

hypertonic sea water, they begin to segment at a temperature of about 19° C., in from an hour to an hour and ten minutes after they have been removed from the hypertonic sea water. After this they go on segmenting at the rate and usually in the manner characteristic of the fertilized egg. The eggs treated with the acetic acid alone, after having formed a membrane, do not begin to segment for about five or six hours (if they segment at all) and they do not develop beyond the four or eight-cell stage, dying as a rule within twenty hours. The treatment with hypertonic sea water, therefore, first accelerates the mechanism of cell division originated by the acid treatment, and second, indirectly through or in addition to this acceleration, increases the vitality or prolongs the life of the egg.

It is not yet possible to say how the acid brings about its effects. Several years ago the author ventured the suggestion that the process of membrane formation was due to coagulation. The author's recent experiments, however, contradict such an assertion, inasmuch as the membrane formation never occurs while the eggs are in the acidulated sea water of the above-mentioned concentration, but only after they are taken out and put back into normal sea water. If the process of membrane formation were due to coagulation by acid, it should occur while the eggs are in the acidulated sea water.

The author considers it possible (but far from proved) that the membrane formation by the spermatozoön and possibly the subsequent process of karyokinesis are due to the transitory action of an acid carried by the spermatozoön into the egg or produced transitorily by the spermatozoön in the egg; and that, in addition, the spermatozoön carries a second agency or substance into the egg, which supplies some of the conditions produced in the above experiments by the brief treatment with hypertonic sea water.

Twelfth meeting.¹

*Laboratory of Clinical Pathology at the Cornell Medical College.
May 24, 1905. Vice President Dunham in the chair.*

34 (80). "Contributions to the study of sulfur. 1. The metabolism in brombenzol poisoning": **W. MACKIM MARRIOTT** and **C. G. L. WOLF**.

Baumann and his pupils investigated the effect of the adminis-

¹ Reprinted from *Science*, 1905, xxi, p. 986; *American Medicine*, 1905, ix, p. 026; *Medical News*, 1905, lxxxvii, p. 520.

tration of the halogen derivatives of the hydrocarbons, and found that one of the results in the disturbance which followed was the elimination of halogen aromatic mercapturic acids, which were regarded as derivatives of cystin. Later, Friedmann investigated these compounds and was able to confirm Baumann's view. The mercapturic acids are derivatives of cystein, the reduction product of cystin.

This study is a part of an investigation of cystinuria, the view, which has been advanced by previous observers, being taken that the process in brombenzol poisoning is an experimental cystinuria. Dogs were used in these experiments, and were fed on a uniform diet. The animals were catheterized once a day. Analyses of the urine, as complete as possible, were made. The feces were examined for nitrogen and fats.

During the period of administration of the brombenzol the nitrogen and urea were somewhat increased. The urea followed the total nitrogen closely. The preformed ammonia remained at a level below that of the fore period. The kreatinin estimations did not give results of any distinctness.

The investigation of the partition of sulfur led to the result that, while the total sulfur excretion was not increased during the experiment, there was almost complete suppression of the alkaline sulfates. The excretion of neutral sulfur, represented for the most part in this case by parabromphenyl-mercapturic acid, was increased 400%. The curves representing the alkaline and neutral sulfur were antipodes. The ethereal sulfates rose markedly during the feeding period. In one experiment it was shown that during the first two days of the administration the total sulfur excretion remained constant, while the total sulfate-sulfur fell rapidly. This period is being made the subject of closer study.

The chlorin and phosphorous excretion remained practically constant during the experiment. There was increased nitrogen and fat elimination in the feces.

On section, the animals showed ulceration of stomach and intestines. Microscopically, the liver and kidneys were markedly degenerated. The investigation is being continued.