place, and the muscle and skin edges brought together over it with strong sutures. The tendency of the wound to pull apart is lessened by applying firm adhesive straps around the body.

The intraperitoneal operation is used when, for any reason, it is necessary to open the abdomen to examine the viscera or to deal with peritonitis. If there is difficulty in reducing the liver, it usually can be accomplished by incising the linea alba to widen the opening, and by dividing the round ligament of the liver.

TREATMENT OF ASTHMA AND ASSOCIATED DISEASES IN CHILDREN.*

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[From the Children's Clinic of the Boston Dispensary.]

By "asthma and associated diseases," I mean asthma, asthmatic bronchitis, and such miscellaneous conditions as may accidentally give rise to similar symptoms. The term "asthma" is one which is hard to define when applied to children, this difficulty being due to the fact that in young children, and especially in infants, bronchitis frequently produces clinical symptoms suggestive of asthma. Also bronchitis, beginning in infancy, or later, not infrequently becomes recurrent, may disappear spontaneously with age, or may be continued into the asthma of adult life. Of 38 patients questioned, 16 began in infancy.

As a means of differentiating asthma the percentage of eosinophiles was determined in 12 cases, only two of whom were at the time in the course of what might be termed an "attack." In none of these was the percentage increased. It is doubtful if eosinophilia can be considered of value in the differential diagnosis. Curshman's spirals are not often found in the asthma of children.

As allergy is accepted as a cause of a considerable group of asthma cases it would not be surprising if the term asthma became limited by practice to such as are of this nature.

The frequency with which allergy occurs as a real cause is shown as follows: Thirty-six patients were tested with pure proteins from the Arlington Chemical Co.; from twenty-seven to forty-five tests were made upon each patient, and all the tests were cutaneous. Eleven gave distinctly positive reactions to one or more proteins, with the formation of wheals at the point of inoculation. But the association of these proteins with the asthma could be confirmed in only six by the disappearance of symptoms when withheld, and one of these required, fur-

thermore, the use of vaccines before symptoms were entirely relieved. Thus about 17 per cent. of 36 cases were without much doubt due to allergy.

Of the six, two were due to cat-hair, one to wheat, one to raw egg and wheat, one to several kinds of fish, and one to chicken-feather. One other of the eleven has not yet had the proper treatment. He gives a strong reaction to dander.

Treatment is most successful when the offending protein is entirely avoided. If this is accomplished many patients show a strong tendency to lose their hypersensitive condition. Immunization is successful in some cases, but during the process it is as important to avoid accidental contact as by the first mentioned scheme. There are two methods of producing artificial immunity; one by subcutaneous injection at intervals of about 5 days,—the other by increasing doses by mouth. As suggested by others, immunization by mouth is the method of choice in young children, because it is so much less disturbing to them. The greatest value of immunization is in cases sensitive to epidermal substances, such as cat-hair or horse-dander, but milk and egg cases can also be treated in this way. Owing to the frequent spontaneous loss of the hypersensitive condition by avoiding contact with the offending protein, it does not seem desirable or profitable to attempt to immunize except possibly against milk, but if the spontaneous loss of the hypersensitive condition does not occur in two or three months then immunization may properly be attempted.

Since the number of allergic cases in this series is rather lower than other observers have reported, it may be that some of the cases not reacting might do so were more tests made. It is also possible that this group might be increased by the use of the more delicate intradermal tests. It does not seem that the dermal method should be followed exclusively even though its results seem considerably more reliable. It appears that many authors favor the intradermal method in all their tests, and it is admitted that occasional cases, which are allergic in nature, do not give positive dermal reactions. On the other hand are the cases occasionally reported of shock following intradermal tests.

In instances where positive reactions are not followed by improvement after avoiding the reacting proteins, any one of three interpretations may be made; first, that the protein has nothing to do with the asthma; second, that it is the real cause but has not been completely avoided; third, that it is only one of several causes, being associated, for example, with a secondary bacterial infection.

For patients not so improved autogenous vaccines were made from sputum and 20 patients were treated at intervals of about 5 days. These

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patients received for a final dose anywhere from 200 to 400 million. The last dose should contain at least 400 million. Some had more than one culture and two or more courses of vaccine. The injections began with 50 million and were increased by this amount at each visit. Of these 20 a cure or very marked improvement took place in 7, or 35 per cent., thus demonstrating that such treatment is of considerable importance.

For those treated, who did not improve, several explanations exist; first, some were not treated persistently enough; second, bacteria may not have been the cause either wholly or partially; third, they may have been partly the cause and improvement depended upon some other undiscovered factors; fourth, the vaccine may not have contained the right organism; fifth, the offending bacteria may have been of types not readily producing immune reactions.

Cases of asthmatic bronchitis due to bacteria, if unimproved by the intensive use of vaccine, may be greatly benefited or permanently cured by a change of climate, either permanent or temporary. If the stay is to be temporary all symptoms should have been absent for a month, at least, before the patient is permitted to return to his home. But even a short absence sometimes seems to give sufficient stimulus to the healing impulse. Improvement may not be immediate; patients should expect that two or three attacks may occur at the new residence and should not be allowed to give up this means of treatment on that account. Five of our patients were boarded out by the Social Service with the general directions that the place chosen should be inland and subject to a less humid atmosphere than Boston. They went to Wrentham, Barre, and Sharon, Mass., and to Redding, Conn., and to New Hampshire. Four are now well and one has been much improved.

Fifteen cases in all, which were probably due to bacteria, are now either well, or, in two cases, practically so; seven from autogenous vaccines, four by change of residence, and four by spontaneous improvement.

A third group consists of those who have asthmatic symptoms from miscellaneous causes. These have to be weeded out by a very careful study of the history and a thorough physical or laboratory examination. They can then be treated, either with or without success, according to the nature of each, but at least with the correct diagnosis. This group is represented by six cases; one of hypothyroidism, one of debility, and myocardial weakness due to puberty, two in whom the neurotic factor was well established, one due to disease of the tonsils, and one to disease of the maxillary antrum. All are free from symptoms except for the two neurotics.

These are sons of an epileptic mother and become asthmatic only during fits of temper. The case of hypothyroidism complained of asthma, constipation, nervousness and irritability, and her skin was of coarse texture. The principal ground for making this diagnosis was the result of giving thyroid, all symptoms, thereupon, disappearing very promptly. There was a recurrence of them upon omission of the tablets and upon substituting pituitary gland tablets. She has now been well for several months.

The case diagnosed as debility and myocardial weakness due to puberty, showed asthmatic symptoms only after exercise. The diagnosis was borne out by the rapid heart action and her general appearance. Digitalis and graduated exercise, by rope-skipping, was followed by a disappearance of all symptoms.

One patient was cured by tonsillectomy apparently, and one by drainage of a diseased antrum, a condition which showed no localizing symptoms of its own.

There were 33 patients with whom a fairly complete course of treatment was carried out: 24 in all were relieved by treatment or spontaneous recovery; 9 were not definitely relieved. Partial records from 10 others are quoted from.

CHOLESTEATOMA OF THE TEMPORAL BONE, WITH THE REPORT OF AN UNUSUAL CASE.

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CHOLESTEATOMA of the ear has been known to pathologists since the writings of Virchow and Rokitsky, but there is still a great difference of opinion in regard to the etiology, except that they are accumulations of epidermis. Troeltsch regards them as retention tumors. Bezold considers them the result of the ingrowth of the epidermis of the external ear through a perforation of the membrane into the tympanic cavity. Leutert distinguishes a real tumefaction and cholesteatoma brought about by the implantation of the remnants of the tympanic membrane which are covered with epidermis (Politzer). It is claimed that cholesteatoma may be primary or secondary, but from the report of cases, primary occurrences are very rare compared with secondary accumulations. There has been some question as to whether these tumors embedding the petrous portion of the bone and penetrating the tympanic cavity do so during their growth or whether they originate in the middle ear and wear away the bone through constant pressure.

Lucae reported a case of primary cholesteatoma, in which the growth originated in the mucous membrane of the tympanic cavity, and