New World species, which I have seen from Bexar County, Texas, off mourning dove, *Zenaidura macroura carolinensis* (J. M. Brennan Collection); Carey, Blaine County, Idaho, off western mourning dove, *Zenaidura macroura marginella* (R. Matheson Collection); and from Pasadena, California, off the introduced and naturalized Chinese spotted dove, *Spilopelia chinensis* (Miss Josephine R. Michener Collection). Professor M. H. Swenk informs me that there is a specimen in the Department of Entomology of the University of Nebraska, taken in Nebraska, from the western mourning dove, April 20, 1920, by C. E. Mickel and R. W. Dawson. Ferris[1] recorded it from squabs of domestic pigeon at Thatcher, Arizona. I have seen many specimens from road-runner and Arizona quail, and a few from meadowlark, canyon towhee, Abert's towhee and western mockingbird. The species is known in the United States from Texas, Nebraska, Arizona, Idaho and California; and a specimen was taken in a market at Washington, D. C., off Arizona quail, evidently an accidental importation. Farther south it is recorded from Cuba, St. Croix, Grenada, Venezuela, Brazil, Paraguay and the Galapagos.

Stilbometopa podopostyla Speiser, also a strictly New World fly, is now known from Nebraska, Arizona, Texas (Bexar County, off *Zenaidura macroura carolinensis*.—J. M. Brennan Collection), Guatemala, the Republic of Honduras (Lancetilla near Tela, without host), Costa Rica (La Fuente, without host), British Guiana, Brazil and Paraguay (San Bernardino, without host). This fly is rare and host records are as yet few; but of the six species of birds from which it has been taken five belong to the dove family.

Ornithoctona erythrocephala (Leach), another fly restricted to the New World, is much more common than the Stilbometopa. It has a fairly large and varied host list. In the West Indies and tropical America it is reported from at least six species of wild doves and from domestic pigeon, as well as from a variety of other birds. Although by no means rare in North America, it has been taken there mostly from birds of prey, never from doves or pigeon. I have seen specimens from British Columbia, Alberta, the Province of Quebec, Maine, Massachusetts, Pennsylvania, North Carolina, Florida and Minnesota.

Ornithoica confluenta (Say), also strictly American, is one of the most common and most widely spread hippoboscids in this country. Its host list is very extensive, but it is most frequent on small migratory birds. Birds of prey and wading birds are probably stray hosts only. No doubt Herman's single record from eastern mourning dove at North Eastham, Mass., is likewise based on an accidental occurrence.

The pigeon fly, *Pseudolynchia canariensis* (Macquart) (Syn.: *maura* Bigot; *lividicolor* Bigot) is at present cosmopolitan. In North America it is known from Washington, D. C., South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Texas, Arkansas and California. In the New World it is often common on domestic pigeon, but has never been found on a wild host. On the other hand, it has been taken from at least eight species of wild doves in Europe, Africa and the Philippines. Evidently this was originally an Old World fly, introduced by man into the Americas.

From the foregoing it would seem that *Microlynchia pusilla* is the most likely natural vector of dove Haemoproteus in North America. This fly, moreover, transmits *Haemoproteus columbae* from pigeon to pigeon, according to H. de Beaurepaire-Aragão.[2] Both *Stilbometopa podopostyla* and *Ornithoctona erythrocephala*, although perhaps potential carriers, are probably too rare in this country on wild doves to be of much importance. *Ornithoica confluenta* is not likely to act as the vector in nature. While *Pseudolynchia canariensis* has been shown to transmit the dove Haemoproteus from dove to pigeon in the laboratory, it probably never carries it from dove to dove in nature in North America.

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[1] Ferris, *Canad. Entom.*, 62: 66, 1930.

[2] H. de Beaurepaire-Aragão, *Brazil-Medico*, 30: 353, 1916.

STOMATAL INDEX AND TRANSPIRATION RATE OF LEAVES

BOTANISTS studying number of stomata in unit surface areas of leaves have noticed great variation between leaves from the lower to the higher levels of plants. Because of this variation it has been impossible to determine, for purposes of comparing plants in breeding work dealing with stomatal number and transpiration rate, whether a leaf at any particular level is typical. Also, it has been impossible to anticipate rate of transpiration on the basis of stomatal number.

In studying different levels of Kentucky wonder bean plants I have observed that the leaves differ significantly in stomatal number for unit surface area from the lower to the higher levels but do not differ in transpiration rate or in stomatal index. Young plants of the Kentucky wonder variety were found to be uniform for the upper epidermis transpiration rate and for stomatal index; they were not uniform for stomatal number except for the upper surface of the juvenile leaves.

In studying juvenile leaves of the Kentucky wonder, black wax and pinto varieties and four segregates of a cross between the black wax and pinto varieties I have noticed that stomatal number of juvenile leaf is

not always an indication of relative transpiration rate. In comparing plants of *Phaseolus vulgaris* transpiration rate parallels stomatal index but does not always parallel stomatal number.

These observations support the view that juvenile leaves may be used to advantage for comparing plants in breeding work dealing with transpiration rate. They also support the view that transpiration rate is associated with stomatal index and not with stomatal number. Stomatal index may be determined from any of the leaves of a young bean plant.

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SOCIETIES AND MEETINGS

THE NEW YORK MEETING OF THE AMERICAN PHYSICAL SOCIETY

THE two hundred and twenty-sixth regular meeting of the American Physical Society was held in New York City on Thursday, Friday and Saturday, February 23, 24 and 25, 1939. All regular sessions of the society devoted to the reading of contributed papers were held in the Pupin Physics Laboratories of Columbia University, while the Saturday morning symposium meeting devoted to television took place in Studio 3A of the National Broadcasting Company in the RCA building at 30 Rockefeller Plaza.

On Thursday morning the Inter-Society Color Council held its business session at 480 Lexington Avenue, and the afternoon was devoted to a technical session on color tolerances, sponsored jointly by the Inter-Society Color Council and the American Psychological Association. Seven papers were presented, dealing with such subjects as the physics of color tolerance, the psychophysics of color tolerance, the representation of color tolerances on the chromaticity diagram, specification of tolerances at the National Bureau of Standards, industrial color tolerances, the ratio method in the review of Munsell colors and color tolerances as affected by changes in composition and intensity of illumination and reflectance of background. At 8:00 o'clock on Thursday evening the council held a popular session on "Parade of Color," including discussions of color in medicine, paper, textiles, industry, lighting, psychology and fashion.

The sessions of the American Physical Society were opened at ten o'clock on Friday morning with a meeting of the council and the presentation of contributed papers. A wide range of subjects was covered, falling into a number of fields. These included reports of studies of field currents at high and low pressures, of field measurements and possible correction of aberrations for magnetic electron lenses, of magnetic susceptibilities in weak fields, studies on the magnetic anisotropy of iron-nickel and copper-nickel alloys, on the theory of paramagnetic relaxation and a new approach to the problem of ferromagnetism. Studies of the structure and properties of metals included papers on the optical and magneto-optical activity of nickel sulfate, α-hexahydrate, in the short infra-red spectrum, on the preparation of single crystals of iron, cobalt, nickel and their alloys, and on the magnetic anisotropy of iron-copper and copper-nickel alloys. In the field of atomic physics there were discussions on the theoretical constitution of metallic barium, on nuclear isomers in radioactive strontium and on the band structure of metallic copper. Discussions of centrifugation and related subjects included papers on a new adaptation of the Beams ultracentrifuge for liquids, on the separation of bromine isotopes by centrifugation and on the formation and properties of unsupported flowing liquid films. Papers were also presented dealing with some physical properties of liquid and solid HD, the lack of "sucking" action by the cathode blast of mercury vapor in a pool rectifier, and the striated luminous glow of the piezoelectric quartz resonator at flexual vibration frequencies. Finally, a paper was presented by Cartwright and Turner on their interesting method of reducing the reflection from glass by deposited multilayer films.

Four contributed papers were read before the Optical Society in its session on Friday morning, which was opened at 9:30 in the Physics Laboratories. They dealt with spectro-radiography with the cathode ray tube, the first spectrum of tin, the behavior of an interferometer in a gravitational field and a calculation of the luminous efficiency of ionized cesium vapor.

A program of eighteen contributed technical papers occupied the Friday afternoon session of the American Physical Society, which was opened at the Physics Laboratory at 2:00 P.M. The program was rendered of unusual interest by discussions by Niels Bohr and Enrico Fermi of the experiments in the disintegration of uranium recently undertaken with the Columbia cyclotron. A number of other fields were treated, including those of cosmic ray studies, with papers on comparisons of counter and electroscope measurements in the stratosphere, on the origin of the rays which produce the bursts of cosmic ray ionization, and on the design and construction of reliable Geiger-Muller counters, of x-rays especially in relation to therapeutics, with papers on a compact pressure-insulated electrostatic x-ray generator for cancer therapy, on some new features in the million-volt x-ray installation at the Memorial Hospital, and de-