fine sand (passed through a No. 40 sieve). The other arm is filled with hot bouillon (tinted with neutral red.) This works up to the same level in both arms. The arm without sand is then inoculated with a few drops of the infected solution and the tube incubated for eighteen hours. Only the most motile bacilli pass through the sand and develop in the layer of bouillon above the sand. The typhoid bacillus is usually the only one which penetrates the sand in eighteen hours, though occasionally the *Bacillus coli* also passes through. In all of our cases an agglutination test was done with a known positive serum, dilution 1:40.

In those cultures in which there seemed to be a contamination, subcultures were made on Endo's medium, Russell's medium, in litmus milk, and in dextrose bouillon, and in each case showing a positive agglutination test from our original sand tube culture, the growths were typical of the typhoid bacilli.

By use of this method we have been able to arrive at a fairly definite diagnosis from twenty-four to forty-eight hours earlier than by the other methods used.

A SUGGESTION FOR THE TREATMENT OF FRACTURES OF THE LOWER JAW

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That fracture of the lower jaw has been a nightmare to the surgeon is shown by the fact that many surgeons, as a matter of routine, refer this type of fracture to the dentist.

Fig. 1.—Plate applied to the chin.

The latter succeeds in obtaining fair results in complicated fractures, but these results can be achieved only after great trouble to the dentist and infinite annoyance to the patient.

Simple fractures of the lower jaw, more particularly in the median line, are comparatively easily treated but oblique fractures in any part of the mandible, especially at the angle, as well as bilateral fractures, are associated with great difficulty in maintaining approximation of the fragments so that the articulation is satisfactorily restored.

As far as my experience goes, pseudo-arthritis of the jaw which has been wired or plated is rare, and it would appear from a review of the literature, as well as personal inquiry, that the inferior maxilla is not so prone to nonunion as a result of the employment of mechanical devices as are some of the other bones, so that the objection that is raised against the employment of plates, etc., would hardly obtain in this type of practice.

The following method for the treatment of fractures of the mandible has been found very satisfactory as far as ease of application and ultimate results are concerned, and the patient is subjected to the minimum of discomfort.

The illustrations are self-explanatory.

The plates used are made of German silver, $\frac{1}{8000}$ inch in thickness, and the metal can easily be cut with metal shears. The shape of the plate assures the maximum of fixation.

If necessary the plate can be strengthened by soldering on its middle a small piece of the same kind of metal.

The drill to be used for making the holes is a No. 48 twist drill, and the screws can be obtained in any supply store.

The ease of application of the plates and the excellent approximation, as compared with the use of wire and other methods, can best be appreciated with their employment. One great advantage of the fixation of the jaw with plates

Fig. 2.—Plate applied to the angle of the jaw.

is that the patient can use his jaw with comparative ease immediately after the operation.

The plates are to be removed at the end of four or five weeks.

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AN EYE-SHADE FOR USE WITH THE MICROSCOPE

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Probably no work on microscopy has ever been written without including several paragraphs, or even an entire chapter, on the care of the eyes. In earlier times when lenses and illumination were less perfect than at present, eye-shades

Fig. 1.—Forms of eye-shade for microscope by various designers.

of varying construction were in common use. These usually were intended to afford a blank surface to shield the unused eye, and consisted of a flat piece of board, fiber, or metal with a perforation at one side to admit the drawtube which supported the shade. Such shades have been designed by Gage, Ward, Pennock, Clark and others. Some of these are illustrated in Figure 1.

Laboratories are now constructed with large windows which permit an abundance of light to flood the microscopic

table. When one is working before such a window, the diffused light tends to render less distinct the image seen in the microscope, and very fine details may be entirely obliterated. Any device which will exclude the light entering the eye above the ocular is of distinct advantage. The image will become more sharp and, what is just as important, eye strain is diminished. A simple test will readily demonstrate the truth of this statement.

The shade herein described consists of a short piece of tubing of diameter large enough to fit over the upper end of

Fig. 2.—Author's eye-shade.

the draw tube. This tubing measures 2 cm. in height and is lined with felt or other soft material to prevent scratching of the lacquer. To the front of the tubing and slanting forward at a slight angle is a thin plate 8 cm. in width and 4 cm. in height. This is bent laterally so as to cup about the eye, and can be made to fit more snugly by cutting down a trifle the nasal side of the shade. It is made of aluminum with a dull black finish. The illustration (Fig. 2) affords a better idea of the construction of the shade than will a description.

I have used this eye-shade for about eighteen months, and find it of sufficient value to recommend it to microscopists. In the *British Medical Journal*, Oct. 2, 1915, Shattock describes a somewhat similar eye-shade which is also intended to prevent direct light from entering the eye above the ocular. I agree with him entirely as to the value of shading the eye in microscopic work.

A PRACTICAL CONTAINER FOR AIR SAMPLES*

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The ordinary method of collecting air samples is to employ two tonometer tubes with ground glass cocks, one of the tubes being filled with mercury. A fairly large tonometer will hold from 2 to 4 pounds of mercury, and the expense of an outfit for getting a number of samples, not to speak of its weight and bulk, is considerable. Another method is to make the collection in small bottles by the use of a mercury trough, which is also rather expensive, and involves some rather troublesome manipulations. Dr. Yandell Henderson suggested to me the use of acidulated water to replace the mercury in such a trough, and we found the results sufficiently accurate for our purposes. Since that time I have devised, and employed to a considerable extent, the small apparatus here described, as a very convenient means of collecting samples, and one which is well within the limits of accuracy demanded for most purposes.

As will be seen by reference to the illustration, the apparatus consists of a small wide-mouthed bottle of about 100 c.c. capacity, through the cork of which extends the air container (A). The latter can be easily made out of large glass tubing of at least 1.5 cm. inside diameter. It should be from 8 to 15 cm. in length in order to furnish the proper capacity (from 15 to 30 c.c.). It is drawn down at both ends and one end is curved as shown, so that the sample will

not escape when the bottle is tilted for the transfer to the analysis apparatus. The upper end is connected by a short piece of rubber tubing with a glass tip (C) which should be made of small-bore tubing. As a valve a ground glass cock may be used, but quite satisfactory is a glass bead (D) inside the rubber tube. On pinching the rubber tube the air is allowed to pass the bead. A small bent tube (E) also passes through the cork of the bottle as a mouth piece. The bottle contains 1 per cent. sulphuric acid, which should be in such an amount that when the air container is full, the level of the fluid is at the small part of the container. This is in order to reduce absorption by making as small as

ANALYSIS OF SAMPLES IMMEDIATELY AND AFTER BEING IN RECEIVERS FIFTEEN MINUTES AND TWENTY-FOUR HOURS

	Samples					
	1		2		3	
	Carbon Dioxid	Oxy-gen	Carbon Dioxid	Oxy-gen	Carbon Dioxid	Oxy-gen
Original sample.....	6.16	12.31	3.30	16.50	3.92	15.83
After 15 minutes.....	6.08	12.16	3.31	16.90	3.93	16.00
After 24 hours.....	5.88	12.25	3.27	17.08	3.83	15.50

possible the surface of fluid which is exposed to the sample. Weak acid is used instead of pure water because the absorption coefficient of 1 per cent. sulphuric acid is very low for ordinary gases. It need hardly be remarked that any dirt in the fluid should be avoided, as decomposing organic matter, etc., will materially affect the carbon dioxid content of the sample.

The method of use is as follows: After pinching the rubber tube around the bead, one blows through the tube (E) until the fluid rises to the tip. The bead is then released;

Container for air samples.

this holds the fluid in place, and the apparatus is ready to collect a sample. Proper connection is now made to obtain the sample, and the valve is again opened. The weight of the fluid sinking in A will suck the sample in after it. On again releasing the bead the sample is safely held until a convenient time for analysis. When the sample is transferred to the analysis apparatus, the bottle should be held somewhat on its side, in order to allow the sample to be readily sucked out of the container, and avoid the considerable negative pressure which would occur if the bottle were upright. The apparatus is so small that the bead can be manipulated with the hand which holds the bottle, while the other hand is

busy with the valves of the Haldane apparatus.

It has been found in practice that the error introduced by the use of weak acid in place of mercury is extremely small. The tabulated figures are given of the analysis of three samples to show the slight effect on the gas percentages.

It will be seen that there is a very slight loss in the carbon dioxid content, more marked when the percentage of the gas is high, but this is hardly larger than the error inherent in the portable Haldane apparatus, and is much smaller than the errors which are unavoidable in working with

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