The incision in the abdominal wall may be made in the median line, downward from the xiphoid, as was done in Cases III and IV. Green prefers an incision along the outer edge of the left rectus, for the reason that the left lobe of the liver is less in the way. In whatever manner the heart is exposed, the technic of massage embodies rhythmic compression of the ventricles, at a rate of about sixty to the minute. Subdiaphragmatic pressure should be made nearly in the median line. There is a tendency to work too far to the left.

CRILE'S TECHNIC.

Crile's technic in the crisis of relative death differs materially from simple direct massage of the heart. He presses rhythmically on the chest wall over the heart and raises the blood pressure by the use of the familiar rubber suit or, better, by adrenalin infusions. "A canula is inserted toward the heart into an artery. Normal saline, Ringer's or Locke's solution, or, in their absence, sterile water, or, in extremity, even tap water, is infused by means of a funnel and rubber tubing. But as soon as the flow has begun the rubber tubing near the canula is pierced with the needle of a hypodermic syringe loaded with 1:1,000 adrenalin chloride, and 15 to 30 minims is at once injected. Repeat the injection in a minute if needed. Synchronously with the injection of the adrenalin the rhythmic pressure on the thorax is brought to a maximum. The resulting artificial circulation distributes the adrenalin that spreads its stimulating contact with the arteries, bringing a wave of powerful contractions and producing a rising arterial, hence coronary, pressure. When the coronary pressure rises to, say, 40 mm. or more, the heart is likely to spring into action. . . . Just as soon as the heart-beat is established the canula should be withdrawn, first, because it is no longer needed, and, second, because the rising blood pressure will drive a torrent of blood into the tube and funnel." It is reasonable to suppose that adrenalin, thus used, tends to prevent the onset of fibrillary tremor.

I have had one unenlightening experience with Crile's method. In a still-born child, the femoral artery was used for an infusion of salt solution and adrenalin. In view of the fact that the child had been dead for upwards of half an hour, restoration was not justly to be anticipated. It was not procured.

From the foregoing it seems reasonable to conclude that in cases of relative death from an anesthetic, from asphyxia, from drowning or from electrocution, we should employ more than ordinary methods in attempting resuscitation. It is probable that Crile's method of thoracic pressure and intra-arterial infusion offers the greatest chance of success. Crile states that it is possible so to drill an operative staff that the technic may be begun within two minutes. This is the method of choice. Yet occasions must surely arise on which, for lack of preparation, the technic would be impracticable. In such instances reliance must needs be placed on artificial respira-

tion and on heart massage, which is "to the circulatory system what artificial respiration is to the respiratory." If, in this way, one can obtain the coronary pressure requisite for recovery, one may argue that the method, though heroic, is legitimate.

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A BRIEF SKETCH OF SEMMELWEIS AND HIS WORK ON PUERPERAL SEPSIS.

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TEXTBOOKS on obstetrics for the past few years mention the name of Semmelweis, but few acknowledge in an adequate degree the great debt which the medical profession and all mankind owe to him for his researches on puerperal sepsis, as well as for the unflagging zeal with which he fought to prove the necessity of antisepsis in the practice of obstetrics.

This omission is not altogether surprising, as the results of his practical application of anti-sepsis in labor, for the first time in the history of medicine, were in the beginning published in

Hungarian and also met such opposition from his contemporaries that they failed to receive well-merited support.

Like reformers in every age, he suffered persecution — a medical persecution — such as happens to few, and as real of its kind as has fallen to the lot of any physician who has progressed beyond the comprehension of his time.

He was born in Budapest on the first day of July, 1818, and received his preliminary education in the city of his birth. In 1838 he began the study of medicine in Vienna; then returned to the University of Pest; and finally was granted his diploma as Doctor of Medicine at Vienna, in 1844. Later in the same year he received the degree of "Magister" in obstetrics and also in surgery.

After acting as assistant for a few months in the obstetrical department of the Vienna General Hospital, he left, but returned again in March, 1847, and remained for two years.

Ignaz Philipp Semmelweis.

Shortly after the beginning of his second service, he became impressed with the fact that puerperal fever was due to the direct transmission of decomposed animal matter through the persons examining or caring for women in childbed. Accordingly, in addition to simple washing, he began the use of chlorine water as a disinfectant for the hands of those attending patients in labor. He also allowed no student who had been in the autopsy room to visit the ward until twenty-four hours had elapsed.

Previous to this time, it appears to have been the custom for students to come directly from the autopsies, where they handled pathological specimens, and proceed, often with insufficient washing of the hands, to examine women in the ward and go from one patient to another.

The effect of these precautions was marvelous, the death-rate falling at once from over 10 to 1%.

In 1847 and 1848, his preliminary work as an assistant was made known by Hebra, Routh, Haller and Skoda, and although he himself spoke on this subject twice in 1850, at the meetings of the Royal Society of Physicians in Vienna, only in 1858 did he publish the results of his investigations in Hungarian, and not until 1860 in the German language.

In 1850, owing to an altercation with the authorities of the institution over the publication of hospital material, he was refused the right to lecture and allowed to demonstrate on the mannikin alone. On this account he left Vienna and returned to Pest, where, in 1851, he became the head of the St. Rochus Hospital, and in 1855 professor in the university. During the latter part of July, 1865, he suddenly developed the result of a pyemia contracted during an operation, and died Aug. 13, 1865, a victim, as it were, of the malady to the combating of which he had dedicated his active years.

His monograph, "Die Aetiologie, der Begriff und die Prophylaxis des Kindbettfiebers," is the contribution to medicine upon which his fame rests. In this he showed by careful reasoning and criticism that puerperal fever could not be due to miasmatic contagion, as Hippocrates and those after him had thought, nor yet to any other of the various theories contemporaneously held by those about him. Furthermore, he demonstrated the possibility of direct infection by animal experimentation and by publishing tables showing the small mortality in certain sections of the hospital where there was no teaching and the greater mortality where students who had been in the autopsy room and handling specimens were allowed to examine patients. Still further he proved that whenever his prophylactic measures were carried out the mortality in the teaching sections decreased, notwithstanding the attendance on autopsies and the contact with infectious material.

The results which he had obtained in Vienna were also supported in his German monograph by statistics from the literature of other lands, as well as by those of his own hospital in Pest.

He was apparently unaware, when beginning his work, that Kirkland, in 1779, and Gordon, in 1795, had proposed the idea that puerperal fever was contagious; that a positive statement to this effect had appeared in the report of the Registrar-General of England for the year 1843, and that this view was widely held among English physicians. Oliver Wendell Holmes had published an article in the United States in the last-named year, proving, from the existing evidence, that puerperal fever was contagious. J. Henle, a German, had also, as early as 1840, conceived the idea that certain diseases were caused by a contagium vivum.

Of the English views Semmelweis was fully aware, at least in 1860, for in that year he published an article explaining in what manner he differed from the English physicians, viz., that he considered puerperal fever due to one source, — decomposed animal matter, — while they viewed

this only as an additional cause, to be classed with the epidemic and endemic theories of the past.

Great as was his discovery, his motives were misunderstood and his work considered a slur upon the institution with which he had been connected. It was possibly this fact which led him to delay his own publication for so many years.

From the time of his departure from Vienna, in 1850, the storm of criticism fell upon him, and his findings remained generally unaccepted. Even when his monograph was published, a decade after his investigations first became known, the feeling of unjust treatment still remained, for he states in his preface, that, although controversy and writing are distasteful to him, fate has selected him as the champion of the truths there set forth.

Semmelweis was not a prolific writer, and began to publish comparatively late in his career. Besides the monograph just mentioned, he wrote on gynecological subjects, turning to this field when the struggle to complete and defend his life-work had sapped his strength. At the time of his death he was engaged upon a work of this character.

His whole energy was spent in efforts to defend his theory from the attacks of brother physicians and to force them to adopt his methods of prophylaxis. It seems hardly credible that even after experimentation on birds, carried out by other investigators, had confirmed the essential truth of his theories, in 1861, thirteen years after his results first became known, only one physician of a representative gathering spoke in his favor. Virchow was among those who opposed him.

The failure of the medical world to acknowledge the truth of his conclusions embittered him and was the direct cause of some rather tart letters to the profession, which have been severely criticised. In Hungary, however, his word and teaching were accepted, and here, at least, his great contribution seems to have been appreciated.

Previous to his time, the cause of childbed fever, on the continent of Europe at least, was one of the mysteries of medicine. He was the first there to definitely perceive that it was the result of direct transmission of infective material through uncleanness, and the first in the world to strive to avoid such transmission by proper methods of nursing, cleanliness and antiseptics. Although understanding the relationship of puerperal septicemia to surgical pyemia, and in 1863 performing an ovariectomy under his own methods of antiseptics, it is said that he lacked a clear appreciation of the parasitic nature of the infection. This is disputed by a recent Hungarian writer, who declares that faulty translation was responsible for the misunderstanding.

Whatever may be the truth of these assertions, the practical application of his methods reduced the mortality of childbed, and we can but admire the courageous, even though at times stormy, persistence with which he, a medical reformer, sought to establish an important truth, apparently beyond the understanding of his generation.

How deeply he felt his mission as the bearer of

a great message to the medical profession, the following passage from this work clearly shows:

"Consequently, according to my conviction, I must here avow that God alone knows the number of those who, because of me, have gone to their grave.

"If I should say the same of another physician, I should purpose only to convey the knowledge of a truth which, to the unspeakable misfortune of mankind, has not been recognized through so many hundred years. Painful and humbling as such a consciousness is, the remedy does not lie in concealment, and if this calamity is not to be permanent, this truth must be brought to the knowledge of all those concerned."

It was not until long after the introduction of antiseptics in surgery by Lister, that the medical world made practical application in obstetrics of the truths which Ignaz Philipp Semmelweis had so clearly proclaimed many years before.

PRINCIPLES OF THERAPEUTICS BY SENSE CULTURE.

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SOME CAUSES OF DISORDERS AND TREATMENT.

PATHOLOGICAL states, whether local or general, may follow (a) overstimulation or exercise at one point or another, (b) under-excitation or exercise at one point or another, (c) over-activity at one point, under-activity at another. Relief from such conditions should be obtained (a) by a reduction of activity, (b) by an increase of activity, or (c) an adjustment between these. Rest and exercise play a most important part in therapeutic procedure. One or the other may be applied for a given time, but for a longer period of time the adjustment of one to the other may be necessary as a means of influencing the tone of different organs or the metabolism of tissues of the body. Absolute rest, of course, cannot be obtained in the living organism, as nutritional activities must always be carried on to a greater or less extent. The rest of any one part may be obtained by the use of such agencies as will either diminish local action directly, or else by stimulating another or adjacent part divert action.

SOME APPLICATIONS OF REST.

The application of this method can be illustrated by the treatment of any of the particular organs. The brain when tired by normal actions and functions is rested by sleep, but when these activities have been more or less abnormal, various hypnotic elements may have to be used to induce sleep. Stimulation of other organs or muscles to increase activity helps to rest the brain to a lesser degree, as athletic sports entered into by a student promote general circulation and muscular action and reduce the mental activity to a certain extent. The effect of digitalis on the heart secures a limited amount of rest to its muscles. An indirect method of reducing the work of the heart is by decreasing peripheral resistance by means of dilatation of the smaller arterioles, whether by