him." He then speculates on the shape of the teeth as influencing their eruption, and appears to regard the process of dentition as being, for the most part, a mechanical one. Probably this theory was rather generally held a short time ago: the tooth was on the wrong side of a tough gum, through which the surgeon must help it with his lancet. Even at the present day, the public mind associates dentition with a certain amount of clumsiness or cruelty. How often does one hear such an expression as this: "My children always cut their teeth with diarrhoea, or a large head." Was not the real explanation of all this usually to be found in the fact of the child being improperly fed? The obscure troubles often come on just as the infant is being weaned; and, from what I know on the matter of dieting at about this period, I should be inclined to think that the source of irritation is much more likely to be in the alimentary canal than in the gums. That a slight loss of blood from scarification of the gums might even in that case give relief, I am willing to admit; but I think that the saddle must often have been put on the wrong horse. How have the public become possessed of the questionable pathology; and how much truth is there in the theory?

To compare the practice of lancing the infant's gum with that of cutting through a fibrous band or roll of mucous membrane which is preventing the complete emergence of the wisdom-tooth of the adult, is not, I think, quite fair. It has been remarked to me that it is strange that the molar teeth of the child do not demand help from the lancet; and that the sharp edged teeth, the incisors, are those which are supposed to stand most in need of help. This fact is suggestive.

Dr. Billard remarked that, if all that authors had written on the aberration of the process of dentition should be recorded, an extended chapter of absurdities would be the result. And, quoting Guersant, he says, "most of the diseases of infancy have been attributed to teething. The difficulty of an accurate observation of diseases at this early age, and the little positive knowledge we possess in this department of pathology, have contributed greatly to the establishment of this opinion" (*Diseases of Infants*, 1839, p. 201).

There is one special trouble which is apt to be associated with dentition, though not dependent upon it, and which is very apt to be overlooked by the practitioner who is inclined to regard the eruption of the teeth as a morbid process; that is, the early stage of infantile paralysis. I would not pretend that one should be able to foretell the on-coming of the paralysis, when summoned to attend a young child with obscure feverish symptoms; but what I would venture strongly to urge is, that one should not content oneself with the suggestion that probably all the symptoms are due to the teething. On several occasions when I have been consulted with regard to the later stages of that disease—the wasted or deformed limbs—I have heard the mother remark reproachfully, if not bitterly, that the doctor assured her that that illness, of many months ago, was but the effect of the teething. I would repeat that dentition is almost invariably a simple physiological process. I would submit that, of the many ills to which tender flesh is heir, few arise from teething, though naturally they accompany it. I would offer a caution, that a careful look-out be kept for one of the most insidious of these ills—essential paralysis.

Then, as regards the gum itself: what is the exact condition which demands scarification? When the alveolus is expanding, the tooth growing, and the enamel advancing, the gum must needs be fibrous and tough; but that it is not really inflamed is evident to the sight, as it is also from the fact that the infant delights in having it pressed and rubbed. Does one often find it red and swollen from inflammation? For years, I have carried a lancet in my card-case, but I find no work for it upon the gums. Doubtless there are gums in need of scarification. Who sees them? Who lances them? Do the physicians? What have the family medical attendants to say upon the subject? Is lancing the gums much employed at the present day; is it little employed; is it "a good remedy out of fashion;" or do the rising generation suffer as little from its rather general disregard as they do from the increasing neglect of James's powder?

At the end of the chapter on "Teething," Combe advises that, when there is much local or constitutional disturbance, the gum should be scarified with a lancet, and allowed to bleed freely, though not in the expectation of the tooth immediately following; and that in the second stage, when the tooth is about to appear, the lancing may be demanded for putting an end to suffering and averting danger. I would ask, in conclusion, if this local and constitutional disturbance, resulting from dentition, is often met with now-a-days; and what are the "dangers" that are to be so averted? Last of all, I would like to hear from the dental surgeon as to what might probably have been the effect upon the development of the permanent teeth of the once widely spread practice of lancing the gums.

REMARKS ON PARACENTESIS AND ASPIRATION: A NEW ASPIRATOR, AND A KNIFE ESPECIALLY ADAPTED FOR THE OPERATION OF INCISION OF THE CHEST.

*Read in the Section of Surgery at the Fifty-Second Annual Meeting of
the British Medical Association.*

By JOHN WARD COUSINS, M.D. Lond., F.R.C.S.,
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THE danger of admitting air into a cavity or wound has long been recognised, and the history of the art proves that a very general conviction on the matter has existed during the past two hundred years: The surgeons of by-gone times discovered that putrefaction of the contents of a cavity often followed the entrance of air; and, moreover, that the exclusion of air was really the exclusion of a great element of danger. But the necessity of preventing its introduction was scarcely fully admitted, until modern research had proved that unpurified air was the constant vehicle of septic particles, and that, in this way, they often obtained an easy entrance into the fluids and tissues of the body. The first principle of antiseptic treatment, then, is the complete exclusion of air in all surgical proceedings, whenever it can be accomplished; and, in all other cases, in which this attainment is impossible, the danger of septic change must be overcome by the purification of the air and surrounding objects, with the aid of subtle chemical substances, and the application of strict antiseptic precautions.

It is an obvious fact that the risk of surgical interference has always a direct relation to the size of the wound, the vitality of the region exposed, and the duration of the operation. Still, it is equally manifest that the particles of infection and putrefaction may find their way into the body through the smallest wounds, and during the performance of the simplest proceedings. Under some conditions, the entrance of a little air, at the time of an operation, is really a dangerous accident; and there is every reason to believe that a few bubbles of unpurified air may actually turn the scale in the direction of septic change. At the present day, there are few surgeons who doubt the practical value of Listerian precautions; and it is a fortunate circumstance that a belief in the germ-theory of disease, and an acceptance of modern speculations respecting the essential relation of micro-organisms to the fluids and tissues of the living body, are by no means necessary to the successful application of antiseptic treatment.

The practice of antiseptic surgery demands both time and labour. Often, in country practice, the surgeon is called upon to perform operations unexpectedly, and many miles away from his residence—out of reach of friendly assistance, and under circumstances in which the strict application of antiseptic precautions is a matter of impossibility. It is, however, the duty of all who undertake the responsibility of surgical proceedings to employ, as far as possible, every protective detail; and it may be confidently affirmed that this practice must be followed by a great reduction of risk, and, in the long run, a great saving of life.

It is now my intention to submit to you a few new contrivances for the antiseptic performance of some of the most common and most simple of all surgical operations. Hundreds of cases of tapping, aspiration, and incision are done daily in this country; and this fact alone must render any new and ready methods worthy of consideration, if only they are really found in practice to be easy, protective, and efficient.

The "improved antiseptic trocar" is made for me by Messrs. Arnold and Sons, of West Smithfield, in several convenient sizes, suitable for the various kinds of tapping and exploring operations. The admission of air is not merely prevented by the siphon-action maintaining a continuous flow, but the whole instrument, with the exception of the penetrating tube, is enclosed in an air-tight India-rubber case, within which it can be opened and shut by a simple joint-movement. The simple construction of the trocar will be readily understood by a reference to the engraving. It is composed of two tubes, which accurately fit one within the other. The outer carries a pen-shaped lance (Fig. B), and the cutting edge extends around only half the circumference of

the tube. On its exterior there is a metal block, upon which a ring is firmly adjusted by means of a screw. The slit of a bayonet-joint is situated between this block and the other end of the tube. The inner tube is a hollow piston, round at the point, with a lateral opening (Fig. c). On the surface, a little stop is placed, which moves in the slit on the outer tube. At the other extremity, there is a grooved metallic boss, by which the sliding movements are readily performed. The India-rubber case and tube are continuous, and are made of thin material. An opening at the end allows the case to be drawn over the trocar by its own elasticity, and it is then securely closed between the block and metal ring. The block, moreover, serves for a handle to the instrument.

The complete trocar, ready for introduction, is represented at Fig. A.

The pen-shaped point makes only a semilunar cut in the punctured part, by which the cannula is held more firmly in the tissues than by the triangular cut of the old trocar. All the movements within the India-rubber case are done by the hand unassisted by the eye, and these are very readily performed by any one after a little attention to the construction of the instrument. By the sliding action of the piston, the point can be easily exposed or protected, and, by slight lateral movements, the trocar can be alternately opened, half opened, or shut. The India-rubber case can be filled with water or some deodorising fluid as an additional protection. Air will not, however, readily run up the tube and cannula; for, the instant the instrument is introduced into a cavity, fluid rushes into the tube and drives the air before it. It is always well to carry out every detail by filling the case with water, and by keeping the end of the tube carefully under the fluid towards the end of the operation; for, without these simple precautions, air may accidentally find an entrance during some movement of the body or change of posture. The antiseptic trocar is made in five sizes, and is thus adapted for every kind of operation. The smallest instrument is a capillary trocar, evacuating at the rate of about fifteen to thirty ounces per hour, and is extremely serviceable in cases of cardiac dropsy.

No. 2 I use for ordinary ascites. The discharge amounts to three

ounces of fluid per minute; so that an ordinary effusion of fifty pints would require a period of about five hours for its removal. This is abdominal tapping by slow evacuation. The patient need not be discomforted by compressing the body with bandages to hasten the expulsion of the fluid. The drain is so slow, and the subsidence of pressure so gradual, that the blood-vessels are not subjected to sudden dilatation, and the circulation through the organs has time to maintain its proper balance. The operation causes no faintness or distress, but, on the other hand, imparts a gradual and increasing sensation of comfort and relief. No. 3 is a special instrument for tapping operations in renal and hepatic cases; No. 4 is the size I prefer for all effusions in the chest; and No. 5 is a large instrument especially adapted for cystic dropsy whenever the palliative operation of paracentesis is considered the right procedure.

A New Aspirator.—The antiseptic trocar can be instantly converted into a simple and efficient aspirator. For this purpose, the two-way India-rubber cork, Fig. D, must be securely fitted into a convenient glass-bottle, and the end of the trocar-tube connected to it. In place of the ordinary piston air-pump, I have introduced a very simple and handy exhaustor. It consists of an India-rubber ball, fitted with small valves and a central recoil-spring, Fig. E. The direction of the discharge is marked on the outside of the ball. The instrument has no joints or stop-cocks to get out of order, and the opening and closing of the tube is regulated by the pressure of the finger and thumb. The operator requires no assistance, for, while controlling the flow with one hand, he can work the exhaustor with the other. Gentle compression of the ball is often sufficient to sustain a steady evacuation.

New Method of Performing Incision of the Chest.—The antiseptic trocar can be easily converted into a blunt-pointed bistoury, for the treatment by incision of empyema, and other deep-seated abscesses. The knife is represented by Fig. F; the cutting edge is two inches in length, and is fixed at the end of a long stem, which permits it to be projected completely beyond the point of the trocar. The handle on one side only is ridged, and this is on the side corresponding to the edge of the knife. When this application of the instrument is required, the trocar must not be withdrawn, but only the India-rubber case and inner tube removed, so that the outer tube can be utilised as a sheath for the knife during its introduction. By this contrivance, the operation of incision of the chest can be very easily and rapidly performed, and the conversion of the exploring instrument into a bistoury is also serviceable in many other minor operations.

In many cases, the cutting from within outwards, after the insertion of the knife into the cavity, is more readily and safely accomplished than the usual method of direct incision. The operation can be rapidly performed in the following way. At the region of the chest selected, an exploratory tapping is made with the antiseptic trocar, No. 2 or No. 4—the former is a very convenient instrument for all cases occurring in children. If incision be now determined upon, the skin and superficial fascia are to be divided with a sharp-pointed knife, commencing at the point of penetration of the trocar, and extending in the direction of the intercostal space for about an inch and a half. The India-rubber cover and the cannula are then removed, the empyema-knife is slipped along the tube, and the incision of the deep structures completed by cutting from within outwards. I now introduce one of my self-adjusting drainage-tubes, and cover the wound with an antiseptic dressing and pad.

ON THE USE OF THE CAUTERY IN EYE-PRACTICE.

Read in the Section of Ophthalmology.

By EDWYN ANDREW, M.D.,

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ALTHOUGH the therapeutic advantages of the actual cautery, simple or galvanic, are acknowledged and made use of in general practice, it appears hitherto to have been little employed in the special department of the eye; as, judging by English writings, rarely an allusion is even made to it, except in the treatment of nævus of the lid.

When we remember in this agent, by varying the degrees of heat, black, red, and white, by short or prolonged application, we have the power of producing solution of continuity, rapid or slow, with or without bleeding, with a small or a large slough, with little tendency to supuration, and with a later power of producing more or less contraction; further, when it is mentioned that it is an antiseptic, a powerful counter-irritant, a good stimulant, and that at a high temperature it produces little or no pain, but rather tends to induce local anaesthesia, it seems to deserve greater attention on the part of ophthalmic surgeons.