

the salt solution and are applied to the prepared surface, care being taken to adjust all edges and keep them from turning under. This is easily done by sliding the piece of skin off the side of the razor by the aid of a probe. The grafts should be applied in such a way that they overlap the freshened edges of the ulcer a little.

When the surface has been covered in this way, the whole is to be covered with strips of rubber tissue previously rendered aseptic and soaked in the salt solution. These strips are made to overlap like shingles on a roof, and are to be long enough to extend well beyond the edges of the ulcer. The whole is then dressed with compresses of gauze moistened in the salt solution.

The part grafted should be kept in a raised position for some minutes to lessen the liability to hæmorrhage, and the Esmarch bandage if used may be left in place for an hour for the same reason. Thiersch says, "Moisten the dressing every four hours"; but once a day is found to be often enough. In ten days to two weeks the surface is completely healed over and in one to two months the skin over it is perfectly firm and strong.

The places from which the grafts are cut bleed very slightly and if dressed in the same way as the grafted surface, heal in a week or ten days without pain.

The rubber strips should be reapplied at each dressing for about two weeks and then may be discontinued and any suitable dressing applied.

In two or three days after the operation, the grafts should be of a delicate pink color, and a yellow or brown color indicates that the graft will probably die. The appearance of a considerable quantity of pus together with rather a foul odor need not be considered as unfavorable to success. They are both almost invariably present.

Of the 123 cases which I have found, 102 (or 82.9%) were perfectly successful, that is, the grafts adhered at once, and union was perfect in about ten days. Thirteen were partially successful, some grafts doing well and others dying. And in eight (or only 6.5%) was the result so bad that a repetition of the operation was deemed necessary. Of these eight unsuccessful cases four were in syphilitic subjects; and a second operation, after a preliminary antisyphilitic treatment, was perfectly successful in each instance. In the other four cases, failure was probably due to slight inaccuracies at the time of operation.

These were not picked cases. The surfaces grafted were either fresh wounds or granulating surfaces of various sorts. There were burns, varicose ulcers, ulcers left after the sloughing away of extensively lacerated tissues, a few tubercular ulcers, and even cavities in bone left after a sequestrotomy. In one of Dr. McBurney's cases, the grafts attached themselves perfectly to bare bone (ramus of the jaw). Of three tubercular ulcers which were grafted, all healed nicely, a thorough curetting of the tubercular granulations being a preliminary step in each instance. These three cases were watched for five months (one of them for ten months), and in none was there any breaking down of the grafted surface.

Taking into consideration the surprisingly good results obtained with this method of operating, and the short time necessary for a cure, together with the fact that the procedure is and has been for five years past one of the well-established operations in many

European clinics (notably Schede's, Koenig's and Czerny's), it would certainly seem that it merits a careful trial in this country. This, so far as I am aware, it has not had except at Roosevelt Hospital in New York.

Judging from the experience of the past five years, it is the operation which should be done in all cases for skin-grafting on large surfaces and where an anæsthetic is permitted.

The case which I have to show to-night is one which was operated upon by Dr. F. S. Watson, who has very kindly allowed me to bring the patient here. The man, A. B., age twenty-five, was badly burned when he was three years old, and after many months of treatment was left with a large cicatrix extending over the left buttock, outer side of left thigh and calf of leg.

September 24, 1890. Entered Boston City Hospital, with an ulcer, four by four inches, on outer surface of left thigh, and entirely within the limits of the old cicatrix. The ulcerated surface was discharging profusely, and the patient was in poor condition.

October 1st. Surface was grafted with a large piece of skin taken from breast of chicken. Wolfe's method.

October 8th. Graft beginning to slough at edge.

October 16th. Whole graft sloughed away.

October 23d. Surface again covered with clean granulations, but showing no disposition to heal.

November 3d. Grafted by Thiersch's method. Ulcerated surface was then well below level of surrounding tissues, and edges were hard. The usual operation was done, the surface granulations curetted away, and the grafts applied directly to the clean surface of the fascia lata. Esmarch bandage used, and tourniquet left in place half an hour after operation.

November 4th. Dressing moistened with salt solution.

November 5th (two days). Grafts look pink. First dressing.

November 13th (ten days). Daily dressing since November 5th. Grafted surface has reached the level of the surrounding parts. Difficult to distinguish the original boundaries of the ulcer.

November 15th (twelve days). Whole surface covered with a layer of epithelium.

November 20th (seventeen days). Surface covering looks like true skin. Patient has gained greatly in weight and strength. Rubber strips omitted, and corrosive sublimate dressing applied.

November 24th (three weeks). Grafted surface completely healed over, and seems firm and strong. Patient up, and walking about ward.

#### A CASE OF ACUTE ENDOCARDITIS.<sup>1</sup>

BY FREDERIC W. TAYLOR, M.D., CAMBRIDGE, MASS.

A. B., MALE, aged thirty-one, American, of German parentage, foreman. Parents, brothers and sisters living and well. Married recently. When seventeen years old had gonorrhœa and syphilis. Since then he has usually been very well, and during the past few years his habits have been exemplary.

During the first part of the week beginning August 10, 1890, he suffered from diarrhœa and malaise. A

<sup>1</sup> Read before the Cambridge Medical Improvement Society, November 24, 1890.

temporary improvement followed, but Thursday, August 14th, the headache increased, and he went to bed. Antipyrine was repeatedly taken with but temporary relief. When first seen by me August 16th, the temperature was 103° F., pulse 100. The only symptom complained of was cephalalgia, which was severe every afternoon, and which was subsequently readily relieved by ordinary doses of Dover's powder. There had been no chill; mind clear; tongue-moist. Milk was taken in abundance, and with relish. The bowels at this time were somewhat constipated, so that during the next week an occasional enema was given. On the 16th, 17th and 18th of August there was an evening rise and morning fall of temperature, with corresponding exacerbation and remission of symptoms. During the week following the 18th, the symptoms were not severe, and only a single daily visit and observation were made till the 26th. During this time the headache gradually abated, and as the opiate was consequently diminished, the bowels acted spontaneously. The abdomen was normally full, at no time tense, nor unduly tympanitic, though at times painful, as if from intestinal colic. The splenic region alone was tender, and the area of splenic dullness enlarged. There were no rose spots at any stage of the illness. A soft systolic souffle was to be heard at the apex of the heart. Subsequent to the increase of respiratory rate, which began on the 24th of August, and reached forty a minute on the 25th, moist râles were heard over the entire chest, but most numerous on the right side, where within a few days they became very abundant. Delirium was occasional, was very mild, and occurred only during sleep, or immediately upon waking.

August 31st, mind less clear, strength evidently failing. Respiration and pulse rapidly increasing in rate. September 1st, diarrhœa: at least four liquid dejections of light brown color. After this date there were three to eight liquid dejections daily, many of them involuntary. September 2d, a few petechial extravasations over abdomen and back. During the next few days the number of these increased greatly. This day the temperature dropped five degrees, to 100° F. September 4th, about five o'clock P. M., the patient was found to be very cold, though he made no complaint. During the evening the temperature rose to 103° F. September 5th, left thigh and leg cold. No pulsation below left groin. Late in the evening the temperature was above 106° F.; pulse, 160. Death took place September 6th, 5 A. M.

The urine throughout had the usual appearance of fever urine; at times voided with difficulty or at least delay, but in good quantity.

The treatment was purely symptomatic. Liquid nourishment, chiefly milk, was taken in abundance. Stimulants, alcohol in various forms, carbonate of ammonia, aromatic spirits of ammonia; digitalis; opiates — at first for pain — toward the last to check diarrhœa, or allay restlessness.

Autopsy, September 8, 1890, 9.30 A. M., was somewhat hurried because of objections of friends to any but a brief examination. Body had been embalmed. Rigor mortis present. Numerous petechiæ over trunk and upper extremities. Left lower extremity larger than right. Head not opened. Lungs receded when chest was opened; crepitation throughout, but diminished in posterior portion of right lung; moderate hypostatic congestion. Heart: mitral and aortic

valves covered by a luxuriant growth of soft vegetations in which were entangled small, fresh clots; otherwise normal. Spleen enlarged to about twice its normal bulk; dark red; soft. Kidneys and liver showed acute granular degeneration. Intestines (most of which were removed and subsequently thoroughly looked over): numerous small hæmorrhages similar to those in the skin, but larger and less definitely bounded; more evident on the mucous side than on the peritoneal. No ulceration was found though carefully looked for. A few single follicles were prominent, some at the centres of extravasations, in which case there was often a loss of epithelium at and immediately about the gland, but no considerable loss of substance.

Riding the fork formed by the division of the left common iliac artery was a firm fibrinous plug, which completely filled the vessel, and from which branches extended into the external iliac and internal iliac.

To recapitulate: A healthy man, aged thirty-one years, suffered from acute febrile symptoms coming on without chill, from severe headache and moderate diarrhœa. The temperature rose to between 103° and 104° F., at night, was one and a half or more degrees lower in the morning. The diarrhœa was of brief duration and not severe. The headache gradually disappeared. In the middle of the second week the respiratory rate rose from twenty to forty a minute, and moist râles appeared in abundance in right lung. A soft systolic cardiac souffle existed. The symptoms remained much the same till toward the end of the third week, when they became aggravated; the respiration forty to fifty, the pulse 120 and over, the temperature very variable, one evening 105° F., the next 100°. At this time diarrhœa re-appeared. Toward the end of the fourth week the pulsation suddenly disappeared from the left lower extremity, and death followed twenty-four hours later. The autopsy revealed enlarged spleen, granular degeneration of the parenchymatous organs, small extravasations in the skin and intestines, abundant vegetations on the mitral and aortic valves, and a completely obstructing embolus in the left common iliac artery.

Two consultants were called to the case. One was in daily attendance for six days, the other for two days previous to the death of the patient. Both expressed agreement with the attendant, who thought the case to be one of typhoid fever. With the added light of the autopsy what diagnosis shall we make?

Of the existence of endocarditis verrucosa there can be no doubt, and that this process was acute is highly probable, from the absence of symptoms previous to the present illness. Valvular disease of the degree found in this heart would undoubtedly have given some indication of its presence.

The embolism of the left common iliac artery was, of course, a direct result of the endocarditis.

The question that chiefly concerns us is, what was the primary disease? Was it endocarditis? or was the endocarditis secondary to some infection, or septic affection?

Dr. A. L. Loomis<sup>2</sup> writes, "acute exudative endocarditis is rarely, if ever, idiopathic."

Strümpel<sup>3</sup> writes, "Endocarditis, therefore, in its ætiological relations is not to be regarded as a single disease; infectious agents of inflammation especially, if

<sup>2</sup> Pepper's System of Medicine, vol. iii., p. 650.  
<sup>3</sup> Text-book of Medicine, p. 257.

not exclusively, seem to be its cause." He then enumerates as causes, acute rheumatism, chorea, the exanthemata, typhoid, small-pox, phthisis, septic and pyæmic diseases, and as a favorable condition for its development chronic endocarditis.

Niemeyer<sup>4</sup> is of much the same opinion. "Whether primary idiopathic endocarditis ever occurs, and whether the disease independently can attack a previously healthy person who has been exposed to cold may be doubted, yet it is not impossible." Niemeyer gives a list of causative diseases which is included in that just given, taken from Strümpel's book.

In addition to the views above expressed, the course of the illness might well lead us to think that its nature differed at different stages. The regular daily remission of symptoms during the first week or ten days, and the regularity of the changes in temperature and pulse-rate on the 17th and 18th of August (the only time in the early part of the illness in which we can exhibit a definite chart), contrast strongly with the irregularity of symptoms and chart of the last week, while the sudden and great increase in the rate of respiration at the end of the second week is suggestive of the time at which a new element was introduced into the case.

What, then, was the disease which *first* attacked our patient?

The clinical aspect of the case was such that the attending physician had no doubt that it was typhoid fever, and the consultants agreed with him in that opinion. The indications pointing to typhoid were the diarrhœa, which, though it lasted but a short time at the beginning of the sickness, reappeared toward the end; the severe afternoon headache; the daily variations of temperature; the enlargement of the spleen; and the absence of symptoms distinctive of any other disease. Yet in view of the facts that the autopsy, made after the disease had been in progress nearly four weeks, discovered no intestinal ulceration, and no evidence of there having been any, and that during the entire course of the disease no rose spots appeared, I believe we are not justified in making that diagnosis, however loath we may be to surrender an opinion confidently held before the patient's death.

Of the other diseases enumerated above as being primary to acute endocarditis, acute rheumatism, chorea, the exanthemata, nephritis, small-pox and phthisis may be dismissed for lack of evidence in their favor. The last of the list is septic and pyæmic diseases. When sepsis or pyæmia is present the place at which the infection entered is usually evident, the womb after child-birth, an open wound after an injury, or some internal lesion, as an intestinal ulcer of typhoid fever. At times, however, the entrance point is obscure, and Strümpel even recognizes cases in which there may have been no lesion, to which he gives the name "spontaneous septico-pyæmia. In the present case there certainly was no *evident* lesion to serve as the starting point of septicæmia. Spontaneous septico-pyæmia is rare, and we must, therefore, have strong evidence in its favor before declaring it, and that we certainly have not here; for a septic disease is usually sudden in its onset, ushered in, and accompanied by chills, has a very irregular temperature chart, and, especially when severe enough to be fatal, and when complicated with endocarditis, presents multiple metastatic abscesses; symptoms which we look for in vain

<sup>4</sup> Text-book of Practical Medicine, vol. 1, p. 329.

in the present case. Therefore, that diagnosis, while possible, is not certain nor satisfactory. The numerous extravasations alone are in its favor, but as these did not appear till toward the close of the sickness they throw no light upon its origin.

After thus wandering about in vain search for a diagnosis, we come back to that of which we are certain, acute endocarditis, and ask if that may not account for all the symptoms. Idiopathic inflammation of a serous membrane is not the rule, but with our present limitation of knowledge I believe that we must still admit that it occurs. Endocarditis raises the temperature and increases the rate of pulse and respiration, and gives rise to symptoms which regularly accompany the condition we call fever. This we know from our observation of it when it occurs in the course of some other disease, for example, acute rheumatism. The temperature rarely rises above 103°. There may be subjective symptoms referred to the cardiac region, but often they are absent. A heart murmur usually exists if the valves are affected, but this may not be present, or may be very soft. In the case reported the murmur was supposed to be of hæmic origin.

In general, there are recognized two forms of acute endocarditis, the exudative and ulcerative, the latter usually septic. Ulcers may form because the exudation takes place so rapidly and so abundantly as to cut off the nutrition of the endocardium overlying it; or the exudation may be purulent, and cause abscesses which rupture the endocardium.

May it not be that the case before us began as a non-septic endocarditis resulting in the formation of vegetations; that the process gradually increased in severity (and the process must have been very active, as shown by the profusion of vegetations) until it took on a septic character, which accounts for the irregularity of the chart, the diarrhœa, and the multiple extravasations occurring during the last five or six days? Finally, a large mass was torn from the vegetations, and the consequent plugging of the left common iliac artery was the immediate cause of death.

I offer this explanation as the best I have been able to make of this very interesting and puzzling case, and trust you may suggest improvements on this, or another entirely different that may be more satisfactory. I have to regret that more detailed notes were not recorded during the progress of the case.

## New Instruments.

### IMPROVED APPARATUS FOR STERILIZING SURGICAL INSTRUMENTS AND DRESSINGS.<sup>1</sup>

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THE inconveniences connected with the methods of sterilizing surgical instruments by immersing them in antiseptic solutions, or by boiling them, have led to the introduction of apparatus for the use of dry heat as a sterilizing agent, the only difficulties to be overcome being the regulation of the temperature, and the even distribution of heat throughout the apparatus.

The oven shown herewith was purchased in Berlin last summer, and may be described as follows: There is a triple metallic box, covered with layers of asbes-

<sup>1</sup> Read at the Meeting of the Surgical Section of the Suffolk District Medical Society, December 3, 1900.