ciation of Physics Teachers, the speakers being Dean Homer L. Dodge, University of Oklahoma, and Dr. A. R. Olpin, Kendall Mills. *Physics in Industry,* Dr. E. C. Sullivan, Corning Glass Works; Dr. Zay Jeffries, General Electric Company; Dr. Paul D. Foote, Gulf Research and Development Company; Dr. J. P. Den Hartog, Harvard University; John Ely Burchard, Bemis Industries, Inc.; E. O. Buckley, Bell Telephone Laboratories; Dr. Clark B. Millikan, California Institute of Technology, and Joseph Slepian, Westinghouse Electric and Manufacturing Company. *The Applications of Optics in Modern Science,* Dr. Saul Dushman, General Electric Research Laboratory; Professor E. R. Schwarz, Massachusetts Institute of Technology, and Dr. Magnus Gregersen, University of Maryland. On Friday evening there will be a joint dinner of all the founder societies.

A SERIES of lectures in industrial chemistry and chemical engineering will be presented by specialists of the Mellon Institute of Industrial Research, Pittsburgh, during 1936–37. The course opened on October 1. These discourses, which will be delivered on alternate Thursdays, at 11:30 to 12:30 throughout both semesters, will be open to all students of industrial chemistry and chemical engineering in the University of Pittsburgh as well as to members of the institute. The lecturers and their subjects follow: Dr. E. R. Weidlein, "The American Chemical Industries and Their Problems"; R. H. Heilman, "Heat-Insulating Materials"; Dr. T. A. Wilson, "Radiations and Their Utility in the Industries"; Dr. F. W. Adams, "Recent Progress in the Production of Heavy Chemicals"; Dr. G. J. Bair, "Silicon Compounds"; Dr. F. J. Williams, "Barium Products"; D. G. Bennett, "Sanitary Enamels"; Dr. E. P. Breakey, "Insecticides and Fungicides"; Dr. E. P. Barrett, "Bone Products"; H. F. Robertson, "Synthetic Organic Chemicals"; Dr. R. L. Wakeman, "Synthetic Resins"; Dr. J. D. Jenkins, "Modern Lacquers"; Dr. W. B. Burnett, "New Textile Products," and Dr. H. K. Salzberg, "Dairy Products and Their Markets."

FRANCIS H. ALLEN, chairman of the directors of the Massachusetts Audubon Society and vice-president of the Federation of the Bird Clubs of New England, writes: "The account in SCIENCE of October 2 of the recent merger of the Federation of the Bird Clubs of New England with the Massachusetts Audubon Society needs a little emendation. It should be made clear that the Federation goes out of existence and that the Audubon Society takes over certain important properties, but continues under its present name, with Mr. Buchheister succeeding Mr. Packard as its secretary-treasurer and executive officer. Of the eleven reservations enumerated, only two—the Annie H. Brown Wild Life Sanctuary on Plum Island and Tern Island, off Chatham, Massachusetts—become the property of the Audubon Society, the others having been previously given to the State of Massachusetts in accordance with the purpose for which they were acquired."

DISCUSSION

NEW RACIAL BLOOD GROUP STUDIES IN EUROPE AND EGYPT

DURING the year 1935–1936, the authors carried out studies on the frequencies of the Landsteiner blood groups and the newer M and N groups of Landsteiner and Levine. The opportunity was taken to observe also the frequency of certain other hereditary factors, such as the ability to taste phenyl-thio-carbamide.[1] Work was carried out in Cairo, Kharkov, Tiflis, Zagorsk (near Moscow), 5 Welsh towns (Llangefni, Caernarvon, Bangor, Machynlleth, Tregaron), Dublin, San Sebastián and Assiut. So far as the authors are aware, no work on the Landsteiner groups has been published from any of these places except the first three, data on M and N have appeared only from the first and data on "taste blindness" only from the last. The most interesting results obtained would seem to be the following.

Two places were found where the percentage of N is significantly lower than the rather consistent figures thus far obtained for Europe (Zagorsk and Tiflis). It will be recalled that the only previous instance of this was furnished by the North American Indians.[2]

Contrary to what might have been expected, no significant difference in blood group frequencies was found between the Copts and Mohammedans in Egypt. In Assiut, the percentage of B was definitely higher than in Cairo (30.5 *vs.* 25.3).

The blood group formula of the Basques (San Sebastián), apparently similar to that of the Australian aborigines and certain American Indians, is probably 0 = ca. 60 per cent., A = ca. 40 per cent. (actually found: Basques—0 = 56.0, A = 40.5, B, 1.3, AB, 2.2; non-Basques—0, 45.9, A, 46.5, B, 5.0, AB, 2.6. The small amount of B found might be readily ascribed to mixture with non-Basques.

[1] L. W. Parr, *Jour. Hered.,* 25: 187, 1934.

[2] A. S. Wiener, "Blood Groups and Blood Transfusions," pp. 132 and 169. Springfield: Charles C Thomas, 1935.

A rather low percentage of "tasters" was observed in Wales (for men, 46.7). Confirming the observations of Fisher and Brandt,[3] a sex difference, in most cases definitely significant statistically, was observed in the tasting results. The ratio of the percentage of female to the percentage of male tasters varied from 1.56 to 1.02.

In addition data were collected on about 200 sibs, which will be analyzed for evidence of linkage,[4] and more than 100 specimens of mummy tissue were obtained, in order to study, if possible, the blood groups of the ancient Egyptians.[5]

Details will be published elsewhere.

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FURTHER OBSERVATIONS ON PARASITISM IN THE STARFISH[1]

DURING the summer of 1936 studies were continued at Milford Laboratory of the Bureau of Fisheries on *Orchitophrya stellarum* Cépède, a gonad parasite of *Asterias forbesi*. Although this parasite is found generally in males, it occurs occasionally in females. Of 326 males examined microscopically, 43 (or 13.2 per cent.) contained *Orchitophrya*, whereas only 4 (or 1.1 per cent.) of the 382 females were parasitized. The incidence of parasitism in this species is much lower than that found by Smith[2] in *A. vulgaris* and much higher than that found by Cépède[3] in *A. rubens*. In Long Island Sound the percentage of parasitized males varies according to the locality, being as high as about 20 per cent. in the region of Stratford Point and as low as about 1 per cent. around New Haven.

Parasites within the egg membrane have not been found yet in sectioned ovaries, but in eggs extruded from the living gonad this is common. The parasites can be seen moving around in the yolk and upon complete destruction of the yolk, the ciliates swim freely within the membrane, apparently unable to get out. Both division and conjugation are frequently seen in the living parasites.

The degree of parasitism varies within the individual. Although generally a starfish is completely parasitized, there are cases in which some gonads of the same individual are infested and others not, or some heavily infested and others only slightly parasitized. A parasitized ovary is usually purplish in color, rather than orange or yellow as in normal ovaries, yet this is not a definite indication of the presence of *Orchitophrya*. A deteriorating ovary, due to unfavorable environmental conditions, such as lowered salinity, may also show a purplish color. An infested testis is generally brownish or dirty white in color, whereas the normal color is whitish or pale yellow.

Piatt[4] obtained negative results in his attempts to parasitize starfish. In the present studies additional experiments have been carried out for both direct and indirect parasitism. Indirect infection was attempted in the following experiments: young *Mytilus edulis* and *Mya arenaria* were placed in separate finger bowls of parasitized sperm suspension and left until the solution was clear. The animals were later examined at intervals of several days, but in no case could the parasite be found in the mussel or clam and apparently served only as food. For attempts at direct infection some heavily parasitized sperm suspension was added to finger bowls containing: unfertilized eggs, cleavage stages, blastula, gastrula, stomadeum and recently metamorphosed starfishes. Negative results were obtained in all but the gastrula stage.

Nearly all the gastrulae became parasitized by one or several *Orchitophrya*. These move freely within the body cavity of the larvae as development proceeds After the stomadeum breaks through, the parasites are shut off from the outside. The parasitized larvae, however, appear to lag somewhat behind the normal ones in development. Unfortunately, all larvae, controls as well as parasitized ones, died before reaching the Bipinnaria and metamorphosing stages. *Orchitophrya* that enter the larvae after the stomadeum opens soon die in the stomach and serve as food. Fifty-one young starfish collected near Stratford Point, Conn., where the incidence of parasitism in adult animals is high, failed to show a single *Orchitophrya*.

The fact that no parasites were found in recently metamorphosed starfish taken from a region where parasitism is common and the fact that infected larvae develop more slowly than normal ones may indicate that all parasitized larvae die before metamorphosis and that the parasite does not remain quiescent until maturity. If such is the case, the method of parasitism in the adult starfish is yet to be discovered.

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[3] R. A. Fisher and A. E. Brandt, personal communication.
[4] L. S. Penrose, *Ann. Eugen.*, 6: 133, 1935.
[5] Wm. C. Boyd and L. G. Boyd, SCIENCE, 78: 578, 1933; *Proc. Soc. Exp. Biol. and Med.*, 31: 671, 1934.
[1] Published by permission of the U. S. Commissioner of Fisheries.
[2] G. F. M. Smith, SCIENCE, n. s., 84: 157, 1936.
[3] C. Cépède, *Arch. Zool. Exp. et Gen.*, Ser. 5, 3: 341, 1910.
[4] J. Piatt, *Fisheries Service Bull.*, No. 247, p. 3, U. S. Dept. of Commerce, 1935.