of pigment and a moderate hypertrophy of the Malpighian follicles. The capsule was thickened.

Guinea-pig 12.—Weight 412 grams. This animal received 50 intraperitoneal injections of 5 c.c. of the peptone solution in the course of two months, a total of 250 c.c., or 2.5 grams of albumose. After each injection it was submitted to deep chloro-anesthesia for 15 minutes. After 25 treatments the weight had increased to 455 grams. At the end of the treatments the weight was 485 grams. The post-mortem revealed nothing macroscopically abnormal, and physically the animal seemed to be in the best sort of condition. Histological examination (Lab. No. 1595) showed that there was a certain amount of anatomic modification of the tissues of some of the organs. The report was as follows: The kidney shows a well-marked edema and cloudy swelling. The glomerular spaces are dilated and the tufts compressed, and in the spaces there is considerable coagulated albuminous material. About the glomeruli there are frequent small accumulations of small round cells, and in the outer layers of the cortex there are occasional lines of interstitial fibrosis. The whole organ showed congestion. The liver showed a very well developed edema, to the extent that in many areas the cells show what seems to be hydropic changes. With this is associated congestion and very moderate interstitial fibrosis as exemplified in the occasional collections of small round cells in the perilobular connective tissues. The spleen shows enormous hyperplasia of the Malpighian follicles together with some increased pigmentation. Within the corpuscles there is evidence of cellular fragmentation. The adrenals show a few collections of formative cells in both medulla and cortex, chiefly in the latter. The other organs revealed nothing remarkable.

Guinea-pig 11.—Weight 445 grams. This animal was treated in exactly the same way as No. 12. After 25 treatments it weighed 482 grams and at the end of the experiment, 565 grams. The report of the histologic examination (No. 1609) stated that the changes were similar to those found in No. 12, except that there were a few retention cysts in the kidneys and that there was nothing of note in the adrenals except an intense congestion.[4]

In this series, which is admittedly small, there is evidence (which we are attempting to verify by an extended series of experiments) that albumose introduced parenterally into the guinea-pig has very little, if any, harmful effect unless the oxidative powers of the organism are below normal. In view of the results of Longcope's experiments, as compared with ours, it seems possible that the more complex proteins will produce effects in the absence of decreased oxidation which the less complex ones will not produce under similar circumstances.[5] We are carrying out a series of experiments which we hope will throw some light upon this problem.

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THE CULTURE OF DIDYMIUM XANTHOPUS (DITMAR) FR.

IN a recent attempt to isolate an ascomycetous fungus occurring abundantly on the seed pods of sweet clover (*Melilotus*) there appeared on one of the plates an organism that had spread over the surface of the synthetic medium. The striking feature was the network of anastomosing branches varying in width and height to about two millimeters. These were brownish yellow, and slightly raised above the surface of the agar, the whole having the appearance of the vascular system of some maple leaves, as seen on the ventral surface. Microscopical examination showed that these ridges were composed of granular protoplasm with no evidence of a containing vessel or cell wall. About ten days after discovery the culture was again examined and

[4] The histologic examinations in these cases were made by Dr. T. H. Kelly, who had no knowledge of the experimental procedures used in the individual cases. They were subsequently verified by one of us (P. G. W.).

[5] These results call to mind Opie's work along somewhat similar lines (*Trans. Assoc. Amer. Phys.*, 1910, XXV., 140).

showed at that time areas of fully developed sporangia which indicated that this organism was a Myxomycete. A culture was submitted to Dr. Thomas H. Macbride, who identified the organism as *Didymium xanthopus* (Ditmar) Fr.

Since the first appearance of this organism cultures have been readily established by transferring small portions of the vegetative form to fresh media, and also by sowing spores. At the present time the third generation from spores is growing luxuriantly and is furnishing excellent material for further study of this very interesting organism. It has been possible to obtain practically all stages in the formation of the sporangium by fixing material taken every two hours during the process of development.

It can also be readily observed with the low power microscope that the protoplasm exhibits reversible streaming movements in somewhat definite channels. This movement occupies but a few seconds in each direction, first accelerating and then retarding to a point of rest before reversing. This feature will have some value to the teacher who wishes to demonstrate protoplasmic streaming to students, for it is superior to any other material observed for this purpose.

A more extensive report of morphological and physiological studies of this organism will be published at a later date.

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The Effect on Plant Growth of Saturating a Soil with Carbon Dioxide

The following note reports a greenhouse experiment with corn and tomato plants where the soil surrounding the roots was gradually saturated with carbon dioxide, the aerial portions of the plants being under normal conditions throughout the experiment. The plants were grown in six-inch earthenware pots in a normal greenhouse soil. Both kinds of plants grew uniformly and there was no choice between the individual corn or tomato plants selected for the experiment.

A bell-jar, about ten liters in capacity and of the same shape as an ordinary aspirator bottle, was placed over one of the tomato plants. The earthenware pot containing the plant was raised up so that as much as possible of the plant was outside the jar. Absorbent cotton was placed about the plant at the mouth of the bell-jar. The bell-jar was put on a glass plate smeared with vaseline. One of the corn plants was treated in exactly the same way. No carbon dioxide was added for a week and the plants growing in the pots, enclosed by the bell-jars, made as good growth as the check plants.

A steady stream of washed carbon dioxide, of such speed that it gave two bubbles of gas per second as it passed through the wash bottle, was led into each of the bell-jars through a side opening near the bottom of the jar. This was continued for two weeks.

The lower parts of the plants were affected first and in a week the ill effects extended entirely over the plants. The leaves drooped, turned brownish, withered and curled up. The veins of both treated plants darkened. The plants were practically brown at the end of two weeks' treatment, the tomato plant being more physiologically affected than the corn plant.

After two weeks the side openings through which the carbon dioxide had been introduced were left open. The tomato plant soon damped off at the mouth of the bell-jar, while the corn plant began to revive, sent out new growth and at the end of a week was growing normally. Two weeks after the treatment was discontinued it had made ten inches of new growth.

From the way the check plants grew, the greenhouse temperature was satisfactory for plant growth and the soil was a normal one. The bell-jars did not produce the results, as they did not inhibit growth before the carbon dioxide was applied or after its application was discontinued. A carbon dioxide saturated soil upset the growth of these plants but did not change the soil so that the plant could not grow after its application was discontinued.

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