs were affected.

Abscess of the liver is almost always at first treated for malaria. The recurring chills and fever, and the sallow tint, lead, not unnaturally, to this mistake, which is made even in regions in the North which are quite free from paludism.

Another condition of the liver is a common source of error, namely, gall-stone fever. I do not refer to the chill during the passage of the gall stone, nor to
the recurring chills in the pyemia of suppurative cholangitis, but to the recurring paroxysms of intermittent fever for months or even for years in connection with the lodgment of a stone in the common duct.

II. THE IRREGULAR MALARIAL FEVERS.

In reality the chief difficulty in the diagnosis of malaria is in the recognition of the remittent fevers which simulate typhoid, of certain pernicious types with special localization, and of certain chronic infections. Every year we have a few cases of malarial remittents which are at first mistaken for typhoid fever and tubbed. I show you here a chart of the last case of this kind.

The patient, Edward Reip, aged twenty-one, was admitted October 2d, complaining of headache and pains through the body. He had had malaria five years ago; otherwise there was nothing of special moment in his history. On the 29th of September, three days before his admission, he had a wetting, and on the following morning awoke with a violent headache, and felt so badly that he worked with difficulty. He stopped work the day before admission. He felt cold, but had no chill. He had lost his appetite. There was no nausea and no vomiting.

When admitted his temperature was 105° F., face was slightly flushed, the tongue furred and white. The examination was negative with the exception of the spleen, which was enlarged and slightly tender. The patient looked very ill, and his temperature on the evening of admission rose to 106° F., and he was given a tub bath. For seven days this patient was treated for typhoid fever, and during this time he had thirty-two tubs. He had no chills, no sweats; the tongue was furred, the cheeks flushed, lips red; the
spleen was readily palpable. The blood was examined by the house physician each day, sometimes twice a day, with negative results. On October 9th Dr. Thayer found in the peripheral blood a number of actively moving ameboid bodies. On the evening of the 9th he was given ten grains of quinin hypodermically, and then five grains every four hours. His temperature fell gradually and reached normal three days after beginning the administration of quinin. In this patient the anemia did not develop until after the end of the first week of the disease.

I mention this case in detail because it illustrates a very important point in the clinical history of these cases, namely, that in certain forms of infection with the organism of the irregular malarial fever the parasites are at first very scanty in the peripheral blood, and may be, in fact, overlooked for some days.

With us it has been very much more common to mistake malaria for typhoid fever than typhoid fever for malaria. The following are the important points of differentiation:

*First. The mode of onset.*—In malarial remittent fever there is not the initial period of malaise and ill-health; the onset is more sudden; chills are much more frequent. They are not, however, always present, as in the case of which I have just spoken. On the other hand, chills at the onset of typhoid fever are not very uncommon. Of 79 cases treated during the sixth year of hospital work, in which this point was inquired about particularly, there were 13 in which the disease began with shaking chills. Epistaxis is rare in malaria.

*Second. The fever,* which presents three points of great importance in the differentiation.
(a) The slow, step-like ascent to the fastigium is not met with in malaria. The rise is abrupt, and on the first or second day the temperature may reach 104° or 105° F. You will see in the chart passing around that the temperature on the third day in that patient reached nearly 106° F. in itself almost enough to exclude typhoid fever.

(b) The malarial remittents never have the remarkable continuous type of fever which we see in typhoid after the fastigium is reached. No other disease, except pneumonia, presents the same persistent pyrexia, with perhaps not more than a degree or a degree and a half of diurnal variation. This is characteristic particularly of the second week of the disease, or from the fifth to the twelfth day. In the estivo-autumnal infections the remissions are, as a rule, marked—two, three, and even four degrees.

(c) In the later stages, say in the third week, when in typhoid fever there are wider excursions and marked remissions, the pyrexia in the remittent fever becomes much more broken, is apt to be more intermittent in character, and the temperature may even be subnormal for several hours of each day.

Third. The general appearance of the patient.—Walking through a ward containing malarial intermittent cases and typhoid fever patients one can usually pick out readily those with the former disease. The early anemia and sallowness are very characteristic. This is not the case with malarial remittent fever. During the first week the aspect may be typically typhoidal, the expression dull and heavy, and the cheeks flushed. Marked anemia and the sallow tint
may not develop until the patient has been under observation for a week or more.

Fourth. — The gastro-intestinal, bronchitic, and nervous features offer less valuable criteria of differentiation. Herpes on the lips, when present, is important because of the great rarity in typhoid fever and the great frequency in malaria. The tongue in remittent fever is usually more coated, pasty, and white early in the disease. Bronchitis is common in both. Mental hebitude and delirium, while more common in typhoid fever, are not at all infrequent in the severer types of the estivo-autumnal fever.

Fifth. The examination of the blood.—The very first slide looked at may give the diagnosis. In other instances repeated examinations may be necessary, and the case to which I have referred is not at all unique in our experience. The paucity of the organisms in the peripheral circulation is very unfortunate just in these cases, as it may leave the diagnosis in doubt for several days. A systematic examination of the blood in any estivo-autumnal form is sure to be rewarded by the detection of perfectly distinctive forms, if not of the intracellular, of the characteristic crescents. Widal’s test, too, will prove of great use. You will notice in the chart passing around that it was not present on October 8th, the eighth day of the patient’s illness, and the day before the organisms were found in the blood, and this, with the irregular temperature, made us renew our efforts to discover the parasite.

Sixth.—Quinin has no influence on typhoid fever. Properly administered, it checks the malarial remittent fever in from two to four days.
There are other points of differentiation, but these are the most important.

In connection with this question there arise two important points for discussion: How far, in paludal regions, does typhoid fever present malarial aspects? It is the rooted and grounded belief of a very large section of the physicians of this country that typhoid fever very often presents "malarial features." The phrase is on their lips constantly. Failure to recognize the extraordinarily protean character of the disease is in the main responsible for this delusion, behind which lies a sort of feeling that a fever with malarial aspects is less apt to be serious. So far as my personal experience is concerned, typhoid fever is a singularly fixed disease in its composite picture, as taken, say, in centuries of cases. I saw the disease for ten years in Montreal, the General Hospital of which offered a very rich field for its study. The cases which came under my care during five years at the University and Blockley Hospitals in Philadelphia presented no essential changes. Many of the cases came from regions infected with malaria. During the seven years and nine months in which the Johns Hopkins Hospital has been opened, there have been in my wards more than five hundred cases of typhoid fever. A considerable number of these came from the outlying districts of the city, in which malaria is very prevalent, and from which our cases of that disease come. Any one may judge from the studies on typhoid fever, issued in Reports of the Johns Hopkins Hospital, Vols. IV. and V., that the disease presents no variations from the universally recognized
picture of the disease. We know nothing of typhoid fever with malarial features; on the other hand, we know a good deal, as you may judge from the chart, of malaria with typhoid features.

How often do combined infections occur with the hematozoa and Eberth’s bacillus? Very seldom; much less frequently than with the pneumococcus and with the ameba coli. Among the 1000 cases of malaria and the 500 cases of typhoid fever which have been at my clinic, almost every one of which has had a blood examination, there has been but one doubtful case of double infection. So far as I know, Dr. Gilman Thompson’s cases are the only satisfactory ones observed in this country. The subject is one deserving of careful study. We have been in the habit of making blood examinations in all of our typhoid cases, and as the double infection is usually with the tertian organism, I can speak with some measure of positiveness as to the accuracy of our results. I would ask particularly that in doubtful cases cover-slips be kept for expert examination. This is not a matter to be left in the hands of the inexperienced house physician. In other double infections quinin causes the hematozoa to disappear within a few days, and the case proceeds without showing signs of special influence, and this was the case, I believe, with Dr. Thompson’s patients.

Certain symptoms, particularly chills and sweats, are prone to deceive the physician who has not learned to recognize them as not infrequent events in typhoid fever, associated with complications or with septic infection.¹

¹ “Chills in Typhoid Fever,” University Medical Magazine, November, 1895.
I need scarcely here refer to other forms of irregular malarial fever—the more pernicious types. They are not very common with us, though in the autumn we have to be on guard constantly to avoid mistakes, and we have, as a rule, one or two fatal cases a year.

III. SPURIOUS MALARIA.

What is spurious malaria? I do not know. One form of it is a serious and very fatal disease, killing, according to the last United States Census Report, in New York as many persons as does typhoid fever, in Brooklyn about one-third as many more. I suspect the Eberth bacillus, not the plasmodium malaria, is responsible for the major part of these cases. Other maladies, a motley host, from headache to biliousness, from keratitis to chilblains, are attributed to "a touch of malaria." Any slight ailment with a periodic tendency, any dubious trouble for which a diagnosis is not forthcoming, is put in the same category. While I do not deny that in regions where malaria is endemic, and everybody comes under its influence, many obscure troubles follow in its train, I claim that the disease in the temperate regions of this country is well defined and easily recognizable, that north of the Chesapeake the fatal forms have become so rare that no health board should take a death certificate signed "malaria" without investigation, and, lastly, that the widespread belief in an occult influence of the disease, in masked forms, and in the modification by it of other affections, has no rational basis of support.

It is just eleven years since I began the study of malarial fever in the Blockley Hospital, Philadel-
phia—a skeptic as to the value of Laveran's work, to which attention was called in this country by Surgeon-General Sternberg and Dr. Councilman. I soon became convinced of its truth, and the results of my study of seventy cases was published in 1887. Since that time, at certain seasons, I have had almost daily opportunity to see malarial fever, and I have of late years been fortunate in having as my associate Dr. Thayer, who has made a special study of the disease, and in Baltimore has kept us in touch with the progress of knowledge in this department. A widened experience has only served to strengthen the conviction that in the practical diagnosis of the infectious diseases, the discovery of the hematozoa of malaria by Laveran takes rank with the finding of the tuberculosis bacillus by Koch.
The Medical News.
Established in 1843.
A WEEKLY MEDICAL NEWSPAPER.
Subscription, $4.00 per Annum.

The American Journal
OF THE
Medical Sciences.
Established in 1820.
A MONTHLY MEDICAL MAGAZINE.
Subscription, $4.00 per Annum.

COMMUTATION RATE, $7.50 PER ANNUM.

LEA BROS & CO.,
NEW YORK AND PHILADELPHIA.
THE FUNCTIONS OF A STATE FACULTY.

BY

WM. OSLER, M. D.

PRESIDENT’S ADDRESS
DELIVERED BEFORE THE MEDICAL AND CHIRURGICAL
FACULTY OF MARYLAND.

AT THE 99th ANNUAL SESSION, BALTIMORE, MD.

April 27th, 1897.
PRESIDENT’S ADDRESS.

THE FUNCTIONS OF A STATE FACULTY.

By Wm. Osler, M. D.

It would be interesting to know the reasons which induced the incorporators in 1798 to call this organization a Faculty, an unusual yet at the same time a most appropriate designation. So far as I know, there is in English speaking lands only one other society which bears this name, the Faculty of Physicians and Surgeons of Glasgow. Time out of mind the term has been applied to the body of practitioners at large. At present its use is confined almost exclusively to indicate a body of men concerned in teaching. The Glasgow society to which I refer is a licensing body, while its use in our own body illustrates the older and more general meaning of the term.

Originally the Medical and Chirurgical Faculty had a dual function, in the language of the act of incorporation, “for the promoting and disseminating medical and surgical knowledge throughout the State,” and “to prevent citizens from risking their lives in the hands of ignorant practitioners or pretenders to the healing art.” In transferring the licensing function to a separate board, this Faculty has followed the good example of other States, but while we now exercise no direct authority in this matter, it is essential that our relations with the Board should be of a most intimate character. The change has been in every way a gain, since in an independent body of medical examiners chosen from the profession at large, our interests
and the welfare of the public are infinitely safer than in
the hands of tender medical school professors, or of mere
registering boards of the respective shores of this State,
the duty of which consisted in a hasty inspection of more
hastily conferred diplomas. The report which will be
made from the State Board will speak of certain matters
requiring early settlement, more particularly our protection
and the protection of the public against unlicensed practi-
tioners. It is most important that we render the Board
willing and loyal support in its efforts, and in every way
assist it in promoting any legislation which may make
it more representative, and which will promote increased
stringency in the examination.

The promotion and dissemination of medical knowledge
throughout the State remains our important function. Physi-
cians as a rule have less appreciation of the value of
organization than the members of other professions. In
large cities weakness results from the breaking into cliques
and coteries, the interests of which take precedence over
others of wider and more public character. Jealousies and
misunderstandings are not unknown, and there is a baneful
individualism—every man for himself—a centrifugaliz-
ing influence against which this Faculty is and has been
the only enduring protest.

No class of men needs friction so much as physicians;
no class gets less. The daily round of a busy practitioner
tends to develop an egoism of a most intense kind, to
which there is no antidote. The few set-backs are for-
gotten, the mistakes are often buried, and ten years of suc-
cessful work tend to make a man touchy, dogmatic,
intolerant of correction, and abominably self-centred. To
this mental attitude the medical society is the best correc-
tive, and a man misses a good part of his education who
does not get knocked about a bit by his colleagues in dis-
cussions and criticisms. The programme in your hands
is evidence that the Faculty is fulfilling its function in pro-
moting and disseminating medical and chirurgical knowl-
edge throughout the State.

I would call your attention to the thoroughly representa-
tive character of the subjects for discussion in their different
bearings: Peritonitis, upon which we all need informa-
tion; Rabies, which has been brought in such a painful
manner to the attention of the public; and the Care of the
Dependent Insane in this State, on which last subject the
Faculty should speak in no uncertain tones. It is pleasant
to be able to announce the great success of our last semi-
annual meeting. Not only was the attendance large, but
the papers were most practical, and the educational aspects
of certain subjects were carefully presented. In enthu-
siasm and hospitality the members of the Washington
County Medical Society have set the pace for other sec-
tions of the State.

These are days of unification and consolidation, and the
question has been raised by several members whether the
usefulness of the Faculty would not be enormously in-
creased by uniting as sections of the Faculty the various
medical societies at present in existence in the city, organ-
izing them as Medical, Surgical, Obstetrical and Gynae-
cological, Neurological, and possibly Ophthalmological
and Otological sections. It would add strength to the
Faculty and dignity to the various sections. It would
make the State organization comparable with the Academy
of Medicine in New York and the College of Physicians
in Philadelphia. The county members could often par-
ticipate in the monthly or fortnightly meetings of the dif-
f erent sections, and in that way maintain a more close
relationship with the Faculty than is at present possible.
The financial aspect could be, I think, readily arranged,
but into details it is not necessary here to enter, and I
mention the subject only that it may ferment in your
minds.

Not only does this Faculty weld into one homogeneous
mass the diverse, even discordant, elements which neces-
sarily make up the profession, but through it we possess
an organic connection with "the great and good who are
gone." Through it, and through it alone, are knit to-
gether the generations of physicians who have here labored
and striven, and then passed to their rest. Of the altruis-
tic instincts veneration is not the most highly developed at
the present day; but I hold strongly with the statement
that it is the sign of a dry age when the great men of the past are held in light esteem. I would like to read you a short paragraph describing the men who made this Faculty in its early days. It is from the memorial address of Dr. Wilmott Hall at the meeting in 1811.

"To classical erudition the most liberal and profound, they united the stores of medical learning with which the ancients or moderns had enriched the science of physick, or of which the schools of America or Europe could boast. In the academies consecrated to literature or medicine, either at home or abroad, they had given convincing evidences of their research, industry and talents; while they bore honorable testimony that the intellectual claims of their native State were inferior to no portion of the old or the new world. As physicians they enjoyed that respect and confidence which is the pleasing and voluntary tribute of intelligence to virtue and worth, which the successful application of the principles of our science so generally receives from the discerning and grateful. As men, they were governed in their intercourse with society by all those refined and enlightened sentiments which generally arise from the study of the sciences and liberal arts; from expanded and comprehensive views of the sublime laws and order of nature, and from a just sense of those moral obligations which bind man to his fellow-man."

As these walls show, our predecessors have done something to keep active a function of this Faculty which is of the greatest moment, viz., the preservation in its archives, on its shelves, and on its walls the memorials of the days that are no more, and of the men who served faithfully the profession of their choice. We owe them much, and a heavy debt remains unpaid. Handsome portraits of Upton Scott, the first President, and of his successors should grace these walls; the list of incorporators, 'tis a long one, from Gustavus Brown, of St. Mary’s County, to George Lynn, of Alleghany County, should live in brass in our hall. Then the men who made strong impress in their day should receive recognition at our hands, and it should be an act of filial piety year by year to add a portrait, a bust or a tablet. Wiesenthal and Buchanan, Potter and Davidge,
Godman and Jamieson, Chew and Power, are names which in honoring we should ourselves be honored. And there are notable men, transient teachers here, who have passed on to other fields; the learned Dunglison, the scholarly Gibson, the erratic Pattison and the philosophical Bartlett have strong claims upon us, and many others of whom time fails me to tell. Are their memorials not written in Quinan's Annals and in Cordell's History? Would that the Faculty had been as faithful in its trust of this heritage as have these two devoted students of the Medical History of this city!

Unlike other State organizations, this Faculty has in its library an important educational function. It was a singularly judicious action on the part of the men who controlled this institution (in the thirties), to begin a collection of books. They knew the true gauge of a profession's standing, not the number of its schools, not the length of the roll of students, not the material wealth of the physicians; these are as dross and slag, chaff and dust, in estimating the true worth of a profession. Books are tools, doctors are craftsmen, and so truly as one can measure the development of any particular handicraft by the variety and complexity of its tools, so we have no better means of judging the intelligence of a profession than by its general collection of books. A physician who does not use books and journals, who does not need a library, who does not read one or two of the best weeklies and monthlies, soon sinks to the level of the cross-counter prescriber, and not alone in practice, but in those mercenary feelings and habits which characterize a trade.

But to maintain a modern medical library is a very serious undertaking. So extensive has the literature become that even well endowed institutions find it impossible to meet the incessant demands in all departments. The Faculty has the nucleus of an excellent collection, and through the kindness of our friends we have been enabled this year to add a long list of most valuable journals and many complete sets. Within a few years this most valuable section of the library should be greatly enlarged. The true worker does not want text-books; he looks to
journal literature and monographs, and the extraordinary development of all special departments makes the work of a Library Committee very difficult unless it has a rich appropriation. In a year or two we should be able to give the committee at least double the present allowance.

There are several ways in which we can all help. Bring in new members; every additional annual subscription adds so much to the library. You can join the Book and Journal Club, which is, as you know, a voluntary organization among members of the Faculty. This year, as Dr. Harry Friedenwald's report will show, we have more than one hundred members, and the club has subscribed to more journals for the library than the Library Committee. This is an excellent way of helping ourselves. The club should next year have at least two hundred members, and present $1,000 worth of new books and journals. And lastly, many of you can help by filling out our imperfect sets of native and foreign journals. Will not one or two of our gynaecological brethren take the trouble to look into the defects in the journals in their department? A little money spent quietly in this way will lighten their pockets and their hearts. There are gaping gaps which our surgeons might bridge over. A little personal interest on the part of the members will be much appreciated.

I envy Charles Frick the good fortune to go down to the future generations in this Faculty with his name linked to an important section of our library. Posthumously and by proxy, as it were, thus to carry on, though dead, the work he was interested in while living, is the nearest approach a man can make to cheating the great enemy, and in Charles Frick's case it is in a measure a compensation for the untimeliness of his taking off. It is proposed to make the Frick Library the strictly medical section, in contradistinction to general surgery, and obstetrics and gynaecology. How suitable it would be to connect also these departments with other names of men who have won sufficient recognition. Than this there is no more appropriate way to perpetuate an honored name in our ranks. The College of Physicians of Philadelphia has set a good example in the Samuel Lewis and the S. D. Gross Libraries,
which are so successfully kept up—the one in general medicine, the other in surgery.

*Pour encourager les autres*, I would like to refer to the splendid bequests which Nicholas Senn has made to the profession of Chicago. Many years ago he purchased the library of Prof. Baum, of Göttingen, containing some 16,000 volumes and pamphlets, and this he presented to the Newberry Library for the use of the physicians of Chicago, and now, this year he has bought the splendid scientific library of the late Prof. Du Bois Reymond.

Increased privileges and facilities bring necessarily increased responsibilities, of which the future holds for us a goodly store. Two years will bring around the centennial of the founding of the Faculty, an occasion which should be made memorable in a very special way. There is, as you know, a small indebtedness on account of this building, a mere bagatelle to the profession of a city of half a million. This must be met, and certainly the centennial celebration of this organization is an epoch important enough to demand a larger effort, for which the payment of the small debt will prove useful training. The Executive Committee has a plan, which it will bring before the members at an early date, asking them to subscribe varying sums for the years 1897, 1898 and 1899, to pay off our mortgage. A few may be relied upon to give $200 a year for the three years; from a larger number we hope for $100; others will give $50; some $25; and a larger number $10. We hope not only to pay off the debt, but to leave a balance.

May I say a word on the art of giving? The essence is contained in the well-known sentence, “Let every man do according as he is disposed in his heart, not grudgingly or of necessity.” Subscriptions to a cause which is for the benefit of the entire profession should truly be given as a man is disposed in his heart, not in his pocket, and assuredly not of necessity, but as a duty, even as a privilege, and as a pleasure. Some of us, the younger men, cannot give. The days of travail and distress are not yet over, and to give would be wrong. It is sufficient for such to have the wish to give; the elder brothers will bear your
share; only be sure to foster those generous impulses, which are apt to be intense in direct proportion to the emptiness of the purse.

Upon a second group we must chiefly depend—the men of moderate incomes, who have a balance, however small, at the end of the year. To devote a fraction of this to the needs of the profession by which they have lived is, on the lowest motives, good policy, on the highest, a delightful privilege.

Beyond a modest competency the sensible doctor does not aspire, but in the profession of every State there is a third group, composed of a few men, who, dry-nursed by us, sometimes by the public, have become prosperous, perhaps wealthy. Freely they have received, freely they should give. It must be acknowledged, however, that the admonition of Sir Thomas Browne, "should your riches increase, let your mind keep pace with them," is not always regarded by the men of this group. We have seen a good deal in the papers about the large fortunes left by doctors who have died in the past few years; but it has not been a pleasant feature to note, with scarcely an exception, either an entire neglect or a very beggarly remembrance of the profession in which these men had at any rate laid the foundation of their large fortunes.

The sum required is not large, and we may confidently hope that the committee who will have it in charge will within a few weeks obtain promises more than sufficient to meet it. If we make this little effort ourselves, we can try in the centennial year to obtain a proper endowment for the Faculty from our friends among the citizens. We shall need a larger hall, more in keeping with the rank and work of the profession of this city—quarters as complete as our brethren enjoy in Philadelphia and New York. And an endowment yielding a few thousand dollars annually is absolutely essential for the proper development of the library. I would offer as a suggestion that a Committee on Finance be appointed to take charge of this matter. It would be well subsequently to have a permanent Finance Committee.
And lastly, I would call the attention of the members to the fact that we are working under a somewhat antiquated and very much patched up set of by-laws. If you will turn to the last year's transactions you will find between five and six pages of resolutions, amendments, etc., affecting the Constitution, from 1885 to 1896 (inclusive). There are also anomalies in the Constitution which might be amended; thus the examining boards for the Eastern and Western Shores, respectively, have no longer any vital status in our organization since the licence is no longer granted by the Faculty. They might be replaced by a committee for the examination of the credentials of candidates for membership. I would suggest that a committee take charge of this whole matter, to report next year on the necessary changes, and give notice of motion for any alterations in the Constitution which are deemed advisable; then in 1899, our centennial year, the Constitution, By-laws, etc., could be all clearly and definitely presented for discussion and adoption.

In conclusion, may I paraphrase those noble words of Aristotle, in which he laid down the duty of the citizen to the state, as also peculiarly appropriate in defining the obligations of the doctor to his calling. No physician has a right to consider himself as belonging to himself; but all ought to regard themselves as belonging to the profession, inasmuch as each is a part of the profession; and care for the part naturally looks to care for the whole.
A CLINICAL LECTURE
ON
THE BALL-VALVE GALL-STONE IN THE COMMON DUCT.
Delivered at the Johns Hopkins Hospital on January 22nd, 1897,

BY WILLIAM OSLER, M.D., F.R.C.P.,
Professor of Medicine at the Johns Hopkins University.

GENTLEMEN,—I will begin this lecture by showing you two interesting specimens. The first consists of the stomach, duodenum, and liver. Even from a distance you can see a nodular projection beneath the mucosa of the duodenum. On closer inspection this is seen to correspond to the papilla biliaria, the orifice of which lies a little to the side of the most prominent part of the projection. This nodular body is a hard, firm mass which can be moved up and down, and as I make it appear at the orifice of the duct you see that it is a rounded, dark gall-stone much too large to escape. On moving it up and down it cannot be passed out of the duodenal portion of the duct, but in this it has considerable play. On examining from the side of the duct the stone is seen to lie in a greatly distended diverticulum of Vater. The common duct is of about the size of my index finger, and the main hepatic ducts are also dilated. The cystic duct is wide, and the gall-bladder is perhaps a little enlarged. It did not at the time of the necropsy contain any stones. The dilated bile-ducts and the gall-bladder contained bile-stained mucus. There was neither
erosion nor ulceration in the bile passages. I have kept this specimen carefully for nearly ten years, and have frequently demonstrated it to classes of students. The history of the case is very instructive, particularly in connexion with the patient whom you will see in a few minutes.

In September, 1887, when I took charge of certain of the medical wards in the Philadelphia Hospital, there was a woman, aged forty years. It was the third or fourth time she had been admitted, each time with chills, fever, and jaundice. The attacks had recurred on and off for two years, during which period she had not passed two months without some tinge of icterus. The case had excited a good deal of attention, and I remember that in 1886 Dr. Bruen brought to me some of her blood to examine for the malarial parasites. The diagnosis of abscess of the liver had been made on several occasions, and the liver had been twice aspirated. When she first came under my care she was up and about in the ward, and showed only the slightest lemon tint of the skin and of the conjunctive. The stools were dark coloured. The liver appeared to be a little enlarged; the gall-bladder could not be felt. Early in October she had an attack of violent pain with vomiting and a moderately severe rigor, after which the temperature rose to nearly 104° F., with sweating, the entire paroxysm lasting for more than twelve hours. The following day she was much more jaundiced, the urine was very dark in colour, and the stools were putty-like. The liver was sensitive on pressure; the gall-bladder could not be felt. The jaundice deepened for three or four days and then gradually became less marked. Throughout the winter at intervals of a few weeks she had four or five attacks of a similar character. I lectured upon the case as one of Charcot's hepatic intermittent fever, due probably to a gall-stone lodged in the common duct, to which opinion I was led from the study of cases which I had seen in Montreal. Early in February I asked Dr. White to see the patient, and she consented to an operation. Perihepatitis was found at the margin of the liver, the gall-bladder was
not enlarged, and no gall-stones could be felt in the gall-bladder or in the duct. Three days subsequently she died from peritonitis.

Naturally I was much chagrined at the negative result of the operation. A necropsy was refused, and the friends removed the body to the country, but a personal interview enabled me to procure an examination, and I was allowed to remove the organs which you see before you for careful dissection. This patient had had for a period of nearly two and a half years attacks of jaundice with chills and fever—a very characteristic picture of the intermittent hepatic fever which Charcot and others have so fully described.

The second specimen is an almost exact counterpart. Projecting from beneath the mucous membrane of the duodenum close to the papilla biliaria is a nodular body of the size of an almond which can be pushed down to the orifice of the duct, when it is seen to be an oval gall-stone lying in the diverticulum of Vater, in which it has a certain degree of mobility. At the necropsy in this case it was very interesting indeed to note that on firm pressure on the gall-bladder bile could be forced past the stone into the duodenum. Both cystic and the common ducts are dilated to about the size of the little finger. The gall-bladder is of the size of a small pear. There is no other gall-stone. The contents of the common and cystic ducts were thin, yellow bile containing some dark granular matter. The colon was adherent to the gall-bladder and to the under surface of the liver. The liver weighed 1570 grammes; the surface was a little roughened. The cut section was bile-stained and showed moderate dilatation of the smaller ducts. The consistence of the organ was increased. It may be mentioned also in connexion with the case that there was a chronic diffuse nephritis. The further details of the necropsy, which is No. 758 in the Johns Hopkins Hospital Records, do not concern us. The history of this case has not quite the same interest as the other, but it presents identical features.
The patient was a man, aged sixty years, who was admitted to the hospital on Dec. 22nd, 1895. I had seen him on Nov. 23rd previously and had learned that he had been ill for rather more than three months with recurring attacks of slight jaundice and paroxysmal pain in the right side, which were sometimes accompanied by chills and fever. When I saw him he was slightly jaundiced, there was much irritability of the stomach, the liver was not enlarged, and the gall-bladder could not be felt. The condition had varied very much from time to time, being sometimes better and sometimes worse. He had had numerous attacks of chills and fever, following which the jaundice would become more intense. He had been actively treated for malaria. He grew progressively weaker, and when admitted to the hospital on Dec. 22nd he was very feeble and apathetic. He had a sallow, slightly jaundiced colour, with distinctly jaundiced conjunctivæ. The pulse was 106; he had no fever. His temperature at 4 A.M. on the 23rd was normal. He shortly afterwards had a chill, and by noon his temperature had risen to nearly 103° F. He had a great deal of pain in the right side of sufficient severity to require morphia. Sweating followed the fever, and the patient seemed to be somewhat more jaundiced. There was a small amount of albumin in the urine with granular casts and a distinct reaction for bile pigment. He became much more prostrated after this attack, had a good deal of pain at intervals, and was drowsy and apathetic. On the night of the 30th he had a severe attack of general convulsive twitching, and a slight rise in the temperature with ephidrosis occurred on the 31st. On Jan. 2nd he had Cheyne-Stokes respiration, became unconscious, and died on Jan. 4th. In this case the attacks of pain and intermittent paroxysms of fever enabled me to make a very positive diagnosis of a gall-stone in the common duct.

The consideration of these two cases and the inspection of the specimens will enable you to appreciate better the symptoms presented by the case which I will now ask to have.
brought into the lecture-room. The history of this patient, as taken by Dr. Gwyn, is as follows:—

A married woman, aged twenty-eight years, was admitted to the hospital on Nov. 28th, 1896, complaining of pain in the epigastrium. She had been a very healthy woman and had had two children. In July, 1894, she had a miscarriage. The first attack of her present trouble (in September, 1894) came on with vomiting, headache, and pain in the abdomen. The skin at this time was very sallow, but she did not think she became jaundiced. The urine was of a dark colour. She had distinct chills, severe and shaking. After an illness of three weeks she recovered and remained quite well until June, 1895. In this second attack she had nausea and vomiting, itching of the skin, jaundice, chills and fever, and pain in the epigastrium. It lasted about four weeks. The third attack was in September, 1895. She had, however, no paroxysm of pain, but she had chills at intervals, and there was slight tingling of the whites of the eyes. Recurring attacks of chills and fever persisted until Christmas. The fourth attack came on in March, 1896. It began with nausea, vomiting, and pain in the epigastrium and under the right costal margin passing back to the right shoulder. She became very jaundiced and had much itching of the skin. The pain was much more intense than in any previous attack, and she had to have morphia. She had recurring chills and fever, and the jaundice persisted for nearly three months. The fifth attack, for which the patient came to the hospital, began on Sept. 1st with nausea, occasional vomiting, headache, itching of the skin, deep-coloured urine, and slight tingling of the conjunctivæ. She had no pain in this attack, but frequent chills recurred until a week before admission to the hospital. The jaundice had been very slight. The chills had been the same in all the attacks. They came on every few days, sometimes quite regularly every other day, lasting fifteen or twenty minutes, and were followed by high fever and occasional sweating. On admission the patient was found to be a well-
nourished, healthy-looking woman. The skin was a little sallow, not distinctly jaundiced, and the conjunctivae were slightly tinged. There was nothing abnormal on examination of the chest. The abdomen was a little full, tympanitic, with no areas of abnormal resistance. The liver dulness began at the sixth rib in the nipple line and barely reached the costal margin. The edge of the liver could not be felt. There was no tenderness on deep pressure in the epigastric region. The gall-bladder was not palpable. The spleen could not be felt. On Nov. 30th the yellow colour of the skin was more marked, and there was bile reaction in the urine. The stools were light in colour. On Dec. 4th there was a little tenderness in the right hypochondriac region, and the patient had had slight pain in this region on the previous day. She remained in hospital until Dec. 6th. She had no chills, and the temperature was under 100° F. The jaundice had almost disappeared and she had gained in weight. She felt well until the day before Christmas, when she became nauseated and was sick at her stomach. On Christmas eve she had a violent chill with high fever and pain of such severity in the region of the liver as to require a hypodermic injection of morphia. The jaundice was intensified the following day and increased considerably. She returned to-day (Jan. 22nd, 1897) to report upon her condition. You see that she is a healthy-looking woman, well nourished, and were it not for the very slight jaundice persisting nothing special would be noted about her. The abdomen is full, a little large, and the panniculus is well preserved. Palpation in the liver region is negative. There is no pain on deep pressure. The edge of the liver cannot be felt, and the gall-bladder is not palpable. Within two years and four months this patient has had at least six attacks of pain in the region of the liver, with chills, fever, and jaundice. The latter has been a variable symptom, sometimes very intense, but if we may judge from her condition on admission on Nov. 28th, 1896, even in the intervals the jaundice does not entirely disappear.
You notice the remarkable similarity in the history of these three cases: jaundice, usually of slight grade but increasing at times in intensity, attacks of pain in the region of the liver, and paroxysms of intermittent fever. The duration of the illness in the first case was two years and a half, in the second between four and five months, and in the woman you have just seen two years and four months. I have no hesitation in making the diagnosis of ball-valve stone in the common duct in the case before you, but before I proceed to speak fully of this condition and of its symptomatology, let me refer for a moment to two anatomical points of special interest in connexion with cholelithiasis.

We do not know what starts a stone on its migrations. In a large proportion of all cases so long as the calculi remain in the gall-bladder they do little or no harm. This statement is borne out by the frequency with which gall-stones are found post mortem in persons who have presented no symptoms whatever and whose gall-bladders show little or no change. Once started, a stone has two main obstacles to overcome. The cystic duct is not a simple tubular structure, but has a very remarkable reduplication of its mucosa known as the Heisterian valve. If you attempt to pass a probe or a pair of probe-pointed scissors into the cystic duct you will find that the point is interrupted by valvular folds which sometimes encircle the entire tube and are very much like the valvulae conniventes. Sometimes the arrangement is that of a spiral valve. In other cases there is no symmetry whatever, and the valves may have the free edges directed upwards towards the gall-bladder, or downwards towards the common duct. Both at the neck of the gall-bladder and at the junction of the cystic with the hepatic duct the folds may be unusually prominent. No possible arrangement could be more unfavourable for the passage of a gall-stone; a small one may get lodged beneath the valvular folds, indeed I have seen one tucked in beneath the strong fold sometimes present at the neck of the gall-bladder. Biliary colic is probably an expres-
tion of the difficulties a stone has in passing through the valvular folds in the cystic duct. Once in the common duct a stone of medium size has little or no difficulty until it reaches the duodenal portion, the anatomical relations of which may for a moment engage our attention. The bile and pancreatic ducts open by an orifice which is smaller than the lumen of the conjoint ducts, and the opening is usually on a prominent papilla on the mucosa of the duodenum. Between the point of junction of the two ducts and the orifice in the papilla biliaria there is a dilatation, the diverticulum or ampulla of Vater. In this part of the duct the ball-valve stone often lodges. The intermittent filling of the gall-bladder almost assumes the existence of a sphincter choledochi, yet no mention is made of such a structure in the text-books (Quain or Henle). Oddi has demonstrated this sphincter in different animals and in man, and Dr. L. F. Barker has been kind enough to prepare for me several specimens by his method which show the fibres very clearly. Doyon claims to have determined the biliary reflex—the afferent fibres pass in the vagus, and the efferent in the splanchnic—and states that stimulation of the central end of the vagus causes contraction of the gall-bladder and at the same time relaxation of the sphincter choledochi. Upon the importance of this sphincter choledochi in the history of gall-stones very little stress has been laid, except by Leichtenstern in his recent section on Diseases of the Bile Passages in Penzoldt and Stintzing's "Handbuch." He states that sometimes macroscopically, as well as microscopically, hypertrophy of this sphincter can be seen in old cases of gall-stone impaction. To another point he refers (of great importance in connexion with the condition of the gall-bladder in these cases)—viz., that the physiological filling of the gall-bladder with bile is a function of

---

1 Di una Speciale Disposizione a Sfintere Allo Sbocco del Coledoco, Perugia, 1887.
2 Archives de Physiologie, January, 1894.
3 Band 4, 1896.
this sphincter. It is in this duodenal portion that the typical ball-valve stone is most frequently found, as in the two specimens which I have demonstrated to you, though it may lie loose in the duct. Let me call to your remembrance the fact that pressure on the gall-bladder in the second specimen could make the bile flow past the obstructing stone. My attention was first called to this condition many years ago, and in a lecture which I published in 1881,¹ on Some of the Effects of Chronic Impaction of Gall-stones, I remarked "that a gall-stone may remain permanently lodged in the pars intestinalis and yet not be impacted. In such instances it may still permit the passage of bile past it, or it may act as a ball valve, only permitting of the flow when the distension behind has reached a certain point." In several cases the stone in the diverticulum of Vater was so placed that it could be moved up and down to act as a sort of ball valve; and clinically I had had an opportunity of studying two cases (Nos. 11 and 12 of those reported in the lecture) in which the remarkable train of symptoms seemed best explained by this ball-valve action of a stone in the common duct. Subsequently, in a paper on Fever of Hepatic Origin,² particularly the intermittent pyrexia associated with gall-stones, I called attention especially to the importance of recognising a group of cases of obstruction of the common duct characterised by the following symptoms: "First, jaundice of varying intensity, deepening after each paroxysm, and which may persist for months or even for years; second, ague-like paroxysms characterised by chill, fever, and sweating, after which the jaundice usually becomes more intense; and, third, at the time of the paroxysms pains in the region of the liver, with gastric disturbance." In this paper I considered at length the question of the hepatic intermittent fever which the French physicians, particularly Charcot, had so carefully described, and emphasised the following points:

¹ Medical Times and Gazette, July 31st, 1881.
² Johns Hopkins Hospital Reports, vol. ii., 1890.
that recovery might follow even, as shown by the cases, after
duration of the chills and fever and jaundice for several
years; that this condition could be differentiated from sup-
purative cholangitis; and that the symptoms were probably
caused by the ball-valve action of the stone. I added the
following statement: "In all of these cases the obstruction is
not complete, as shown by the presence of bile in the stools
for long periods at a time. The association of the chills and
fever with intensification of the jaundice must be more than
accidental. The two must be correlated in some way, in all
probability through a transient impaction of the stone in the
duct. Such a condition might induce the chill, either through
reflex irritation, as held by Murchison, or by preventing the
escape from the bile passages of toxic ingredients—ferments
produced by the action of micro-organisms—which are ab-
sorbed into the blood instead of escaping freely into the bowel.
The impaction is probably overcome by a gradual increase in
the vis a tergo until the duct is stretched to a point which
permits the calculus to fall back into a wider portion. The
pressure may reach such a grade that the stone is forced out,
as happened in Case 2, and very likely in the other cases in
which recovery followed." In both editions of my "Text-
book of Medicine" I recognised the possibility of diagnosing
the presence of the stone in the common duct and of differ-
entiating the catarrhal from the suppurative cholangitis. I
had seen many cases which seemed to bear out these statements,
and had been in the habit in my classes and at meetings
of societies of speaking of the ball-valve action of certain
gall-stones. Not having seen my papers, Christian Fenger of
Chicago, in the February and March numbers of the American
Journal of the Medical Sciences, 1896, made the statement that
"neither Courvoisier nor any other author seems to have ob-
served the ball-valve action of floating stones in the common
duct."

**Symptoms.**—What are the symptoms of gall-stones in the
common duct? They are very variable. There may be none;
it may be dilated and full of stones so arranged that the bile can flow past them without much, if any, obstruction. I have twice seen a single small stone in the common duct which had apparently caused no disturbance. No one has laid down more clearly the symptoms of stone in the common duct than Naunyn:¹ "(1) The continuous or occasional presence of bile in the faeces; (2) distinct variations in the intensity of the jaundice; (3) normal size or only slight enlargement of the liver; (4) absence of distension of the gall-bladder; (5) enlargement of the spleen; (6) absence of ascites; (7) presence of febrile disturbance; and (8) duration of the jaundice for more than a year." Now what I wish to bring out in connexion with the case you have just seen is the probable association of the intermittent features—pain, rigors, fever, and jaundice—with the ball-valve action of a stone in the common duct or its diverticulum—a view which offers a reasonable explanation of the remarkable phenomena of the case. This patient when you saw her in the ward looked a well-nourished, healthy woman with only the slightest trace of jaundice, chiefly noticeable in the conjunctivæ. Some of you may remember that I predicted another attack as very probable within a few months. In these protracted intervals I take it the gall-stone lies loose in the duct or its ampulla, and the pressure is sufficient to force the bile past it, though the persistence of the slight jaundice for weeks or months shows that the flow is not quite free. The onset of the paroxysms may be due to an acute infection with swelling of the mucosa about the stone and transient complete blocking of the duct, or the stone may be jammed tightly against the orifice of the duct. Impaction would account for the pain and the jaundice; the intermittent paroxysms of fever are probably due, as I suggested in the extract read a few minutes ago, to the absorption by the blood of the toxins produced by the micro-organisms which

in the intervals of impaction pass into the bowel. The im-
paction is followed, of course, by stasis of the bile, a condition 
very favourable to the growth of the micro-organisms. I 
have recently had occasion to discuss with you the question 
of infection of the bile passages in a case of typhoid fever 
with colic and jaundice. Various organisms may be present 
without doing damage. Thus typhoid bacilli were present 
in the bile passages of seven persons who died from typhoid 
fever (seven of fourteen examined) not one of whom had 
during life given any signs of liver trouble. A stone in the 
common duct with stasis of the bile and catarrhal cholangitis 
favours the growth of organisms, which are always seeking 
entrance—in healthy persons in vain—at the portals of the 
ducts. Unfortunately in the necropsy upon the case from 
which the second specimen was obtained, though cultures were 
made from many parts—as is the custom in the post-mortem 
room—which were sterile, there is no specific note in the report 
about the bile passages. Infective cholangitis is present in 
all these cases, and to it the febrile phenomena are due. The 
large experience which we are daily receiving from the sur-
geons should very soon give us positive data as to the varieties 
of micro-organisms associated with this condition. To one 
point I would here direct your particular attention—viz., 
that this infective cholangitis may persist for years without 
causing suppuration in the ducts or ulceration of their walls. 
A knowledge of this fact has a very direct bearing on the 
prognosis and diagnosis of these cases.

Diagnosis.—The diagnosis of a stone in the common duct 
may often be made with reasonable probability, and while 
the rules laid down by Naunyn could not be bettered I am 
anxious to go further and to urge the possibility of recognising 
as a special variety the ball-valve stone. The group of 
symptoms to which I have referred (and which were shown 
so graphically in the case of the patient whom you have just 
seen as well as in those from which the specimens were taken) 
have not been sufficiently recognised by authors, and when
recognised have been too often misinterpreted. Let me again recall them. They are chronic jaundice, rarely deep, varying in intensity, at times almost or entirely disappearing to deepen invariably after a paroxysm (the icterus may be of maximum grade and associated with intolerable itching); pain, often a constant sense of discomfort, sometimes only an obscure gastric distress, and at others agonising, griping, and like ordinary liver colic; fever, occurring in paroxysms, usually preceded by a chill and followed by sweats, but there may be pyrexia alone; the chills may be quotidian or tertian in type or they may recur for weeks in succession on the same day; the spleen usually enlarges during the febrile paroxysms. Though persisting for months or even for years, the general health may be little, if at all, impaired, and in the intervals between the paroxysms a person may be able to work as usual. The cases are usually diagnosed as chronic malaria, abscess of the liver, or suppuration of the bile passages.

The regularity of the chills and the slight jaundice naturally suggest malaria. In almost every one of my cases the diagnosis of malaria had been made and the patient had been dosed with quinine for weeks or months. In Case 7, a man, aged sixty-four years, who had had jaundice with the intermittent fever, &c., for eleven months, was treated by a well-known Carlsbad physician for malaria, which opinion was concurred in by at least half a dozen physicians in Europe and in this country. The mistake is a very natural one, particularly if the patient has not very intense jaundice. The paroxysm is almost identical in its features with that of simple intermittent malarial fever. The periodicity may be striking, the chills recurring like a tertian or a quartan fever. The good condition in the interval, the absence of great enlargement of the liver or of enlargement of the gall-bladder, and the presence of enlarged spleen are all points which strongly suggest malarial fever. On the other hand, the absence of plasmodia in the blood, the occurrence of pain at the onset of the paroxysm, and the deepening of the jaun-
dice, which is usually of a grade more intense and quite different from the slight sub-icteroid hue of chronic malaria, should be sufficient to differentiate a case. Cases of simple intermittent fever do not resist the action of quinine. Chronic paludism also as a rule is associated with much more pronounced enlargement of the spleen.

Abscess of the liver can usually be excluded by the absence of tenderness and enlargement, local or general, the variable character of the jaundice, the good condition of the patient in the intervals of the paroxysms, the very chronic course in many cases, and the absence of progressive deterioration of health and strength. In the case from which the first specimen was taken the diagnosis of abscess of the liver had been made by several physicians, and exploratory punctures had been made on two or three occasions. Her general condition at the end of two years' illness seemed to me to exclude abscess.

As regards suppurative cholangitis, infective processes in the bile passages are very prone to end in pus formation, an only too common sequence of chronic impaction of stone in the common duct. I show you here a coloured drawing of a case of this sort in which you see the stone in the ampulla of Vater; the ducts were enormously dilated, even to the surface of the liver; the gall-bladder was greatly enlarged, full of pus, and the walls ulcerated. Now a majority of writers have regarded the hepatic intermittent fever as an indication, not simply of infective, but of suppurative cholangitis. In the present case, though the condition has persisted for more than two years, purulent inflammation of the bile-ducts can be positively excluded. When this serious complication is present the symptoms are those of pyæmia of a severe grade. Among the points to be considered are the following: (1) increased tenderness in the hepatic region with possibly enlargement of the gall-bladder, as this is a more common event in suppurative cholangitis than in simple obstruction of the duct; (2) the more frequent return of the paroxysms and, in some instances,
the irregularly remittent character of the fever; (3) the jaundice is not so intense in suppurative cholangitis, and we do not see the remarkable deepening in colour after the paroxysms; and (4) the general condition of the patient in the intervals is very different in the two conditions. When suppuration exists there are rarely the prolonged periods of apyrexia, the freedom from distress, and the general betterment which are so well illustrated in the case before you. And, lastly, the time element comes in as an important aid in diagnosis. As I mentioned a few moments ago, the good condition when she was in the ward of the patient in the present case was quite inconsistent with the idea of a purulent inflammation in the bile-ducks.

The ball-valve action is more likely to occur with a single stone, but the group of intermittent symptoms are not necessarily present. I have reported a case of a man, aged seventy years, who had been jaundiced for several years, but who had not had, so far as could be gathered, attacks of chills and fever. There was a gall-stone in the diverticulum of Vater which could not be pushed into the common duct. There was not, however, complete obstruction, as on squeezing the duct bile-stained mucus flowed from the orifice. A second stone of the size of an olive lay free in the common duct. I cannot speak positively about the clinical features of this case, which I did not see during life. The common duct may be full of calculi and, as is well known, there may be no suspicion of any trouble during life; the bile may flow, as water does in a rocky stream, between the stones. On the other hand, these cases of multiple calculi in the common duct may present marked intermittency in the symptoms. One of the first cases admitted to this hospital was a man, aged sixty-eight years, who had had jaundice of great intensity of three years duration, during which time he had scarcely passed three weeks without a chill of great severity. He died from cholæmia two days after admission. The common duct was distended into a sac and filled with gall-stones. The gall-bladder was
shrunk to a small sac tightly contracted around several gall-stones. There was a small ulceration between the duodenum and the common duct. The walls of the ducts were thickened, not ulcerated, and the contents were a viscid, yellowish, non-purulent material. There was an acute ulcerative endocarditis in this case. Other causes of chronic jaundice do not, so far as I know, give this clinical picture. In the pressure of a new growth, as from the pancreas, the jaundice is deeper, more enduring, as a rule, and there are not these singular intermittent features; pain is not so constant a symptom; infection of the bile passages is less frequent; there are often signs of secondary disease; the gall-bladder is enlarged (Courvoisier’s rule) and palpable; there is progressive deterioration of health and strength; and, lastly, there are sometimes the special features of pancreatic diseases—fatty stools, &c.

The presence of the ball-valve stone in the diverticulum of Vater gives a possible clue to the absence of enlargement of the gall-bladder in these cases of obstruction from stone, a point to which a good deal of attention has been paid recently. This interesting observation we owe to Courvoisier, and it is of a good deal of diagnostic significance. Ecklin¹ has recently reviewed the question, and finds that of 172 cases of obstruction of the common duct by calculus in 34 the gall-bladder was normal, in 110 it was contracted, and in 28 it was dilated. Of 139 cases of occlusion of the common duct from other causes the gall-bladder was normal in 9, shrunk in 9, and dilated in 121. It seems quite possible that this absence of dilatation in obstruction by stone is associated with the disturbance in the normal reflex of the sphincter choledochi, an important function of which is, as Leichtenstern states, filling of the gall-bladder.

Prognosis.—What is the outlook in these cases? Let me give you briefly my personal experience.

CASE 1.—This was that of a woman, aged thirty years, in whom for eight months there were recurring attacks of pain withague-likeparoxysms and intensification of the jaundice. The gall-stone passed and the patient recovered.

CASE 2.—A woman, aged fifty-five years, from July, 1897, until August, 1892, had jaundice of varying intensity with recurring attacks of pain and intermittent fever. This case was one of unusual severity. Recovery was complete. The patient was in good health in 1888 when last heard from.

CASE 3.—A woman, aged forty years, had variable jaundice of two and a half years’ duration; there were recurring attacks of intermittent fever with pain; an operation was performed, death ensued, and post-mortem a ball-valve stone was found in the diverticulum of Vater.

CASE 4.—A man, aged seventy years, had had jaundice of varying intensity for eleven months; there were repeated paroxysms of pain and intermittent fever; death followed from choalaemia.

CASE 5.—A woman, aged forty-six years, had been under observation for three years with attacks of pain and intermittent fever with intensification of the jaundice. The patient has been lost sight of.

CASE 6.—A woman, aged twenty-three years, suffered from jaundice of ten months’ duration varying in intensity; there were paroxysms of hepatic intermittent fever, but the patient recovered.¹

CASE 7.—This was that of a man, aged sixty-four years, who had had jaundice for two and a half years (May, 1890, to November, 1892), with recurring chills and fever with intensification of the jaundice; there was very little pain but great loss of weight. The patient has been in perfect health up to date (January, 1897) since recovery.

¹These cases have been reported in full in an article on Hepatic Intermittent Fever, Johns Hopkins Hospital Reports, vol. ii.
Case 8.—A man, aged forty-four years, suffered from intermittent jaundice of many years’ (fifteen?) duration; there were innumerable attacks of chills and fever recurring at intervals of from six weeks to six months. Several attacks occurred while under observation in 1892. The patient recovered and has been in perfect health since the spring of 1892.

Case 9.—A man, aged sixty years, had jaundice varying in intensity for nearly six months; there were recurring attacks of pain with chills and fever; death occurred from cholæmia.

Case 10.—A woman, aged twenty-eight years, for two and a half years has had intermittent attacks of jaundice with chills and fever. Her general health has been well maintained. This patient is the one now under observation.

Recovery followed spontaneously in five cases (in one after an indefinite period of years, in one after three years, in one after two and a half years, and in two cases after eight and ten months respectively), two died from cholæmia, one case was operated on and died, and one was lost sight of. The dangers are suppurative cholangitis, perforation of the duct, diffuse hepatitis, and remotely the development of cancer.

What shall we advise in the present case? The patient’s life has been miserable for more than two years; all sorts of measures have been employed and the Pharmacopœia has been exhausted. The two remedies which are in vogue at present—phosphate of soda in large doses and olive oil—have been tried in vain. The medicinal treatment of gall-stones is a chapter in our therapeutics the leaves of which are best turned very rapidly. The man who believes he can dissolve gall-stones will probably tell you that he can abort an attack of pneumonia and that he can cure locomotor ataxia. So soon as they give serious trouble their removal by operation is the only rational method of treatment. When they are in the gall-bladder the operation in skilled hands has a minimum of risk. Kehr’s recent statistics give one hundred and twenty-seven cholecystotomies with only one death. The question is a
very different one in the common duct cases. The operation is much more severe, the risks infinitely greater, and the results, even in the best hands, not nearly so good. Kehr has, however, had thirty cases with only two deaths—a remarkable record. In the present case the attacks are recurring with greater intensity and greater frequency, the bile passages have stood the irritation long enough, and I have urged her strongly to submit to an operation at an early date.

A knowledge of the significance of the group of symptoms to which I have called your attention will suggest to surgeons the advisability of seeking the obstruction in the terminal portion of the duct. In the specimens before you the stones lie in reality within the duodenum, projecting beneath its mucosa, and would be more accessible through an incision in the gut than by a choledochotomy.
JOHN MURPHY & CO., PRINTERS,
BALTIMORE.
PNEUMONIA.

Review of Cases Studied by the Third and Fourth Year Classes, Johns Hopkins Hospital, Season of 1896-97.

BY

WILLIAM OSLER, M. D.,
Professor of Medicine In the Johns Hopkins University.

FROM
THE NATIONAL MEDICAL REVIEW,
WASHINGTON, D. C.
DEC., 1897.
PNEUMONIA.


By William Osler, M. D.,
Professor of Medicine Johns Hopkins University.

In the memorable address with which Sir James Paget opened the Seventh International Congress in London, he spoke of our profession as one that "offers the most complete and constant union of those three qualities which have the greatest charm for pure and active minds—novelty, utility and charity." This element of novelty is one with which even those of you who are only beginning your clinical work must be much impressed. For the past eight weeks we have been studying together the prevalent acute diseases—malaria and typhoid fever; and now the picture begins to change, and the presence in the wards of several cases reminds us that the pneumonia season is at hand. We shall begin to-day a systematic study of this the most important acute affection you will be called upon to treat—a disease with manifestations perhaps less multi-
form than typhoid fever or malaria, but one infinitely more dangerous, and much less under our control. As our aim is to make this a school of practical medicine, I dispense as far as possible with all theoretical and didactic considerations, and make the cases teach the lesson of the disease. In the ward classes you will see (as far as is possible) and have notes of every case of pneumonia admitted this session, and I have asked one of your number to be Recorder, and fill up week by week on the blackboard a tabular list, so that you can, as we say, "keep track" of them. Before speaking of the cases now under observation, let me give you in a brief summary our pneumonia lesson of the last session. I am indebted to Mr. Ford, the Recorder of the cases last year, for an excellent analysis.

In a general hospital we see five groups of cases: (1) acute pneumonia developing in healthy children or adults, or in debilitated or dissipated persons; (2) pneumonia developing after anaesthesia or surgical operations; (3) the terminal pneumonia in old hospital cases, a form more often recognized in the dead-house than in the wards; (4) cases admitted with the sequelæ or complications of pneumonia, and (5) cases
admitted as pneumonia, but which prove to be some other disease. Let me re-

fresh your memories by a brief review of the cases of the last session grouped in this way.

I. Ordinary pneumonia. There were twenty-five cases admitted. The ages were as follows: under 10 years 7 cases; the youngest case was No. 23, a child aged 2½ years; between the ages of 30 and 50 there were 9 cases; the oldest case was No. 20, a man aged 71 years. The part of the lung involved: left lower lobe 10 cases; left upper lobe 2; right lower lobe 16; right upper lobe 9; double pneumonia 6 cases. A majority of the cases pursued an uneventful course. Well marked crisis occurred in 20 cases—on the fourth day in 2 cases, on the fifth day in 1 case, on the sixth day in 2, on the seventh day in 5, on the eighth day in 3, on the ninth day in 2, on the tenth day in 2, on the eleventh day in 2, on the fourteenth day in 1. Death occurred in five cases, giving a mortality of 20 per cent, which is some-

what lower than is usual in the disease and lower than our total mortality for the past eight years. Case 5, a child aged five years, died on the twenty-fifth day of a streptococcus empyema. A rib was resected and the pleura drained, but
there was a general streptococcus septicæmia. In case 6 the patient died of double pneumonia with pericarditis on the eleventh day. Case 7 died of asthenia on the fifteenth day, with a complication of pericarditis. Case 11 died of asthenia on the thirteenth day. Case 24 died on the eleventh day with consolidation of all of the right lung, and the lower lobe of the left.

I have frequently called your attention to the fact that with the exception of involvement of the pleura and pericardium, complications and sequelæ are rare in pneumonia. In only two of the cases did an extensive pleurisy with effusion develop. One case had jaundice. A leucocytosis was present in all of the cases. The lowest count was 12,400 leucocytes per c. m. in case 11, a hard drinker, aged 48, who died on the thirteenth day. The highest count of leucocytes was 63,000 per c. m.

II. Through the kindness of my colleague, Dr. Halstead, and of Dr. Bloodgood, we have been able to keep track of the pneumonia cases developing on the surgical side. The three cases are particularly interesting, as they illustrate the three chief conditions under which pneumonia occurs in surgical practice. It is well known that after injuries, particu-
larly in elderly men or in hard drinkers, pneumonia is very liable to develop. A man admitted March 2, 1897, with a compound fracture of the right tibia and fibula, contracted pneumonia on the thirteenth day. He had consolidation of the right lower lobe, which was followed by an extensive pneumococcus empyema, necessitating resection of the rib and drainage. He made a good recovery.

It is not very uncommon for surgical cases in general hospitals, whether they have been operated upon or not, to be attacked with pneumonia. An exceedingly interesting case of Dr. Finney’s was a man aged 48, whom I saw on his admission, with a distended painful abdomen and signs of obstruction. Dr. Finney operated at once and found a strangulation by a small retro-peritoneal band, which was readily nicked and at once relieved the pressure. The patient did well, but three weeks subsequently developed pneumonia in the left lower lobe. It ran a very favorable course and terminated by crisis on the seventh day.

A form of pneumonia of the greatest interest to surgeons is that which follows the administration of an anaesthetic. Renewed attention has been directed to the subject by Mr. Clement Lucas, of Guy’s Hospital, and the London jour-
nals of the past year contain a good deal of interesting matter upon it. The question has also been discussed in Boston, and you will find in the Boston Medical and Surgical Journal for September 23 a suggestive paper by Dr. W. F. Whitney. This "ether pneumonia," as it has been called, differs in no way from the ordinary form, and it is probable that prolonged and profound etherization is simply a condition which increases the liability to infection, if the pneumococcus happens to be present (as it so often is) in the patient's air passages. It is remarkable with what rapidity an ether pneumonia may kill. We have had one case in which the patient died on the second day. The only case during this session was one of gastrotomy for malignant stricture of the oesophagus in a woman aged 70. She died a few days after the operation of pneumonia involving the bases of both lungs. Dr. Whitney suggests that before operation the mouth should be thoroughly disinfected and the throat gargled with a warm solution of chlorinated soda, (Labarraque's solution), three drachms in two ounces of peppermint water and two ounces of glycerine; and that the nose should be douchèd with a solution of boracic acid and salt.

III. Terminal Pneumonia. Cases of
chronic diseases are not infrequently carried off with a terminal inflammation of the lung. In pulmonary tuberculosis, the various forms of Bright’s disease, cirrhosis of the liver, all forms of chronic heart disease and diabetes, the end may be caused by inflammation of the lungs. This is frequently overlooked in the wards and not detected until the autopsy; in fact the remarkable discrepancy between the post-mortem and clinical records of a hospital in the matter of pneumonia is largely accounted for by this terminal form, the existence of which is often masked by the other features of the case, or which indeed may not present any suggestive indications. The only case of the kind under observation last year you still remember very well. Ida A——, aged 17, who was in ward G for the greater part of the winter with chronic Bright’s disease. The condition became much aggravated; she had a great deal of anasarca, and grew much debilitated. On March 8 she began to have dyspnoea, and we detected signs of consolidation in the left lung. She died on the 12th day.

IV. As I mentioned a few moments ago, we had no case of pneumonia admitted to the wards which showed any of the serious sequelæ, but one case was ad-
mitted which illustrated one of the most serious terminations of the disease; namely, abscess. The patient, a man aged 57, was admitted March 25, 1897. His illness began on January 3, with a chill, pain in the right side and shortness of breath, and from the statements which he gives, there is little doubt that he had an ordinary pneumonia. From the outset he had fever, loss in weight, shortness of breath, and cough, with expectoration of a very ill-smelling sputa. The patient presented signs of cavity in the lower lobe of the left lung. The sputum was abundant, with a sweetish, sometimes a very foul odor; elastic tissue and tubercle bacilli were not found. The question of operation was considered, but he refused, which, considering his very weak state, was, I think, wise. He went to his home and died on April 6.

V. No cases are of greater interest than those which present at the outset all the features of frank pneumonia, but which subsequently prove to be the subjects of the pneumatic form of pulmonary tuberculosis. The most interesting of the two cases, as we were able to follow it almost from the outset, was that of A. H., aged 52, a Dane, who was admitted February 12, 1897. He had been steward on a steamer, and had been
taken ill suddenly only a few days before admission, with a chill, cough, dyspnœa and labial herpes. He had dullness with tubular breathing at the right apex. The sputum was at first rusty colored, and there was no suggestion whatever that the condition was anything but ordinary pneumonia. He had very slight leucocytosis; the temperature was not very high, but subsequently there were signs of pleurisy in the left axilla. After the tenth day, when no crisis occurred, we became a little suspicious, and the sputum was very carefully examined. Tubercle bacilli were found on the twelfth day, elastic tissue on the twentieth day. The sputa had also, some of you may remember, that very greenish hue upon which Traube laid so much stress in these cases. Death occurred on the forty-third day, and the autopsy showed the right lung uniformly involved in a fresh tuberculous pneumonia. There was a small cavity in the lower lobe. The left lung showed an old cheesy focus and areas of fresh tuberculous infiltration.

About the other case we could not be so positive. A man aged 58, admitted December 3, 1896, had dullness over the right lung from apex to base behind, with intense tubular breathing.
He had been ill for about six weeks before admission with pain in the right side, cough and dyspnœa. We never found tubercle bacilli or elastic tissue in the sputa. The temperature was not high during the short time he stayed in hospital. He emaciated very rapidly, went to his home, and died within three months of the onset of his illness. He had chills and sweats and involvement of the other lung. There was a history of consumption in his family and though the positive evidence furnished by the tubercle bacilli in the sputa was not forth-coming, yet I think there can be very little question that in this case, too, the process was tuberculous.

Some concrete positive knowledge of these 32 cases makes a good clinical beginning for the fourth year students among you, and should you double this experience during the present session you will at least start with a fair fighting knowledge of one of your worst foes.
INTERNAL MEDICINE AS A VOCATION
INTERNAL MEDICINE AS A VOCATION

AN ADDRESS

BEFORE THE SECTION ON GENERAL MEDICINE AT THE NEW YORK ACADEMY OF MEDICINE, OCTOBER 19TH, 1897

BY

WILLIAM OSLER, M. D.
Professor of Medicine in the Johns Hopkins University

REPRINTED FROM
THE MEDICAL NEWS
NEW YORK, NOVEMBER 20TH, 1897
JOHN MURPHY & CO., PRINTERS,
BALTIMORE.
IT was with the greatest pleasure that I accepted an invitation to say a few words before this section of the Academy on the importance of internal medicine as a vocation. I wish there were another term to designate the wide field of medical practice which remains after the separation of surgery, midwifery, and gynecology. In itself it is not a specialty, but embraces at least half a dozen, and so its cultivators cannot be called specialists, but bear without reproach the good old name physician, in contradistinction to general practitioners, surgeons, obstetricians, and gynecologists. I have heard the fear expressed that in this country the sphere of the physician proper is becoming more and more restricted, and perhaps this is true; but I maintain (and I hope to convince you) that the opportunities are still great, and that the harvest is truly plenteous, while the laborers, though not few, are scarcely sufficient to meet the demand.

At the outset I would like to emphasize the fact that the student of internal medicine cannot be a specialist. The manifestations of almost any one of the important diseases in the course of a few years will "box the compass" of the specialties. Typhoid fever, for example, will not only go the rounds of those embraced in medicine proper, but will carry its student far afield in morbid psychology, and sometimes teach him, perhaps at the cost of the patient, a little surgery. So, too, with syphilis, which after the first few
weeks I claim as a medical affection. I often tell my students that it is the only disease which they require to study thoroughly. Know syphilis in all its manifestations and relations, and what remains to be learned will not stretch the pia mater of a megallocephalic senior student.

Each generation has to grow its own consultants. Hos-sack, Samuel Mitchell, Swett, Alonzo Clark, Austin Flint, Fordyce Barker, and Alfred Loomis, served their day in this city, and then passed on into silence. Their works remain; but enough of a great physician's experience dies with him to justify the saying "there is no wisdom in the grave." The author of "Rab and His Friends" has a couple of paragraphs on this point which are worth quoting:

"Much that made such a man what the community, to their highest profit, found him to be, dies with him. His inborn gifts, and much of what was most valuable in his experience, were necessarily incommunicable to others; this depending much on his forgetting the process by which, in particular cases, he made up his mind, and its minute successive steps . . . , but mainly, we believe, because no man can explain directly to another man how he does any one practical thing, the doing of which he himself has accomplished not at once or by imitation, or by teaching, but by repeated personal trials, by missing much before ultimately hitting."

Wherewithal shall a young man prepare himself, should the ambition arise in him to follow in the footsteps of such a teacher as, let us say, the late Austin Flint—the young man just starting, and who will from 1915 to 1940 stand in relation to the profession of this city and this country as did Dr. Flint between 1861 and the time of his death. We will assume that he starts with equivalent advantages, though this is taking a great deal for granted, since Austin Flint had a strong hereditary bias toward medicine, and early in life fell under the influence of remarkable men whose teachings molded his thought to the very end. We must not forget that Dr. Flint was a New Englander, and
of the same type of mind as his great teachers—James Jackson and Jacob Bigelow.

Our future consultant has just left the hospital, where, for the first time realizing the possibilities of his profession, he has had his ambition fired. Shall he go abroad? It is not necessary. The man whom we have chosen as his exemplar did not, but found his opportunities in country practice, and in Buffalo and Louisville, then frontier towns, and had a national reputation before he reached New York. But would it be useful to him? Undoubtedly. He will have a broader foundation on which to build, and a year or two in the laboratories and clinics of the great European cities will be most helpful. To walk the wards of Guy's or St. Bartholomew's, to see the work at the St. Louis and at the Salpêtrière, to have put in a few quiet months of study at one of the German university towns will store the young man's mind with priceless treasures. I assume that he has a mind. I am not heedless of the truth of Shakespeare's sharp taunt,

How much the fool that hath been sent to Rome,  
Exceeds the fool that hath been kept at home.

At any rate, whether he goes abroad or not, let him early escape from the besetting sin of the young physician, Chauvinism, that intolerant attitude of mind which brooks no regard for anything outside his own circle and his own school. If he cannot go abroad let him spend part of his short vacations in seeing how it fares with the brethren in his own country. Even a New Yorker could learn something in the Massachusetts General and the Boston City Hospitals. A trip to Philadelphia would be most helpful; there is much to stimulate the mind at the old Pennsylvania Hospital and at the University, and he would be none the worse for a few weeks spent still farther south on the banks of the Chesapeake. The all-important matter is to get breadth of view as early as possible, and this is difficult without travel.
Poll the successful consulting physicians of this country to-day, and you will find they have been evolved either from general practice or from laboratory and clinical work; many of the most prominent having risen from the ranks of general practitioners. I once heard an eminent consultant rise in wrath because some one had made a remark reflecting upon this class. He declared that no single part of his professional experience had been of such value. But I wish to speak here of the training of men who start with the object of becoming pure physicians. From the vantage ground of more than forty years of hard work, Sir Andrew Clark told me that he had striven ten years for bread, ten years for bread and butter, and twenty years for cakes and ale; and this is really a very good partition of the life of the student of internal medicine, of some at least, since all do not reach the last stage.

It is high time we had our young Lydgate started. If he has shown any signs of nous during his student and hospital days a dispensary assistantship should be available; anything should be acceptable which brings him into contact with patients. By all means, if possible, let him be a pluralist, and—as he values his future life—let him not get early entangled in the meshes of specialism. Once established as a clinical assistant he can begin his education, and nowadays this is a very complicated matter. There are three lines of work which he may follow, all of the most intense interest, all of the greatest value to him—chemistry, physiology, and morbid anatomy. Professional chemists look askance at physiological chemistry, and physiological chemists criticize pretty sharply the work of some clinical chemists, but there can be no doubt of the value to the physician of a very thorough training in methods and ways

---

1This well-drawn character in George Eliot's "Middlemarch" may be studied with advantage by the physician; one of the most important lessons to be gathered from it is—marry the right woman!
of organic chemistry. We sorely want, in this country, men of this line of training, and the outlook for them has never before been so bright. If at the start he has not had a good chemical training, the other lines should be more closely followed.

Physiology, which for him will mean very largely experimental therapeutics and experimental pathology, will open a wider view and render possible a deeper grasp of the problems of disease. To Traube and men of his stamp, the physiological clinicians, this generation owes much more than to the chemical or post-mortem-room group. The training is more difficult to get, and nowadays when physiology is cultivated as a specialty few physicians will graduate into clinical medicine directly from the laboratory. On the other hand, the opportunities for work are now more numerous, and the training which a young fellow gets in a laboratory controlled by a pure physiologist will help to give that scientific impress, which is only enduring when early received. A thorough chemical training and a complete equipment in methods of experimental research are less often met with in the clinical physician than a good practical knowledge of morbid anatomy; and, if our prospective consultant has to limit his work, chemistry and physiology should yield to the claims of the dead-house. In this dry-bread period he should see autopsies daily, if possible. Successful knowledge of the infinite variations of disease can only be obtained by a prolonged study of morbid anatomy. Of special value in training the physician in diagnosis, it also enables him to correct his mistakes, and, if he reads its lessons aright, it may serve to keep him humble.

This is, of course, a very full programme, but in ten years a bright man with what Sydenham calls "the ancient and serious diligence of Hippocrates" will pick up a very fair education, and will be fit to pass from the dispensary to the wards. If he cannot go abroad after his hospital term, let it be an incentive to save money, and with the first
$600 let him take a summer semester in Germany, working quietly at one of the smaller places. Another year spend three months or longer in Paris. Lay schemes in advance, and it is surprising how often the circumstances fit in with them. How shall he live meanwhile? On crumbs—on pickings obtained from men in the cakes-and-ale stage (who always can put paying work into the hands of young men), and on fees from classes, journal work, private instruction, and from work in the schools. Any sort of medical practice should be taken, but with caution—too much of it early may prove a good man’s ruin. He cannot expect to do more than just eke out a living. He must put his emotions on ice; there must be no “Amaryllis in the shade,” and he must beware the tangles of “Neaera’s hair.” Success during the first ten years means endurance and perseverance; all things come to him who has learned to labor and wait, who bides his time “ohne hast, aber ohne rast,” whose talent develops “in der Stille,” in the quiet fruitful years of unselfish devoted work. A few words in addition about this dry-bread decade. He should stick closely to the dispensary. A first-class reputation may be built up in them. Bryom Bramwell’s “Atlas of Medicine” largely represents his work while an assistant physician to the Royal Infirmary, Edinburgh. Many of the best-known men in London serve ten, fifteen, or even twenty years in the out-patient departments before getting wards. Lauder Brunton has only recently obtained his full physicianship at St. Bartholomew’s after a service of more than twenty years in the out-patient department. During this period let him not lose the substance of ultimate success in grasping at the shadow of present opportunity. Time is now his money, and he must not barter away too much of it in profitless work—profitless so far as his education is concerned, though it may mean ready cash. Too many quiz classes or too much journal work has ruined many a promising clinical physician. While the Pythagorean silence of nearly seven years, which the great
Louis followed (and broke to burst into a full-blown reputation) cannot be enjoined, the young physician should be careful what and how he writes. Let him take heed to his education, and his reputation will take care of itself, and in a development under the guidance of seniors he will find plenty of material for papers before medical societies and for publication in scientific journals.

I would like to add here a few words on the question of clinical instruction, as with the great prospective increase of it in our schools there will be many chances of employment for young physicians who wish to follow medicine proper as a vocation. To-day this serious problem confronts the professors in many of our schools—how to teach practical medicine to the large classes; how to give them protracted and systematic ward instruction? I know of no teacher in the country who controls enough clinical material for the instruction of classes of say 200 men during the third and fourth years. It seems to me there are two plans open to the schools: The first is to utilize dispensaries for clinical instruction much more than is at present the rule. For this purpose a teaching-room for a class of twenty-five or thirty students immediately adjoining the dispensary is essential. For instruction in physical diagnosis, for the objective teaching of disease, and for the instruction of students in the use of their senses, such an arrangement is invaluable. There are hundreds of dispensaries in which this plan is feasible, and in which the material now is not properly worked up because of the lack of this very stimulus. In the second place, I feel sure that ultimately, we shall develop a system of extra-mural teaching similar to that which has been so successful in Edinburgh; and this will give employment to a large number of the younger men. At any large university school of medicine there might be four or five extra-mural teachers of medicine, selected from men who could show that they were fully qualified to teach, and that they had a sufficient number of beds at their command, with proper
equipment for clinical work. At Edinburgh there are eight extra-mural teachers of medicine whose courses qualify the student to present himself for examination either before the Royal Colleges or the University. If we ever are to give our third and fourth year students protracted and complete courses in physical diagnosis and clinical medicine, extending throughout the session, and not in classes of a brief period of six weeks’ duration, I am confident that the number of men engaged in teaching must be greatly increased.

Ten years’ hard work tells with colleagues and friends in the profession, and with enlarged clinical facilities the physician enters upon the second, or bread-and-butter period. This, to most men, is the great trial, since the risks are greater, and many now drop out of the race, wearied at the length of the way and drift into specialism or general practice. The physician develops more slowly than the surgeon, and success comes later. There are surgeons at forty years in full practice and at the very top of the wave, a time at which the physician is only preparing to reap the harvest of years of patient toil. The surgeon must have hands, and better, young hands. He should have a head, too, but this does not seem so essential to success, and he cannot have an old head with young hands. At the end of twenty years, when about forty-five, our Lydgate should have a first-class reputation in the profession, and a large circle of friends and students. He will probably have precious little capital in the bank, but a very large accumulation of interest-bearing funds in his brain-pan. He has gathered a stock of special knowledge which his friends in the profession appreciate, and they begin to seek his counsel in doubtful cases, and gradually learn to lean upon him in times of trial. He may awake some day, perhaps, quite suddenly, to find that twenty years of quiet work, done for the love of it, has a very solid value.

The environment of a large city is not necessary to the growth of a good clinical physician. Even in small towns
a man can, if he has it in him, become well versed in methods of work, and with the assistance of an occasional visit to some medical centre he can become an expert diagnostician and reach a position of dignity and worth in the community in which he lives. I wish to plead particularly for the wasted opportunities in the smaller hospitals of our large cities, and in those of more moderate size. There are in this State a score or more of hospitals with from thirty to fifty medical beds, offering splendid material for good men on which to build reputations. Take, for example, the town of Thelma, which I know well, to which young Rondibilis, a recent resident at the Hôtel Dieu, has just gone. He wrote asking me for a letter of advice, from which I take the liberty of extracting one or two paragraphs:

"Your training warrants a high aim. Say to those who ask, that you intend to practice medicine only, and will not take surgical or midwifery cases. X. has promised that you may help in the dispensary, and as you can count blood and percuss a chest you will be useful to him in the wards, which, by the way, he now rarely visits. Be careful with the house physicians, and if you teach them anything do it gently, and never crow when you are right. The crow of the young rooster before his spurs are on always jars and antagonizes. Get your own little clinical laboratory in order. Old Dr. Rolando will be sure to visit you, and bear with him as he tells you how he can tell casts from the ascending limb of the loop of Henle. He was once as you are now, a modern, but he crawled up the bank twenty years ago; the stream has left him there, but he does not know it. He means to impress you; be civil and show him the new Nissl-stain preparations, and you will have him as a warm friend. His good heart has kept him with a large general practice, and he can throw post-mortems in your way, and may send for you to sit up with his rich patients. If Y. asks you to help in the teaching, jump at the chance. The school is not what you might wish, but the men are in
earnest, and a clinical microscopy-class or a voluntary ward-
class, with Y's. cases, will put you on the first rung of the
ladder. Yes, join both the city and the county society, and
never miss a meeting. Keep your mouth shut, too, for a
few years, particularly in discussions.

"Foote's (Philadelphia) is the catalogue to which I
referred. Let the old men read new books; you read the
journals and the old books. Study Lænnec this winter;
Forbes' 'Translation' can be cheaply obtained, but it will
help to keep up your French to read it in the original.
The old Sydenham Society editions of the Greek writers and
of Sydenham are easily got and are really very helpful. As
a teacher you can never get orientirt without a knowledge
of the Fathers, ancient and modern. And do not forget,
above all things, the famous advice to Backmore, to whom,
when he first began the study of physic, and asked what
books he should read, Sydenham replied, 'Don Quixote,'
meaning thereby, as I take it, that the only book of physic
suitable for permanent reading is the book of Nature."

A young fellow with staying powers who avoids entangle-
ments, may look forward in twenty years to a good consulta-
tion practice in any town of 40,000 to 50,000 inhabitants.
Some such man, perhaps, in a town far distant, taking care
of his education, and not of his bank book, may be the Austin
Flint of New York in 1930.

"Many are called, but few are chosen," and of the many
who start out with high aims, few see the goal. Even when
reached the final period of "cakes and ale" has serious
drawbacks. There are two groups of consultants, the intra-
and the extra-professional; the one gets work through his
colleagues, the other, having outgrown the narrow limits of
professional reputation, is at the mercy of the profanum
vulgus. Then for him "farewell the tranquil mind, fare-
well content." His life becomes an incessant struggle, and
between the attempt to carry on an exhausting and irk-
some practice, and to keep abreast with young fellows still
in the bread-and-butter stage, the consultant at this period is worthy of our sincerest sympathy.

One thing may save him. It was the wish of Walter Savage Landor always to walk with Epicurus on the right hand and Epictetus on the left, and I would urge the clinical physician, as he travels farther from the East, to look well to his companions—to see that they are not of his own age and generation. He must walk with the “boys,” else he is lost, irrevocably lost; not all at once, but by easy grades, and every one perceives his ruin before he, “good, easy man,” is aware of it. I would not have him a basil plant, to feed on the brains of the bright young fellows who follow the great wheel uphill, but to keep his mind receptive, plastic, and impressionable he must travel with the men who are doing the work of the world, the men between the ages of twenty-five and forty.

In the life of every successful physician there comes the temptation to toy with the Delilah of the press—daily and otherwise. There are times when she may be courted with satisfaction, but beware! sooner or later she is sure to play the harlot, and has left many a man shorn of his strength, viz., the confidence of his professional brethren. Not altogether with justice have some notable members of our profession labored under the accusation of pandering too much to the public. When a man reaches the climacteric, and has long passed beyond the professional stage of his reputation, we who are still “in the ring” must exercise a good deal of charity, and discount largely the on dits which indiscreet friends circulate. It cannot be denied that in dealings with the public just a little touch of humbug is immensely effective, but it is not necessary. In a large city there were three eminent consultants of world-wide reputation; one was said to be a good physician but no humbug, the second was no physician but a great humbug, the third was a great physician and a great humbug. The first achieved the greatest success, professional and social, possibly not financial.
While living laborious days, happy in his work, happy in the growing recognition which he is receiving from his colleagues, no shadow of doubt haunts the mind of the young physician, other than the fear of failure; but I warn him to cherish the days of his freedom, the days when he can follow his bent, untrammeled, undisturbed, and not as yet in the coils of the octopus. In a play of Oscar Wilde's one of the characters remarks, "there are only two great tragedies in life, not getting what you want—and getting it!" and I have known consultants whose treadmill life illustrated the bitterness of this mot, and whose great success at sixty did not bring the comfort they had anticipated at forty. The mournful echo of the words of the preacher rings in their ears, words which I not long ago heard quoted with deep feeling by a distinguished physician, "Better is a handful with quietness than both hands full with travail and vexation of spirit."