

GENETICS

Genetically Pure Fly

Strain of fly that breeds true indefinitely developed by tagging groups of genes with easily spotted physical traits, then tying the groups together.

► A GENETICALLY pure strain of fruit flies that will breed true indefinitely has been produced at Purdue University, handing science a powerful new tool with which to study the age-old question of heredity vs. environment.

Developed in the laboratory by Dr. Allan B. Burdick, the fly will help science probe the effects of great and small environmental changes on heredity, including mutations caused by irradiation by thermal neutrons.

All present genetic tests indicate that Dr. Burdick's fly is probably the most genetically pure animal in the world, with all its offspring and their offspring's offspring as alike as lead soldiers cast from the same mold.

Until this development, the only genetically pure organisms were some corn and other vegetables, which were developed by special means, not by breeding.

Dr. Burdick bred his pure flies from a special producer strain with numerous easily-spotted physical traits, such as curly wings, short body bristles and reduced eye size that, when bred out, indicated entire

bundles of genes were paired with exact duplicates of themselves. Lining up some 10,000 of these submicroscopic carriers of heredity was difficult because, as a rule, the two genes in each pair are not alike, making any given fly a genetic potpourri.

Scientists know more about the hereditary behavior of fruit flies, *Drosophila melanogaster*, than any other organism. *Drosophila* have been their favorite experimental animals for years, because of their short breeding cycle of 10 days per generation.

This knowledge enabled the Purdue geneticist to achieve his pure strain in just three generations, by taking advantage of the fact that he could "tag" groups of genes with easily-spotted physical traits and tie these groups together so that none of the genes could "slip out" from one generation to the next.

The marked and bound bundles, called "markers," were then used to duplicate single sets of normal genes, resulting in a fly that is to the biologist what pure chemicals are to the chemist.

Until development of this technique, which Dr. Burdick calls the "complete marked inversion," or CMI method, the only way to aim for animal genetic purity was through several hundred generations of brother-sister matings, which still resulted in a strain less than 100% theoretically pure.

The stock Mr. Burdick chose for his successful experiment in genetic purity carries a long name for a short fly, but one of great importance to geneticists: FM1, $y^{31d} sc^8 dm B$; Ins SM1, al Cy $sp^2/dp b Pm ds^{38k}$; Ubx¹⁰⁰ e⁹/C Sb; pol.

Science News Letter, January 28, 1956

FORESTRY

Forest Insect Infestation Down, But Danger Stays

► INSECT FIGHTERS feel flushed by major victories as epidemic pest infestations decrease markedly in the West, state forester Roger L. Guernsey of Idaho has reported.

He warned, however, against new attacks of the balsam woolly aphid on silver fir and the Douglas fir tussock moth. Idaho had a costly siege with this pest eight years ago, when it cost \$600,000 to spray 413,000 infested acres. The new outbreak is in northeastern Washington, close to the border to Idaho.

Other battle front reports were cited by Mr. Guernsey. These include Oregon's spraying of 3,800,000 acres of budworm areas from 1949-1955 at a cost of \$1.05 per acre. No control is recommended for 1956. Idaho has sprayed 1,500,000 acres of forest infested with tussock moth, pine butterfly and spruce budworm. Montana has sprayed 400,000 acres for budworm.

The insect control program can be improved by more cooperative aerial and ground detection surveys, timely cooperative control programs, a stepped-up access road program, an accelerated research program on problem insects, and increased publicity on the threat of insects to western forest economy, Mr. Guernsey said.

Science News Letter, January 28, 1956

EDUCATION

Rockefeller Institute To Grant Degrees

► THE ROCKEFELLER INSTITUTE for Medical Research, famed laboratories for medical and biological investigations, has become a degree-granting university and is admitting about 10 to 20 candidates for the Ph.D. degree on a fellowship basis.

Under the presidency of Dr. Detlev Bronk, the institute has joined in the State University of New York under its original charter to become, in effect, a university without undergraduates.

The candidates will do research and study in biophysics, biochemistry, biological sciences and even in the philosophy of science. They are being selected upon invitation to heads of various university departments.

Science News Letter, January 28, 1956



NUTRITION OF STARFISH—Research on the starfish's strange eating habits at Cornell University, Ithaca, N. Y., is being directed by Prof. John M. Anderson of the zoology department. Scientists are investigating how this sea animal manages to push its stomach out through its mouth into an opened clam or oyster shell, digest the meal there, then pull its stomach back in. Rubber bands, special chemicals and electric shocks are among the devices being used in the studies.