ments in both plants and animals have been discovered, and the proper corrective measures applied. A quickly devised procedure for combating mites has saved many tons of tomatoes for processing; an accurate method for determining butterfat content of milk has greatly advanced the dairy industry and inaugurated new research projects; disease control has made livestock concentration possible and stabilized financial investments therein; the amount of labor required to produce crops and improve quality has been reduced through labor-saving machinery; and a more accurate knowledge of the labor requirement of various crops has provided essential data on their relative desirability for food production during periods of stress. In projects of this sort the worker has been closely in touch with the needs of the industry.

The Hatch Act of 1887, in establishing agricultural experiment stations, defines their purpose as follows: "To aid in acquiring and diffusing among the people of the United States useful and practical information on subjects connected with agriculture, and to promote scientific investigation and experiment respecting the principles and applications of agricultural science." Vital research is the purpose of this act. The early agricultural studies indicated a desire to solve vital problems affecting the food security and health of our citizens and thus to increase our agricultural wealth. This point of view predominated for some time. With the increase of staff members, there gradually developed at some stations a group primarily interested in more indirect applications or in merely widening our horizon of knowledge. The value of much of their work and training has been proved repeatedly, but most vividly when the war suddenly focused our attention on providing food, shelter and clothing. For the first time in many years, workers in other sciences were striving with agricultural personnel towards a common goal. The constructive gains made through this cooperation must be preserved. Vital research needs the cooperation of all workers.

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THE ACTION OF AMINO ACIDS ON COLOR CHANGE IN FUNDULUS

IN the course of some work on Fundulus it was noticed that those fish that were injected intraperitoneally with a mixture of amino acids turned dark in a few minutes if they were light or if they were dark and removed to a light environment they remained dark.

The fish were injected with a mixture of amino acids[1] in 15 per cent. solution containing amino acids as derived from the acid hydrolysis of casein fortified with tryptophane. The approximate analysis as furnished by the manufacturer is: Total nitrogen 2 per cent., alpha amino nitrogen, approximately 75 per cent. of total nitrogen, tryptophane 1 per cent. of amino acids, calcium 0.01 per cent. to 0.02 per cent., sulfates 0.01 per cent., phosphates, iron and magnesium a trace. pH approximately 4.0.

The fundulus were removed from the aquarium and immediately injected intraperitoneally through a 27-gauge needle with doses ranging from 0.05 cc to 1 cc of the mixture of amino acids. They were placed in containers of either aerated or running sea water, some of which were over light backgrounds and others over dark.

With doses of 0.5 cc and 1 cc none of the fish turned light and those that were light before injection turned dark in about five minutes. Controls uninjected and injected intraperitoneally with 1 cc of sea water turned light when placed over a light background. The controls injected with 1 cc sea water survived, as did those injected with 0.5 cc amino acid mixture. Those injected with 1 cc of the amino acid in the morning died during the night; their abdomens were very red and swollen.

This information is published for the benefit of those interested in color changes in fish, as the writer has no intention of pursuing this problem.

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A STRANGE COINCIDENCE OF ERRORS

IN clearing out old papers I am reminded of a most curious coincidence of errors which hitherto has never been fully published. My late colleague, F. E. Fowle, and I determined the dispersion of rock salt, as published by Langley in Volume I of the *Annals of the Smithsonian Astrophysical Observatory* in the year 1900. Our values of wave-length and refractive index were fitted by a least squares solution to the 5-constant formula of Ketteler, by the late Professor H. H. Kimball, of the Weather Bureau. I have his original manuscript before me. Kimball computed from his constants, derived entirely from our work, the indices of refraction corresponding to the wave-lengths 13.96 microns and 22.3 microns, which had shortly before been observed by Rubens and Nichols, and by Rubens and Trowbridge.[1] The following are

[1] Marketed by Frederick Stearns and Company, Detroit, Mich., under the name of Parenamine. I am indebted to the manufacturers for a supply of this substance.

[1] *Ann. der Phys. u. Chemie*, Bd. 60, 1897, pp. 454 and 733.