State College, has been appointed delegate of the United States at the autumn meeting of the International Institute of Agriculture in Rome. Dr. Rexford G. Tugwell, Assistant Secretary of Agriculture, has been designated as alternate delegate.

CURATOR FRANK E. LUTZ and E. L. Bell, of the American Museum of Natural History, and two volunteer assistants spent the summer in southwestern Colorado and northern Arizona for the purpose of collecting and making observations upon the insects of the region. Their work took them to the bottom of the Grand Canyon and to the tree-line near the tops of near-by mountains.

TEMPLETON CROCKER is leaving San Francisco on September 15 on the *Zaca* for a scientific expedition to southeastern Polynesia, accompanied by Dr. H. L. Shapiro, Dr. James P. Chapin and Francis L. Jaques, all from the American Museum of Natural History. The itinerary is expected to include the Marquesas, Tuamotus, Tahiti, Rapa, Mangareva, Pitcairn Island, Easter Island and several islands off the coast of South America, as well as the Galapagos Islands. Dr. Chapin and Mr. Jaques will collect material for habitat groups of oceanic birds, while Dr. Shapiro will continue his studies of Polynesian peoples. The Pitcairn Islanders will be a particular object for his genetic researches on the descendants of the mutineers of the *Bounty*.

THE nineteenth annual meeting of the Optical Society of America will be held from October 18 to 20 at the National Bureau of Standards, Washington, D. C. In addition to the usual program of papers contributed by members on their own initiative, the meeting will include the following special features: (1) An exhibition of instruments and products in which the application of optical principles plays an important part in their design, construction or use. The exhibit will be in the same building in which the meetings are held and will be open one evening as well as during the day; (2) an evening visit to the Naval Observatory with an opportunity to inspect its equipment and in particular the new Ritchey-Chrétien 40-inch photographic reflector; (3) a session devoted to "Optics of Astronomical Instruments."

THE Genetics Society of America held a meeting at the Marine Biological Laboratory, Woods Hole, on August 22 and 23. In the absence of the presiding officers, Professor John H. Gerould acted as chairman for the morning sessions at which sixteen papers were read. There was an attendance of about seventy-five, of whom forty-one were members of the society. Wednesday afternoon was devoted to informal discussion with twelve demonstrations of genetic and cytological material. Much interest centered about conditions in the egg bearing on genetic problems. About seventy attended the shore dinner and beach party at Sippiwisset. The symposium on Thursday afternoon on "Genetics and Development," with Professor E. G. Conklin presiding, consisted of papers by Drs. Emil Witschi, B. H. Willier, J. L. Cartledge and P. W. Whiting. The Marine Biological Laboratory arranged programs of interest to geneticists on evenings preceding and following the meetings of the society.

THE eighth Congress of the French Societies of Oto-Neuro-ophthalmology, which was to have been held at Barcelona this year, has been postponed to next Easter, when it will probably be held at Nice.

WEEKLY lectures in the sciences underlying the practise of horticulture will be resumed on October 1 in the course for professional gardeners given by the New York Botanical Garden. Advance registrations will be received by Dr. Forman T. McLean, director of the course, at the New York Botanical Garden. The original aim of this course was to give proper training to the younger gardeners at the institution. Its scope was later extended. Enrolment is restricted, however, to those who have had several years of continuous and successful experience with plants. A knowledge of the common garden and greenhouse subjects is assumed for each student. Most of the lectures are given by the staff of the New York Botanical Garden, all of whom volunteer their services. First-year men study the structure, relationships, habits, functions and classification of plants. Laboratory work is included in the second half year. The subjects of the advanced courses include soils and fertilizers, entomology, plant pathology and the breeding of plants for new varieties.

DISCUSSION

ORIGIN OF ASPHALTS, OIL, NATURAL GAS AND BITUMINOUS COAL

CELLULOSE and other carbohydrates, together with sufficient alkaline materials such as limestone, magnesite, dolomite, zeolite, etc., yield at higher temperature (230° C. and more) in the presence of water a plastic material—"proto product"—containing aliphatic, naphthenic and aromatic substances. Nitrogen and sulfur can be introduced easily into the proto product. This proto product gives on incomplete

hydrogenation or incomplete cracking an asphalt-like material. As natural asphalt or material like jet, the proto product gives on complete cracking or complete hydrogenation a mixture of aliphatic, hydroaromatic and aromatic hydrocarbons. This mixture is very much like natural oil. Asphalts and jets are therefore intermediate stages of the transformation of the proto product into oil and are not formed from hydrocarbons through the reaction with oxygen.

Humic acids formed from carbohydrates yield also on coalification proto products. Identical results can be obtained by coalification of saccharinic and lactic acids, which, in turn, can be formed from carbohydrates through alkaline treatment.

Lignin, on the other hand, and its derivatives, the so-called lignin-humic acids, do not yield by any treatment whatever material which on hydrogenation is changed into asphalt-like material or into a mixture resembling natural oil.

Fats and waxes do not yield hydrocarbons under the above-mentioned conditions of coalification.

Carbohydrates form on coalification gases containing low hydrocarbons and much CO_2.

Bituminous coals, giving excellent hard coke, can be produced by the coalification of carbohydrates, such as cellulose, with weakly alkaline water. They can not be obtained through coalification of lignin and its derivatives.

Natural gas, asphalts, oils and bituminous coals may therefore be derived from the same substances or their derivatives—the carbohydrates formed by nature on such a great scale.

The so-called animal theory, which explains the formation of oil by the heat decomposition of fish, and the lignin theory, which assumes that bituminous coals are derivatives of lignin, can not be substantiated by experiments.

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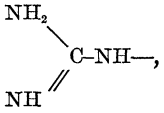
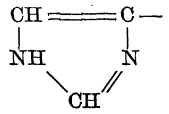
THE IONIZATION OF ARGININE AND HISTIDINE

CERTAIN anomalies in the behavior of the amino-acids arginine and histidine can be explained by the resonance theory.

The anomalies are as follows: The guanidine group of arginine is powerfully basic. The group does not react in the formaldehyde titration for the determination of amino groups. Yet its formula is usually written as

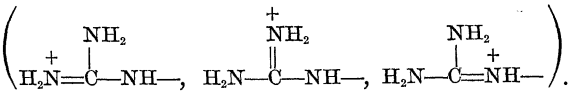


showing the presence of no powerfully basic radicals and revealing an amino group which should react in the formaldehyde titration. The imidazole group of histidine is definitely basic ($pK' = 6.0$). Its formula is written



showing no detectable basicity.

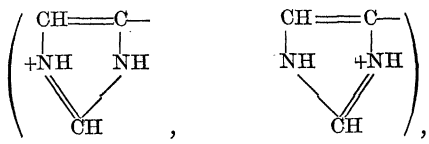
These anomalies may be explained by the assumption that the guanidine group adds H^+ not to the amino- but to the imino-group. The resulting ion has strong molecular resonance, and may be represented by the formula



This ion lacks the $-\overset{+}{N}H_3$ group which is necessary to the formaldehyde reaction

$$-\overset{+}{N}H_3 + HCHO \rightarrow -N{=}CH_2 + H^+ + H_2O$$

The imidazole group may be assumed to add hydrogen ion to form



the resonant condition of which accounts for the definite basicity of the group.

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CAUSE OF MORTALITY OF YOUNG GROUSE

FIELD studies in Algonquin Park, Ontario, during the present summer have shown the disappearance of young grouse (*Bonasa umbellus togata*) to be associated with a very high occurrence of a Leukocytozoon, of which the species has not yet been determined. Grouse in this area appear to be decreasing in numbers after having reached a peak of abundance last year. A mortality of at least 60 per cent. among chicks had taken place to mid-July in the area under immediate observation, and in practically all specimens examined, adult and young, the Leukocytozoon was found to be present. In view of the fact that similar parasites are known to be lethal to ducks and turkeys, a connection between its occurrence in grouse