

A NEW FORM OF SACCHAROMETER FOR USE WITH FEHLING'S SOLUTION.

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The idea of this saccharometer was suggested by the following passage from Tyson's "Practice of Medicine":

Fehling's solution is so composed that if an equal volume is exactly reduced by an equal volume of urine, that urine contains $\frac{1}{2}$ of 1 per cent. of glucose; if by half bulk, 1 per cent.; if twice the bulk, $\frac{1}{4}$ per cent., and so on. Should the urine contain more than 1 per cent. of sugar, it should be diluted one to ten and the result multiplied by ten.

After making a number of quantitative tests for glucose by Fehling's clinical method, while resident physician at the Germantown Hospital, I found that I could tell with some degree of accuracy the percentage of glucose in a specimen merely by the depth of the solution in the test-tube when the reaction occurred, for in making the tests I used 5 c.c. of a mixture of one part Fehling's solution and four parts water, the diluted Fehling's solution, therefore, being of the same depth at the beginning of each test.

Because of this fact, together with the suggestion offered by the above passage, it occurred to me that were a test-tube marked at the depths of 6, 7, 8, 9 and 10 c.c., 5 c.c. of the diluted Fehling's solution (containing 1 c.c. of the undiluted solution) being introduced and the sugar test performed in the usual manner, the marks would indicate $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{6}$, $\frac{1}{8}$ and $\frac{1}{10}$ per cent. of glucose respectively, the reading being taken from the surface of the solution when the reaction occurred.

For example, if when the reaction occurred the surface of the solution stood at the 7 c.c. mark, that is, if 2 c.c. of urine had been required, that urine would have contained $\frac{1}{4}$ per cent. of glucose. If, however, the urine contained more than $\frac{1}{2}$ per cent. of glucose, i. e., if when the reaction occurred the surface of the solution was below the 6 c.c. mark, the urine must needs be diluted with nine parts of water, the test being repeated with the diluted urine and the result multiplied by 10.

Thus if the reaction occurred when the surface of the solution stood at the 9 c.c. mark, that is, if 4 c.c. of the dilute urine had been required, the urine would have contained 1.25 per cent. of glucose, as shown by multiplying $\frac{1}{8}$ by 10.

The completed saccharometer, as shown by the cut, is graduated in two columns, one for urine containing less than 1 per cent. of glucose, which is used undiluted; the other for urine containing over 1 per cent., which must be diluted. The mark "F" is placed at the depth of 1 c.c. and the mark "W" at 5 c.c.

The column marked "Undil." is graduated according to the above description. In the column marked "Dil.

1-10" the mark "1%" is placed at the depth of 10 c.c. or 5 c.c. above "W," as 5 c.c. of the diluted urine contains 0.5 c.c. of the undiluted. The mark "2%" is midway between this point and "W," or opposite the $\frac{1}{5}$ per cent. mark of the other column, and so on. It will be seen that by multiplying any number in the "Undil." column by 10 it will give the number at the corresponding level in the other column. For instance, 2.5 per cent. is opposite $\frac{1}{4}$ per cent., 5 per cent. is opposite $\frac{1}{2}$ per cent., and so on.

The results of the tests by this instrument are found to correspond to the results obtained by the polariscope, by Einhorn's saccharometer and by Robert's differential density method. The apparatus simplifies the technique of the quantitative test with Fehling's solution by eliminating the necessity of accurately measuring the amount of urine added while performing the test and doing away with any subsequent calculation, for by the graduated scale, when the characteristic reaction occurs, the percentage of sugar may at once be observed.

The test is carried out by filling the saccharometer to point "F" with Fehling's solution and adding water to point "W." This solution is boiled, and if no precipitate appears the test is carried on in a manner similar to the qualitative test, a few drops of the suspected urine being added at a time, boiling and shaking after each addition.

In case there is more than 1 per cent. of sugar the urine may be diluted by filling the saccharometer to the $\frac{1}{8}$ per cent. mark with water and adding the urine until the $\frac{1}{10}$ per cent. mark is reached. The diluted urine is then poured into a suitable vessel and the test carried on as before, reading the per cent. of sugar from the scale marked "Dil. 1-10."

Fortunately the urine in most cases of glycosuria contains more than 1 per cent. of glucose, for the test is much more accurate with the diluted urine than with the undiluted.

To procure greater accuracy in making the test 1 c.c. of Fehling's solution may be placed in the saccharometer by a 1 c.c. pipette instead of pouring in the solution to mark "F," or 0.5 c.c. of Fehling's solution No. 1 and 0.5 c.c. of Fehling's solution No. 2 may be separately introduced into the saccharometer by a graduated 1 c.c. pipette.

For convenience in the laboratory where many tests for glucose are made daily a mixture of one part of Fehling's solution to four parts of water may be made up for the day's use. In making the routine sugar analyses the saccharometer may be filled to "W" with this diluted Fehling's solution and the test carried on similarly to the qualitative test when, if sugar be found, the amount is immediately known.

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PAINLESS TONSILLECTOMY AND ADENECTOMY WITH QUININ ANESTHESIA.

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Some months ago¹ THE JOURNAL reviewed the experimental work of H. Thibault with infiltration anesthesia by quinin. It at once struck me that this might be the ideal anesthetic for tonsillectomy. I have used quinin hydrochlorid in 3 per cent. solution during the

1. "A New Local Anesthetic," by H. Thibault, Jour. Arkansas Med. Society, September, 1907. Abst. in THE JOURNAL A. M. A., Nov. 16, 1907, p. 1719.

succeeding months in all my tonsillectomies in older children and adults with very great satisfaction. In one case I painted the greatly enlarged right tonsil of a 12-year-old boy once with 1 per cent. holocain and then injected into the pillars and deep parts of the tonsil not to exceed 70 minims of the quinin solution and 10 minims of a 1 to 1,000 adrenalin solution. The pillars were separated, the tonsil drawn forcibly through the No. 10 wire loop of a Peters' snare and cleanly removed in its capsule. Practically no blood was lost and the boy at once exclaimed: "It did not hurt a bit."

With a curved and reinforced needle three and one-half inches in length, made for the purpose, I have in a few cases of manageable patients injected the above solution into adenoids, the soft palate being drawn forward with a retractor. While this has proved less satisfactory than in case of tonsils, since it is much more difficult, it has probably rendered the adenectomies less painful than after the repeated painting with 20 per cent. solution of cocain. In most of these cases the injection has been preceded by a single painting with 1 per cent. holocain.

In a few cases of submucous nasal septum operations I have injected the quinin solution freely and found that the operation was rendered entirely painless with the use of very much less cocain or holocain.

In the removal of a large, pigmented and painful mole from the neck of a 71-year-old woman suffering from recurrent carcinoma the solution was injected, the mole removed by an elliptical incision and the wound closed. The patient remarked that the operation was much less painful than under similar operations with cocain infiltration.

I believe that quinin in solution offers a means of local infiltration anesthesia which is ideal in safety, efficiency, convenience and cheapness.

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COAL-TAR IN CHRONIC ECZEMA.

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I desire to call attention to the value and efficiency of common coal-tar in the treatment of certain types of eczema. This substance, a dark, thick, semi-liquid, is obtained as a product of the dry distillation of bituminous coal and contains a number of active chemicals, carbolic acid and creosote being among the most important. It can be purchased from any of the large roofing or paving companies for about 25 cents a gallon.

It is particularly indicated in the chronic, recurrent form of the disease in which the skin is dry, cracked and scaly, with considerable papillary hypertrophy and but slight thickening of the outer layers of the epidermis. Eruptions of such a type are frequently seen about the knuckles, especially as a sequel to repeated attacks of an occupation dermatitis, or are at times manifested without apparent cause on the shins, forearms or other parts of the body. In these cases I have found this remedy much superior to salicylic acid and like keratolytics.

It is applied, undiluted, on smooth pieces of cotton cloth, these being fixed in place by means of bandages or adhesive plaster. At the end of twenty-four to seventy-two hours there is a resulting exfoliation of the superficial strata of the corneum and the outer scales

can be easily rubbed off. If the reaction is very marked, an infrequent occurrence, the inflammation can be readily subdued by means of plain or carbolized zinc oil (carbolic acid 5.0, zinc oxid 55.0, olive oil 40.0). The application of the tar can then be repeated if necessary.

It can hardly be possible that so common a substance possessing such valuable therapeutic properties has never before been employed in dermatology. If it has I have been unable to find any record of the fact. At any rate, it is of sufficient worth and reliability to merit a permanent place in the therapy of one of the most troublesome of all skin affections.

Therapeutics

THE LENHARTZ TREATMENT OF GASTRIC ULCER.

Dr. Samuel W. Lambert, New York (*American Journal of the Medical Sciences*, January, 1908), describes this treatment and believes that it is an advance in the therapy of this disease. Lenhartz published the results of his treatment in January, 1904, but the treatment did not at first receive the attention that it deserved.

Instead of a starvation period with rectal alimentation, Lenhartz's treatment aims to furnish more nutrition to the patient and improve the general condition and thus favor the healing of the ulcer. It also aims "to prevent distention of the stomach by a limitation of the size of each portion of food taken and of the amount of fluids taken and by the use of ice applications externally." And lastly it aims "to prevent the action of the excessive hydrochloric acid on the ulcer by combining it with food albumin and by the use of bismuth subnitrate internally." These objects are accomplished as follows: By giving the patient nourishment every hour, and this nourishment concentrated and rich in albumin so that "the acid of the gastric juice will be rapidly combined with the food proteid." The food should be slowly and completely masticated, and this is best accomplished by feeding the patient "in teaspoonful amounts and by never allowing him to feed himself during the first two weeks of his treatment." Three or four weeks' rest in bed ordinarily must be insisted on. When there is hemorrhage an ice bag to the epigastrium is recommended, and bismuth subnitrate internally. Iron should be given later for the subsequent anemia.

"The food given should be fresh milk, iced; raw eggs (the whole egg is beaten up and iced). Both the milk and the egg are prepared in covered glass tumblers, surrounded by cracked ice, and kept at the bedside. The feeding spoon is also kept iced in the same manner." If the patient prefers, Lambert allows a mixing of the eggs and milk and feeding the mixture instead of the usual alternation as advised by Lenhartz. After the third day, granulated sugar is added to the eggs. On the sixth day "raw scraped beef, boiled rice and zwieback prepared in the usual manner" are given. Lambert substitutes cooked, chopped chicken for the raw ham in the treatment of Lenhartz. Finally butter is added to the diet. After the tenth day Lambert allows a broiled chop, beefsteak, or chicken as a substitute for the raw beef. Later ice cream is added and the zwieback is changed to toasted bread, and other cereals take the place of rice. For the first ten days of the treatment the food is given hourly from 7 in the morning until