G. Harris, without intimating to either of them what result I expected. Each, independently, reported a negative reaction. The woman did not have syphilis.

The bald recital of the facts gives no intimation of the tense misery of the situation. Here was a guiltless young unmarried woman—worthy to be the wife or daughter of one of the best of us—whose life seemed to her and her family to be blasted by syphilis, and who might have gone to her dying day with the conviction that she had syphilis, if her doctor had not been unwilling to accept as final a Wassermann report that had been offered as final evidence. The only way to realize the horror of such a situation is to try to imagine the patient one of the innocent women of one's own family.

This is not a unique case in my experience; I have had several of this character. I know at least two syphilophobes who are going about in constant fear lest they have syphilis, because of mistaken diagnoses of syphilis based on unreliable Wassermans. And the sometimes appalling character of these mistakes of a positive Wassermann in the absence of syphilis impels me to call attention to them.

Undoubtedly a good many unreliable Wassermans are being made. The greatest fault is carelessness in technic. Another source of error is old blood. Blood two days old, even when kept in an ice-box, is unreliable for the test; and much more so if it has been kept at car temperature while in transit to a distant laboratory. Finally, some careful and conscientious but overzealous workers are drawing their test so fine in order to increase its sensitiveness that their readings sometimes become unreliable.

This criticism is not directed against the Wassermann as a test. The Wassermann is all right, but it should be appreciated that it is open to error in manipulation. It is not final and unimpeachable evidence, and in improbable cases, like the one mentioned, a positive reaction should not be accepted as final unless one can be perfectly sure of the reliability of the process by which it has been obtained. The tendency to accept the result of a test as infallible is the old story of allowing too much weight to laboratory findings—as though they were above the common human frailty of error. The Wassermann reaction is but one fact in the diagnosis of syphilis. It should be confirmed by other diagnostic evidence. In the very rare absence of this, it is not too much caution to have two independent tests to check each other.

WILLIAM A. PUSEY, M.D., Chicago.

The Paramecium as an Indicator of Pathologic Tissue Changes

To the Editor:—The editorial on the work of Underhill and Woodruff (*THE JOURNAL*, Nov. 8, 1913, p. 1720), is justified in every way. At the suggestion of Herbert Spencer Jennings of Johns Hopkins and under his guidance, about a year ago I began an investigation of the sudden development of epidemics among paramecia. Every now and again a race of *Paramecium caudatum* or *Paramecium aurelia* will lose its normal powers of multiplication. A division-rate of eight or sixteen a day may suddenly cease, and the race of paramecium may become almost sterile for a day or two and then be annihilated.

We have found many of these differences in division-rate and destruction to be due to specific bacterial troubles, such as the overgrowth of zooglean masses of putrefying organisms of the *B. proteus* group, the *B. turgidus* and the like. Of course, the many racial and environmental accidents that produce acute changes in the rate of division of paramecia are too numerous to allow the deduction to be made that this can be used as an indicator of pathologic tissue change.

LEONARD K. HIRSHBERG, M.D., Baltimore.

Rest in the Treatment of Heart-Disease.—And last, but not least, rest. I say "last, but not least, rest," and I am always tempted to utter the paraphrase: "Now abideth diet, drugs, rest, these three, but the greatest of these is rest."—F. J. Wethered, in (London) *Clinical Journal*.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

USES OF CHROMIUM SULPHATE IN MEDICINE

To the Editor:—Please enlighten me about the claims made for chromium sulphate.

M. E. M.

ANSWER.—An answer to a similar query was published in *THE JOURNAL*, Feb. 4, 1911, p. 367.

In his article published in the *Monthly Cyclopaedia and Medical Bulletin*, September, 1908, Dr. S. Kolipinski said, "At the annual meeting of the American Therapeutic Society, May, 1902, the writer read a concise paper on the 'Therapeutics of Chromium Sulphate.' As far as he knows, the statements there made have not been confirmed, nor has this chemical attracted attention as a medicine."

Dr. Kolipinski also said, "The diseases in which chromium has been used with success are: cirrhosis of the female breast, castration, menopause, functional impotency in men, chronic alcoholism, nervous vomiting and vomiting in pregnancy, neurasthenia, locomotor ataxia, exophthalmic goiter and the migraines."

Since that time no literature has appeared on this subject, except as noted before, and the firm which puts out the preparation of chromium sulphate still uses Dr. Kolipinski's paper as practically its sole advertising matter. There is no doubt that the substance has been tried by clinicians who have failed to obtain satisfactory results. If this were not the case, reports of its use would have appeared in reputable medical journals before this time. It seems evident, therefore, that this substance has failed to satisfy the remarkable claims made for it by its introducer.

INFORMATION CONCERNING VARIOUS TESTS

To the Editor:—Please tell me where I can find a thorough description and information of how to make the following tests:

1. Lange's test of cerebrospinal fluid in congenital syphilis.
2. Complement-fixation test for gonorrhea.
3. Abderhalden's test for pregnancy.
4. Tschernogubow's blood-test for syphilis.
5. Kowarski's blood-test for differential diagnosis of diabetes.

W. E. MCKINLEY, M.D., Grant City, Mo.

ANSWER.—1. See "A Manual of Venereal Diseases," by Keogh, Melville, Leishman, Pollock and Harrison, p. 120.

2. See *THE JOURNAL*, Oct. 5, 1912, p. 1309. A description of the method is given by Lespinasse and Wolff, *Illinois Med. Jour.*, January, 1913, p. 26.

3. See *THE JOURNAL*, Sept. 6, 1913, p. 788.

4. Tschernogubow's test for syphilis is described in *THE JOURNAL*, April 2, 1910, p. 114, by W. J. Butler.

5. Kowarski's method of testing for sugar in the urine is a modification of the phenylhydrazin test. It consists in mixing 5 drops of pure phenylhydrazin in a test-tube with 10 drops of acetic acid, gently shaking and then adding about 1 c.c. of a saturated solution of sodium chlorid. To the solid mass that forms is added from 3 to 5 c.c. of the urine, and the test-tube is then heated in the free flame for two minutes after its contents begin to boil. On cooling, the osazone crystals separate from urines containing over 2 per cent. of sugar in one minute, and from weaker solutions in about five minutes. It will be noted that this method is merely a test for sugar and not for differential diagnosis of diabetes.

RABIES AND THE PASTEUR TREATMENT

To the Editor:—I wish to raise the following questions:

1. Are there not more cases of rabies in dog-bitten patients now than before the Pasteur treatment became popularized?
2. Is there not a greater death-rate among dog-bitten patients now than before the Pasteur treatment became popular?
3. Is the fatality among Pasteur-treated patients about 8 per cent.?
4. What would be the death-rate of dog-bitten patients minus the Pasteur treatment?

L. G. LELAND, M.D., Newton Falls, Ohio.

ANSWER.—1. The work of Pasteur did not result in an increase in the number of cases of rabies in dog-bitten patients. He drew the attention of the medical profession and the laity to the disease, which had been comparatively neglected up to that time. Since the Pasteur treatment became popularized, cases of rabies have been recognized,