a pigeon and more of a water bird than commonly held? It does indeed, as observers have repeatedly pointed out, have a habitat and habits not unlike those of such water-liking birds as ibises and rails. It inhabits trees and undergrowth along rivers and in marshy regions. It makes nests usually in trees over water. The nests are also, says Beebe, the most recent and most careful observer of the habits of the strange birds, hardly distinguishable from those of the guinea herons, and built in the same situations. But all this may, of course, mean nothing as to the bird's phylogeny.

The suggestion that may come from some that my specimens of *Læmobothrium* from the hoatzin may have come to this host from some Venezuelan ibis or heron host by natural straggling is extremely unlikely for Mallophagan individuals of different bird species. This is only recorded, and practically only possible, among individuals infesting two bird sorts that consort gregariously in considerable numbers and closely. This is not true of the hoatzin, as Beebe's observations make clearly evident. Mallophaga are in only rare instances, outside perhaps of crowded hen-houses and chicken yards, colonies of chimney swifts or swallows, and places of common roosting or other foregathering of many bird individuals of a kind, found *alive* (or even dead) off the body of a bird. They make their migration from host individual to individual on occasions of actual bodily contact of these hosts, as at mating, and in the nest.

So it is practically certain that the hoatzin is host to a Mallophagan kind, which is most nearly related to a species, or, perhaps indeed, is but a variety of the very species, found heretofore only on Old and New World ibises and courlans.

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THE TOXICITY OF INSECTICIDES

CERTAIN facts which may be of general importance in physiological investigations were brought to light in a study of the toxicity of insecticides now under way at the California Agricultural Experiment Station.

A very elaborate series of determinations were made on the effect of hydrocyanic-acid gas on scale insect eggs. The plan of the experiment was to separate the eggs found beneath a scale insect into two lots of about equal size, placing them in gelatin capsules, one lot being allowed to hatch without treatment, and the other after being exposed to the gas for a definite time. The species studied lay on the average rather more than a thousand eggs, and each series of experiments included the eggs from a hundred insects. Nearly three hundred series were thus studied, including five different species of scale insects from eleven different localities in California.

Solutions of hydrocyanic acid of varying concentration were placed in closed glass containers and the open capsules containing eggs to be treated were suspended above these solutions. The density of the gas above these solutions is dependent on the concentration and temperature.

After hatching, the capsule was placed under a microscope and an estimate was made of the hatch in each lot, using only the numbers 05, 10, 20, 30, 40, 50, 60, 70, 80, 90, 95, 100 per cent. The following table will show the results of one series.

The upper right-hand corner gives the results with the weakest dose and shortest time. As would be expected, in the opposite corner, there is no hatch and the mean percentages given below show the effects of the different concentrations, the last two or three of which are completely ineffectual since the hatch is the same as the untreated check lots.

The series of means given at the right bring out an entirely unexpected result, apparently showing that the length of time the eggs remained exposed to the gas has very little effect. This is, however, not at all the fact as shown by the curves on the left side of the table.

The average means of 72 series of experiments with the same insect from the same food plant and locality are 58.31, 59.20, 56.10,

PERCENTAGE OF HATCH

European Fruit Scale on Christmas Berry

Duration of treatment	Concentrations 512	256	128	64	32	16	8	4	2	1	Mean	Check
1	0	0	60	50	80	80	0	100	95	0	46½	77½
1.6	0	0	90	80	0	0	80	0	95	30	37½	79½
3	0	5	90	80	10	90	0	100	80	80	53½	83
6	0	30	60	0	0	0	50	50	100	20	31	82½
11	0	0	0	60	0	20	0	100	100	80	36	79
20	0	20	5	0	80	30	60	100	95	95	48½	72½
35	0	0	0	10	0	60	0	100	10	90	27	69½
59	0	0	0	50	50	100	90	100	95	95	58	80½
98	0	0	0	0	0	20	60	100	50	100	33	75
160	0	0	0	20	0	20	50	100	50	100	34	74½
Mean	0	5½	30½	35	22	42	39	85	77	69	40.5	
Check	88½	75	74	61½	65½	68½	96½	98	77	69		77.35

54.30, 52.20, 50.10, 48.50, 48.01, 46.51 and 43.30, respectively.

In all such experiments individual variation will be very pronounced, but averages based on as large a number of series as this are quite dependable, and we can safely say that long continued action of cyanide at a strength below that producing fatal results exerts on the contrary a benign influence.

It will be remembered that fatal results follow, as a rule, from weaker doses when the time of exposure is long, but far short of the theoretical proportion that would follow on the assumption that the toxicity was dependent on the amount of gas absorbed and that this varied directly as the time and density.

The possible explanation used on the assumption of the production of antibodies within the egg can only partially, if at all, account for the facts since another phenomenon, the acceleration of the rate of development resulting in an earlier hatching, is also evident.

The quickened cell activities indicate that the effect of cyanide, at least in light doses, is to increase cell permeability, a process of rejuvenescence which may be specially useful in an insect's egg so full of yolk material. Decreased permeability is generally considered the measure of approaching death, but it may be that acute poisons like the strong insecticides produce a violent death of cells by the sudden or excessive increase in catabolism.

A third suggestion which may seem rather bold to offer in the case of animal tissue is the possibility of the nitrogen of hydrocyanic acid being available as food directly utilizable by the protoplasm of the cells. The basis for this suggestion is the fact that in a series of experiments by Mr. E. Ralph Ong, conducted in my laboratory with seeds in hydrocyanic acid solutions, a very remarkable and similar acceleration in time of sprouting was observable when the solution was slightly short of a toxic strength, and these plants developed with all the appearance of having had a strong nitrogen fertilization. There is no doubt of the ability of plant tissue to utilize nitrogen in various forms, and we know of no special mechanism necessary to accomplish this which is characteristic of vegetable protoplasm.

The cyanide produced from hydrocyanic acid absorbed in the tissue of a scale-insect egg when not immediately fatal, but present in considerable quantities may be either utilized as food or act as a disturber of the equilibrium of cell permeability or both and in addition it may cause a reaction bringing about the production of antibodies which will neutralize the poison. One or more of these factors may produce a degree of immunity from the effects of long continued exposure to hydrocyanic-acid gas and, indeed, counteract the effect to such an extent that the surviving eggs hatch better than those with short treatment in the gas. Both animal and plant tissues thus exhibit very decided evidences of definite cyanide stimulation.

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UNIVERSITY OF CALIFORNIA

THE AMERICAN SOCIETY OF NATURALISTS

THE thirty-second annual meeting of the American Society of Naturalists was held in the zoological laboratory of the University of Pennsylvania on December 31, 1914. In affiliation with the society this year were the American Society of Zoologists, the Botanical Society of America, the Society of American Bacteriologists, and the American Psychological Association.

By-law No. 3 of the society was amended to read "The Records of the society shall be published once every three years beginning in 1914. The Records shall contain the constitution and by-laws of the society, the minutes of all meetings held within the period covered, the treasurer's reports, and a full list of members of the society."

An invitation to the society from the Pacific Coast Committee on Zoological Program to participate in the sessions concerned with zoology during the convocation week of the American Association for the Advancement of Science, to be held in August, 1915, received the following action. It was voted that the secretary express the appreciation of the society for the invitation and its best wishes for the success of the Pacific Coast meetings. The American Society of Naturalists suggests that members resident on the Pacific Coast organize, if they so desire, a section of the society in accordance with the provisions of Art. IV., Sec. 3, of the constitution, and that this section in cooperation with the American Association for the Advancement of Science hold a meeting in August, 1915.

There were elected to honorary membership in the society Hugo De Vries and Wilhelm Roux.

The following were elected to membership: W. C. Allee, University of Oklahoma; Charles E. Allen, University of Wisconsin; Cora J. Beckwith, Vassar College; Charles E. Bessey, University of Nebraska; William W. Browne, College of the City of New York; W. A. Cannon, Desert Botanical Laboratory; Ralph V. Chamberlain, Museum of Comparative Zoology; Maynie R. Curtis, Maine Agricultural Experiment Station; John A. Detlefsen, University of Illinois; Dayton J. Edwards, College of the City of New York; Arthur H. Estabrook, Eugenics Record Office; Richard Goldschmidt, Kaiser Wilhelm Institut für Biologie; John W. Harshberger, University of Pennsylvania; Marshall A. Howe, New York Botanical Garden; Hartley H. T. Jackson, U. S. Department of Agriculture; Thomas H. Kearney, U. S. Department of Agriculture; Henry H. Lane, University of Oklahoma; W. H. Longley, Goucher College; Henry Laurens, Yale University; George R. Lyman, U. S. Department of Agriculture; John M. Macfarlane, University of Pennsylvania; Frederick C. Newcombe, University of Michigan; Susan P. Nichols, Oberlin College; Theophilus S. Painter, Yale University; Arthur S. Pearse, University of Wisconsin; Herbert W. Rand, Harvard University; Charles G. Rogers, Oberlin College; Forrest Shreve, Desert Botanical Laboratory; William C. Stevens, University of Kansas; L. B. Walton, Kenyon College; Orland E. White, Brooklyn Botanic Garden.

A cordial vote of thanks was passed to the University of Pennsylvania for its hospitality.

The program of the morning session was as follows:

A. F. Blakeslee and D. E. Warner, "Correlation between Egg-laying Activity and Yellow Pigment in the Domestic Fowl."

A. F. Blakeslee, "A Sexual Mutation in a Vegetatively Propagated Pure Line of Mucors."

Sewall Wright (by invitation), "The Albino Series of Allelomorphs in Guinea-pigs."

H. S. Jennings, C. S. Lashley, A. R. Middleton, F. M. Root and Ruth J. Stocking, "Researches on the Inheritance and the Results of Selection in Uniparental Reproduction."

Edward M. East, "The Phenomenon of Self Sterility." (Read by title.)

Helen D. King, "The Effects of Inbreeding and Selection on the Growth, Fertility and Sex Ratio of the Albino Rat."

H. H. Newman (by invitation), "Development and Heredity in Heterogenic Teleost Hybrids." (Read by title.)

Alice M. Boring, "Data on the Relation between Primary and Secondary Sexual Characters in the Domestic Fowl."

R. A. Emerson, "Somatic Mutations in Variegated Maize Pericarp."

H. J. Webber and C. H. Myers, "Bud Variation within Tuber Lines of the Common Potato."

Clarence C. Little, "The Inheritance of Certain Types of Spotting in Mice."