was touched with cotton to clear the field, or with Killian's forceps, coughing was excited, and a little bleeding. After two or three attempts the nail was freed from its impacted position, and although it slipped from the forceps, it followed the tube as it was withdrawn through the glottis, and was seized in the pharynx. The illumination was by reflected light. There was a little blood when the nail was first seized, which stopped immediately. The patient did not suffer in the least from the operation.

May 16. — Patient discharged well, except for a few coarse rales on the right side, especially in the scapula region, the same condition as before the operation.

May 29. — The child's father, who is a physician, reports that the patient is well, and that no rales are to be heard.

From the experience of these cases I have but little to add to the conclusions presented with my first case. I am, if anything, more in favor of operative interference in cases of inspired foreign bodies than at that time, and inclined to attempt their removal through the natural passages in a larger number of cases. The latter demands that there be at hand not only the proper bronchoscope, but what is equally important, proper instruments for working through the tube after it is in place. For the lower operation, almost any hollow tube of proper caliber, and long slender forceps will carry the operator well into the primary bronchi. The introduction of the bronchoscope after previous tracheotomy presents no difficulties. A general anesthetic is not necessary nor advisable if a tracheal opening already exists, and in many cases the tracheotomy might well be done with cocaine. The reflex respiratory inhibition which has been carefully studied by Crile is sometimes annoying, and may be serious. In my cases it appeared only under a general anesthetic, and did not occur after a subcutaneous injection of atropine and local application of cocaine, as recommended by Crile.⁵

In regard to the choice between the tracheal and natural passages, in the first two cases the presence of a tracheal opening or the absence of the proper instruments left no opportunity for choosing. In the third case, a pin, point upwards, was shown by the x-ray to be at the bottom of the left primary bronchus, with the point at the fourth interspace, and the head an inch and a half lower. I did not think that I could succeed in reaching it through the mouth, and feared that an unsuccessful attempt to do so might harm the patient. In the fourth case the point of the nail was probably as high as the bifurcation, a typical case for an attempt by the natural passage. Bronchoscopy through the natural passages is, of course, not so very simple and easy as through the tracheal wall, but the introduction of the bronchoscope in this case presented no difficulty. The added difficulty was due to the smaller calibre and greater length of the tube. With Kirstein's autoscope the glottis was seen, and after spraying with 1% cocaine, the bronchoscope passed easily. It is, of course, a satisfaction to the patient and to the surgeon to avoid tracheotomy, and there is no doubt that trache-

otomy is a source of danger in itself. An unsuccessful attempt through the natural passages followed by tracheotomy not only lengthens the operation, but it must add a little to the danger of sepsis. The mouth and pharynx cannot be made surgically clean, and it is difficult not to come in contact with them. This, I think, should be considered, especially when there is probable wounding of the trachea or bronchi, or where any circumstance is likely to prolong the search for, or extraction of, the foreign body.

A CASE OF MALIGNANT ENDOCARDITIS.*

BY J. F. ALLEYNE ADAMS, M.D., PITTSFIELD.

MR. E. A. B., aged thirty-five, born in England, married, telephone manager.

On the morning of July 13, 1903, he was attacked with a chill, and came to my office, saying he could not get warm. He had been swimming the afternoon before, had been a long time in the water, and felt cold. He had previously been well, except that he had a bronchial cough for a short time the last winter, and in May complained of *muscae volitantes* for a few days, caused by constipation. He was a man of nervous temperament and active habits, who worked very hard at his business and devoted the latter part of each afternoon to athletic pursuits, such as golf and swimming. I found his temperature normal at ten o'clock. He went home and I called to see him at 3 P.M. Temperature then 103, and the same in the evening, falling to 102 between these times. He complained of "soreness of the ribs," meaning the short ribs on both sides, especially the left. It hurt him to take a long breath, and he would frequently blow out the breath, explosively. His wife said this had been a habit with him. Examination of the heart and lungs revealed nothing abnormal. The area of the spleen was somewhat enlarged; liver normal size; abdomen rigid without tenderness or pain. In the evening he was dull, saying little and hardly answering questions. He said he could not see clearly. From this time the temperature continued high and irregular, rising to 104 $\frac{3}{4}$ on the fifth day. He was dull and sometimes mildly delirious during the first week. On the third day, an erythematous eruption appeared on the lower part of the chest, in front, disappearing the next day. On the fifth day, the abdomen was greatly distended, causing much pain and distress. This was relieved by a dose of calomel followed by a saline, which caused the expulsion of much gas.

On July 18, the sixth day, he was removed from his home to the Pittsfield "House of Mercy" where he was quite comfortable for ten days, with temperature rather lower than the first few days. He was still dull and talked very little, but was quite rational. He had no more soreness of the ribs, no dyspnea, no cough, and had the general aspect of typhoid fever. But no rose-spots appeared, there was no diarrhea,

* Read at the Annual Meeting of The Massachusetts Medical Society, June 7, 1904.

⁵ Medical News, Feb. 24, 1900.

and the Widal test gave a negative result. This was made by Dr. H. C. Emerson of Springfield, Mass., with blood taken on the third, seventh, and thirteenth days of the disease, and also by Dr. R. A. Woodruff of Pittsfield on the eighteenth day, each time with negative reaction. Dr. Woodruff also made a blood count on the eighteenth day, showing:

Red corpuscles	3,200,000
White corpuscles	18,000
Hemoglobin	48%

On July 27, the fifteenth day, he began to have epistaxis, the blood running back into the throat and most of it swallowed, blackening the stools. This continued for a week, and considerable blood was lost in this way.

On July 28, the sixteenth day, on making an examination with stethoscope, I discovered a *heart murmur*, systolic, at apex. This was soft, smooth and faint, and heard over a small area, below the nipple, not at all at the base of heart or anywhere above the nipple. The lungs were normal; there were no heart symptoms. The temperature was lower than usual in the morning, being 100; but it rose to 102 $\frac{3}{4}$ in the evening, to 103 $\frac{3}{4}$ the following morning, and to 104 $\frac{3}{4}$ the following evening. From this date, the patient rapidly grew worse; the murmur became louder each day and was heard over a larger area, until on Aug. 1, the twentieth day, it was a loud, rough, churning sound, heard all over the heart area and well around on the left side of the chest.

On July 30, the nineteenth day, he began to have dyspnea at times, breathing rapidly for a few respirations. The following day, the dyspnea was increased, and in the evening he would at times open the mouth wide and seem to gasp for air.

From July 30 to Aug. 2, there was retention of urine and the catheter was used, the amount drawn being three pints a day. The urine of July 30 contained a trace of albumin, but there was none previously nor later. Aug. 3, the urine was passed involuntarily and so continued until his death, the amount three pints or more. He grew more dull and looked very white and anemic. There was a reaching out with the hands and picking at the air. Epistaxis ceased on Aug. 2.

On Aug. 4, twenty-third day, the bowels moved involuntarily. There then appeared a partial paralysis of the right arm and leg, with a dropping of the left upper eyelid. There was no picking at the bedclothes after this, and the patient lay perfectly still. At times there was a gasping for breath, but never any orthopnea.

Aug. 5, twenty-fourth day, his color was ashy, and for the first time there was difficulty in swallowing. A few petechiæ appeared on the chest and abdomen about Aug. 2 and gradually increased in number until they covered the upper chest, abdomen and forearms.

Aug. 6, twenty-fifth day, died at 12.45 noon. He was unconscious during the night and morn-

ing, but could be made to swallow milk or medicine if spoken to.

During the last few days there was dullness over the base of both lungs, with absence of vesicular murmur, but without rales. There was no cough at any time. The pulse, throughout the attack, was soft, full, and regular. Toward the last it grew very soft and compressible, though still full and regular. Its frequency was from 80 to 100 until the sixteenth day, when the heart murmur appeared, and after this was 120 or more. The respiration ranged from 18 to 30 until the sixteenth day, and after that from 30 to 50. Urine was secreted freely to the end. There was never any diarrhea.

TREATMENT. — At the outset he had a dose of calomel, followed by a Seidlitz powder, and this was repeated on the fifth and eleventh days. During the first few days he took salicylate of sodium, grs. viii, every three or four hours. After this he was given a tablet containing guaia-col, menthol, thymol, and eucalyptol, every two hours until the end of the second week. Strychnia was given throughout the attack. During the last week he also had tr. digitalis and an anema thrice daily of a quart of normal salt solution, fully half of which was retained. At night he usually had one or two doses of codeine, $\frac{1}{4}$ grain each, which quieted restlessness and produced sleep. Tepid sponging was used several times daily, and was usually followed, especially during the first and second week, by a drop of temperature of one or two degrees. The bowels were kept open by enemata.

AUTOPSY. — *Heart:* The pericardium contains about one ounce of clear fluid; no adhesions. Size of heart 4 $\frac{1}{2}$ by 5 $\frac{1}{2}$ inches. Many petechial hemorrhages on anterior surface, particularly over right auricle and ventricle, just within the visceral serous covering. Heart fat fair in amount. Heart muscle flabby. Veins of heart distended with dark, liquid blood. On section, *right auricle* contains post-mortem clots and partly organized ante-mortem clots. The auricular appendage has organized clots (marantic). *Right ventricle* contains ante-mortem clots fully organized; probably marantic in origin. *Tricuspid valves* seem to be competent, but covered with a fibrinous exudate of recent origin, and valves are somewhat thickened. Papillary muscle and chordæ tendineæ practically normal. *Left auricle* negative. *Left ventricle* contains ante-mortem and post-mortem clots. *Mitral valves* are thickened and eroded and are covered with an ulcerative exudate forming excrescences of various sizes, some as large as a hazel nut, and in the exudate are pockets containing pus. Papillary muscle atrophied. Cordæ tendineæ thickened and imbedded in the inflammatory exudate. *Heart muscle* is pale and shows areas of brown atrophy, with areas of recent myocardial inflammation. Coronaries patent; no sclerosis. A few patches of beginning sclerosis in the aorta. Aortic and pulmonic semilunar valves normal.

Left lung: Free from adhesions. Petechial hemorrhages cover the visceral pleura. Upper

lobe crepitant in its upper and anterior portion. The rest of this lobe and the lower lobe firm to touch and dark in appearance. On section, lower half of upper lobe in a state of red hepatization. Lower lobe in an organized pneumonic condition. Bronchi contain a frothy, bloody exudate. Branches of the pulmonary artery supplying the lower and posterior portion of the upper lobe and the whole of the lower lobe contain thrombi, more or less organized. Bronchial mucous membrane thickened and injected.

Right Lung: Free from adhesions. The posterior portion of the upper lobe is hard and

consistency and of a chocolate color. On anterior surface there is an infarct 4 by 1½ inches, which extends through the organ from before backward. Also at the posterior and dependent angle there is an infarct 1 by 1 inch. This infarct contains liquid blood, on section. Spleen pulp very soft; all markings very indistinct. The large infarct is hard and cuts firm, and over the infarcted area there is a perisplenitis.

Left kidney 5½ by 3½ inches. Fatty capsule well marked. Fibrous capsule thickened and strips readily. Surface of kidney studded all over with petechial hemorrhages, some of them being ⅓ by ⅓ inch; and on section these hemor-

nodular and shows four or five old scars. Anterior portions of upper, middle and lower lobes are crepitant throughout. Posterior portion of all the lobes firm and solid to the touch and dark in appearance. The visceral pleura shows many petechial hemorrhages. On section, the bronchi contain frothy, bloody material and the mucous membranes are injected. The hard nodule in apex proves to be an infarct partly organized. The middle and lower lobes are pneumatic, and the pulmonary vessels supplying the posterior portion of the lobes contain thrombi.

Spleen measures 6 by 4½ inches; very soft in

rhages extend into the substance of the organ. The inferior pole of the kidney is blue in appearance. Several small white infarcts. Cortex ½ to ¾ inch thick. Malpighian bodies distinct in appearance. In the pelvis of this kidney and extending into the substance of the organ, there is a small abscess.

Right kidney 5 by 3 inches, similar in appearance to the left, but without the abscess.

Liver 10 by 9 by 3½ inches, surface smooth, consistency fairly solid; free from adhesions; light yellow in color; no infarcts; cuts fairly firm, and yet the substance in scraping breaks readily.

The organ gives all the appearances and conditions of passive congestion.

Stomach normal in size; mucous membrane thickened and studded with petechial hemorrhages.

Intestines normal, except being in a state of passive congestion.

Appendix six inches long; filled with concretions, and adherent to the cecum in a circular manner, for three inches; not inflamed.

Pancreas 7 by 1½ inches, fairly firm, and appears normal.

Brain and Spinal cord not examined.

Bacterioscopic examination of smears from the various organs and the blood from the heart showed staphylococci and a short rod bacillus, presumably the colon, as a terminal infection.

Portions of the heart muscle, spleen, liver and left kidney were examined microscopically at the Bender Laboratory in Albany, and the following report received:

Spleen shows a recent anemic infarct.

Liver: In cells about the glands of the lobules is an accumulation of pigment, of light yellow color, appearing in fine granules. The capillaries of center of lobules are slightly dilated; liver otherwise negative.

Heart muscle: Muscle fibres are slightly vacuolated. Nuclei somewhat pyknotic. The intermuscular tissue moderately edematous. On the endocardial surface are portions of small marantic thrombi.

Kidney: Tubules moderately dilated. Intertubular tissue edematous. In the lumen of tubules is an accumulation of fine granular coagulated material, but no definite casts. Glomeruli slightly lobulated. The enlarged capsular space contains granular coagulated material similar to that in tubules. There is no accumulation of lymphoid cells or increase of intertubular tissue.

DIAGNOSIS.—At the outset the case looked like a severe attack of grippe, but, the fever continuing, without local symptoms, it was called provisionally atypical typhoid fever, though the negative Widal tests and the absence of diarrhea and rose-spots made the accuracy of this diagnosis seem very improbable. After the heart murmur appeared, the diagnosis of malignant endocarditis was made; and this was borne out by the rapid progress of the heart symptoms, and the supervention of local conditions, evidently embolic, of which the most striking were the double pneumonia and the partial right hemiplegia from cerebral embolism. The leucocytosis as well as the petechial eruption tended still further to support this diagnosis. This was confirmed by the autopsy, which revealed ulcerative endocarditis, double pneumonia, thromboses of branches of the pulmonary vessels, parenchymatous nephritis, infarcts in spleen, lung and kidney, abscess of left kidney, and passive congestion of liver and other organs, with staphylococcus infection.

This disease, which is variously designated malignant, ulcerative or infectious endocarditis, bears a general resemblance to typhoid fever,

for which it is frequently mistaken. The temperature, however, does not follow the typhoid curve, but is distinctly that of a septic fever, being high at the outset, and subject to great and irregular diurnal variations. It differs from simple endocarditis in the greater size and abundance of the vegetations on the cardiac valves, the breaking down of these vegetations, with ulceration and suppuration, the numerous infarctions of other organs, the general violence of the symptoms, and the almost invariable fatal termination. Although the heart is the seat of the primary lesion, it is a curious fact that the heart symptoms are never very pronounced, that the heart murmur is seldom heard in the early stages of the disease and is sometimes wholly absent, the true nature of the disease being only learned at the autopsy.

Two symptoms which are common in malignant endocarditis were absent in this case—namely, chills and sweating. Sweating did occur toward the end of the attack, but not during the first two weeks, and the initial chill was the only one.

Before the appearance of the heart murmur, there was no possibility of making a definite diagnosis. The negative Widal reaction made the diagnosis of typhoid fever more and more doubtful, this test being applied on the third, seventh, thirteenth and eighteenth days. This almost positively excluded typhoid, and yet there are cases closely resembling typhoid, but not giving the Widal reaction. In these cases a bacillus has been found which appears intermediate between the typhoid and colon bacillus, and has been named the paratyphoid bacillus. The disease is usually of a milder type than typhoid, although fatal cases are reported.

On the other hand, the presence of the Widal reaction would not absolutely exclude malignant endocarditis, for Dr. W. Hale White reports a case in Grey's Hospital, London, of true malignant endocarditis of streptococcal origin which gave a positive Widal reaction on four occasions. Dr. Henry L. Elsner, in the *Medical News* of May 9, 1903, says, in reference to the diagnosis, that, "considered collectively, typhoid fever shows a surprisingly infinitesimal number of permanent heart lesions during the acute febrile period, or following. Hence, with evidences of endocarditis and the typhoid condition, we are justified in assuming that the disease is not typhoid fever. To make the diagnosis positive ante-mortem, we must have the presence of physical signs referable to the heart, and these we have in the majority of our cases before death. However, the endocardium may be plastered with vegetations without giving rise to physical signs. The presence of embolic infarcts is a valuable diagnostic fact."

Osler (*Practice of Medicine*, 4th ed., p. 705) says: "Perhaps a majority of the cases not associated with puerperal processes or bone disease are confounded with typhoid fever. A differential diagnosis may even be impossible, particularly when we consider that, in typhoid

fever, infection and parotitis may occur." He adds: "Points which may guide us are, the more abrupt onset in endocarditis, the absence of any regularity of the pyrexia in the early stage of the disease, and the cardiac pain. Oppression and shortness of breath may be early symptoms in malignant endocarditis. Rigors, too, are not uncommon. There is a marked leucocytosis."

In this case we had the abrupt onset and irregular pyrexia; but never any cardiac pain and little or no oppression or shortness of breath until the last week. Leucocytosis was very marked on the eighteenth day.

Although malignant endocarditis most commonly occurs as a secondary affection as in acute rheumatism, pneumonia, or septicemia, it is recognized as sometimes occurring as a primary disease. Such seems to be the case under consideration. At any rate I have been unable to discover any antecedent septic condition. All the lesions found were apparently secondary to the endocarditis. A possible exception is the nephritis, but of this there had been no symptoms, for I found the urine normal two months before this illness and also at the beginning of the attack. As for the small abscess in the left kidney, this was most likely metastatic. If these renal conditions are considered secondary, as they probably should be, we seem compelled to call the case one of primary malignant endocarditis. Perhaps it would be better described as a case of septic endocarditis, in which the origin of the infection was not discovered.

The autopsy and bacteriological examinations were made by Dr. R. A. Woodruff, of Pittsfield. The case was seen in consultation by Drs. Henry Colt and L. C. Swift of Pittsfield and by Dr. W. Gilman Thompson of New York.

DISCUSSION.

DR. C. F. WITHINGTON of Boston: I have been very much interested in this extremely carefully prepared report of this case of Dr. Adams'. He mentioned the differential points in the diagnosis of this disease and typhoid fever. It seems to me that it is one of the most important discriminations to bear in mind. In the cases I have seen the temperature was almost always irregular with marked evening exacerbations. There were other signs of sepsis, including the one he mentions and emphasizes — petechiæ on the surface of the body. I saw a case a few weeks ago at the New England Hospital with multiple abscesses. There was an abscess of the ankle joint, one on the buttocks and one on the back. The sero-pus from one of these abscesses showed the streptococcus.

One very important point is the prognosis. It is a disease that is almost invariably fatal, although I have seen two cases which I have reason to believe were ulcerative endocarditis and which did not die. Two years ago I saw the first of these. The temperature was irregular, chills, sweating, with no other explanation than that suggested by the endocardial murmur. The diagnosis was confirmed by Dr. Whittier, and the patient, after a protracted illness, recovered. I have recently had a case at the hospital of a man of twenty-six. He entered the hospital April 19. He had had measles four weeks previously, but had recovered from them, and two days later had a chill, followed by an irregular temperature, cough, sweat and chills. Four

days before coming into the hospital he had phlebitis, the limb being dark purple and swollen. The heart was enlarged, the action very violent, and the rate 160 to 170. There was marked gallop rhythm. He also had limited but distinct areas of consolidation in both lungs, which were believed to be embolic pneumonia. Six weeks before coming into the hospital he had had acute gonorrhea. That took place on the 17th of March, and the measles on the 22d of March. Forty-eight days after the gonorrhea blood cultures were taken and the gonococci were found. There was no doubt about the accuracy of the observations, and the diagnosis of malignant gonorrheal endocarditis seems established. Dr. Adams' case was from staphylococcus infection. This one was from gonococcus infection. This patient gradually improved, and his temperature became normal. For a month he has been practically well, his phlebitis has largely disappeared, and he is walking about. He has no symptoms at all now, though there is still a murmur. The white count has gone from 16,200 down to 9,400. I think we may say that although such cases are usually fatal, and the prognosis always exceedingly grave, occasional cases may recover.

DR. HENRY JACKSON of Boston: It has always been my opinion that malignant endocarditis was fatal. I saw the case referred to by Dr. Withington in consultation with Dr. Ames, and we were much pleased to have the diagnosis confirmed by him. I look upon the case as the first one I have known to get well of this disease.

DR. G. S. C. BADGER of Boston: There are two clinical forms of malignant endocarditis, — the non-septic and the septic. The former is attended by bland infarcts, suppuration does not follow, and therefore there are no abscesses. Chills and sweating are not very common in this type of the disease. In the septic variety the infarcts suppurate, abscesses develop, and chills and sweating are very common. In the case mentioned by Dr. Withington there were multiple abscesses accompanied by chills and sweating. In the case reported by Dr. Adams the infarcts were bland and chills were not common. Both these varieties may be due to the same organism; for example, the streptococcus.

ON "VARIANT" INFECTIONS: WITH REPORT OF CASES.

BY THOMAS HORACE EVANS, M.D., PHILADELPHIA.

THE nominalism in medical theories must be resigned in view of the principles of cellular pathology and its further development.

No longer will a disease be thought of to possess, as an entity, the body and mind of the unfortunate who suffer it. For we are able, now, to reduce disease to a matter of physiochemic reaction. And the terms of disease are to be read in "replacement of radicals"; and in certain peculiar, primary, protoplasmic changes affecting the original faculties of irritability, contractility, metabolism, respiration and reproduction; and in the modifications of tissue and organ forms and functions in consequence.

Neither can we neglect the factor of personality in disease. Inheritance and environment have put together a vitalism, a mechanism, if you will, that will take its own nature into the pathologic equation.

I have been interested to note the effects of a