increased stimulation of hydrochloric acid by the gastric glands. This may even increase the amount of acid available for digestion.

3. Sodium citrate acts on the acid in the stomach converting it into sodium chloride and thus markedly reduces the "available hydrochloric acid."

4. Barley water seems to have no constant effect upon the chemistry of gastric digestion in the infant.

5. The type of infants who vomit persistently may be divided into two classes, hypoacidity and hyperacidity.

6. Test feedings should be given to this type of infants to determine to which class they belong.

7. A five per cent. milk sugar solution seems to be the most satisfactory feeding to determine fine differences in the gastric contents. This may be followed by a mixture of milk one part, water two parts, to determine to what extent the gastric glands are capable of responding to stimuli. For the lactose solution thirty minutes is the most satisfactory time to allow the feeding to remain in the stomach; for the milk mixture sixty minutes.

8. On purely theoretical grounds it would appear that when the acidity is low either small doses of alkalis or of hydrochloric acid are indicated while in hyperacidity sodium citrate holds out the best hope of benefit.

9. Protein digestion in the infant's stomach is slight and is proportional to the amount of hydrochloric acid in the organ.

I desire to express my thanks to Dr. L. Emmett Holt for the inspiration and the many valuable clinical suggestions given during the course of this work; to Dr. P. A. Levene for his aid in directing and overseeing the chemical side of the problem; and to Dr. Hemenway, resident physician, her assistants, and the nurses of the Babies' Hospital for their coöperation and kind assistance.

BOILS: A NOTE ON THEIR TREATMENT.¹

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Not long ago ringworm was regarded as a constitutional disease, and rules were given as to the general treatment of the patient in order to effect a cure. This ancient tradition still lingers, in so far as some doctors still insist that ringworm of the scalp is more obstinate in strumous than in other patients, and in them constitutional

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treatment is important, if not essential, for its cure. There is no doubt that ringworm is a purely local infection by some form of the trichophyton, and has nothing whatever to do with constitutional states. As the trichophyton is a vegetable fungus, it will grow better in some soils than in others, and so some people are more susceptible than others to infection by it. What the peculiar condition of the soil is we do not know. We do know that at the age of puberty some change takes place in the scalp that renders it no longer a proper soil for the growth of the trichophyton, and a ringworm that has long been on the scalp disappears even without treatment. We also know that ringworm is practically never seen on the scalp of an adult.

Boils, likewise, have nothing to do with constitutional states, but are due to local infection with staphylococci. We see them breaking out as small epidemics at times. Some rowing crew composed of young men in superb physical condition develops such an epidemic. One of their number contracts a boil on his hand, and others of them get boils from handling the oars. Surely here is no vice of constitution, but a pure infection. Boils are most often seen on the back of the neck. Surely there is no constitutional condition conceivable that would cause them to limit themselves to that region. They appear there simply because the back of the neck is subject to slight traumatism, as from the rubbing of a rough collar or a collar button, and this gives the chance for the pus organisms to find entrance into the skin. Boils are frequently seen in diabetes, in which there is a grave constitutional disorder. But they are seen frequently also in scabies, in which there is no question of a constitutional disorder. In both instances their presence is due to the slight traumatisms of the skin caused by the scratching to relieve the itching, and the consequent opportunity for the entrance of the pus organisms.

It need not surprise us that boils are as frequent as they are. The surprise is that they are not more frequent than they are, the special fungus being so common that it is often found on damp cloths hung up in a room. The only explanation of their comparative infrequency is that, as in ringworm of the scalp, there is some peculiarity of the tissues of some individuals that makes them more susceptible to infection, while the majority of individuals are protected by an absence of such peculiarity.

Perhaps it may be asked: "How about crops of boils of which we hear so much?" Crops of boils are due most always to bad treatment of the first boil. When a boil developed from the infection of a skin follicle, the old and classic method was, and is, to poultice the boil, and when it came to a head, or "pointed," to open it with a crucial incision, squeeze out the pus, and replace the poultice. When we consider that a boil is due to a vegetable fungus somewhat like the yeast plant, how could we do better to cause it to grow

luxuriantly than to supply it with heat and moisture? And if we desired to produce a crop of boils, how could we do better than to smear the warm, moist surface with a pure culture of the fungus, as we do when we squeeze the pus over the surface of the skin after opening the boil?

Again, we meet with cases in which boils appear on different parts of the body. This condition is called furunculosis. It does not mean that there is any constitutional infection, but simply a transference of the common infection from one part to another by the fingers, or something else, in a person who is susceptible to the infection. It is true that this form of boils occurs at times in persons who are in poor general health, who on that account have their resistance to infection lowered. But still the sole cause of the boils is the local infection.

For a quarter of a century I have treated all boils, no matter where located, according to the method taught me by my friend Dr. George H. Fox. Scores of such cases have been treated by me both in public and private practice with uniform success. Though I have gone over the literature of the subject, I have found no mention of the method. As it is simple, safe, and effective, no excuse is necessary for making it the subject of this communication.

For the treatment of boils all that is necessary is a small piece of stick sharpened to a fine point, a little absorbent cotton, a 95 per cent. solution of carbolic acid, and a 5 or 10 per cent. ointment of salicylic acid. As soon as the boil has pointed, and it has usually done so when the patient comes to us, a small bit of the cotton is wound about the pointed stick, dipped in the carbolic acid, and hored into the softened point of the boil. This gives a chance for the pus to escape and thoroughly disinfects the cavity of the boil. The boil is not to be squeezed. The surface of the skin in the neighborhood of the boil is then washed over with peroxide of hydrogen, or a solution of bichloride of mercury, 1 in 1000, and the salicylic acid ointment spread on old washed cotton or linen cloth, or several thicknesses of gauze, laid over the boil and the adjacent region. That is the end of that boil, as a rule. If it is a very large boil, the operation may have to be repeated the next day. The ointment is to be kept constantly on the affected part for a week. Of course, a few new boils may appear for a few days in the region, the result of the infection of the skin follicles before this treatment was instituted. They are to be treated in the same way, and a cure will soon be attained.

If a patient comes to us before the boil has pointed it may be aborted by injecting into it a drop or two of a 5 to 10 per cent. solution of carbolic acid, or touching its top with 95 per cent. carbolic acid, while the above-mentioned salicylic acid ointment is used as a dressing.

There is no question that warm poulticing will relieve the pain of a boil, because it relieves tension of the skin. If such a dressing is thought to be necessary there is no harm in using compresses of hot boric acid solution. It is not necessary if the boil is punctured with pure carbolic acid, because the acid produces anesthesia in a few moments. Many times have I seen patients who have been kept awake for nights by the throbbing pain of the boil, go home and sleep quietly after the carbolic acid has been used.

As cases illustrative of the results of the treatment here advocated I would cite the following:

CASE I.—Man, aged forty years. Ten days before I saw him a boil appeared. He had poulticed it, and a second boil had formed. I injected three drops of 10 per cent. solution of carbolic acid into the new boil, and bored into the old one with pure carbolic acid. Over all a 10 per cent. ointment of carbolic acid was placed. Prompt and complete recovery.

CASE II.—Girl, aged nine years. She had a boil the size of a small cherry over her right eye. It was swabbed out with pure carbolic acid and covered with a 5 per cent. ointment of salicylic acid. Prompt and complete recovery.

CASE III.—Woman, aged sixty years. For about three years she had had a succession of boils about her head and neck. The above treatment was used. She made a prompt and complete recovery, and had no new boils for eight months, when I lost track of her.

CASE IV.—Man, aged forty years. He had had a series of boils for four months. After they had been treated as above he made a prompt and complete recovery.

CASE V.—Man, aged eighteen years. He had his first attack of boils one year before he came to me. It lasted under the old method of treatment for three or four months. Three weeks before he came to me the boils had begun to appear. Under the above treatment he promptly recovered.

CASE VI.—Man, aged forty-eight years. He had had a boil on the end of his nose for three weeks, which had been lanced. One application of the carbolic acid followed by the salicylic acid ointment ended the trouble in a few days.

CASE VII.—Man, aged thirty-seven years. He had had a series of boils on the back of his neck and hands for fifteen months. He had them lanced, dressed with bichloride solution, poulticed, and had taken yeast and many kinds of medicine from many physicians. When I told him he would be well in three or four weeks without taking any medicine, he laughed at me. In two weeks all the boils had disappeared. One month afterward one small one came, which also became well under one application of the acid. Nine months after, he came to me at my request and reported that he had had no more boils.

It will be noted that in all these cases not one drop of medicine was given by the mouth. I commend this treatment, asking that it be tried, and being sure that one will be convinced of its efficacy. It has one not small advantage over the usual surgical plan of incision, which is that it leaves a hardly appreciable scar. Thus, the patient escapes bearing a cross on the back of his neck for the rest of his life and advertising the fact that he once had a boil.

Opsonins and vaccines now occupy the centre of the medical stage. I do not deny their value, and in an extensive case of furunculosis I would use them. But in the usual run of cases what is the use of going to the trouble and expense of using them, when such excellent results can be obtained by using a pointed piece of wood, a minute amount of absorbent cotton, a drop of 95 per cent. carbolic acid, and a few cents worth of salicylic acid ointment?