

BIOLOGY

Colchicine Injections Change Chromosomes in Fruit Flies

Exceedingly Fine Hypodermic Needle, Filed Down, Used To Inject Into 3-Day Larvae in Region of Brain

COLCHICINE, the "evolution chemical" that has been producing amazing results in plant breeding during the past few years, has now broken into the hitherto closed field of changes in animal cells, in experiments on fruit-fly larvae performed in the biological laboratories of the Catholic University of America, by Dr. Dale C. Braungart and Rev. C. E. Ott.

The two zoologists used very young larvae, or grubs, of the common fruit-fly, favorite insect guinea-pig of genetic studies. When the larvae were about three days old, they injected the colchicine into the region of the brain, using

an exceedingly fine hypodermic needle attached to a small rubber tube as a syringe.

"We filed the needle down, some," admitted Dr. Braungart.

Cells in certain limited parts of the brain were later found to have undergone doublings in the number of chromosomes, the heredity-bearing bits of specialized protoplasm within the nuclei. Similar increases in chromosome numbers in plants, induced by colchicine treatment, have been followed by radical changes in the whole bodies of plants of the following generation, and these changes have been regarded as evolu-

tionary "jumps" or mutations by some biologists.

However, efforts to produce like increases in chromosome numbers in animal cells have hitherto had scant success. Either the colchicine would have no effect at all, or it would kill the animal cells outright. So, although fruit-flies are zoologically very remote from back-boned animals, at least they do belong to the animal kingdom, and thus represent a "toe in the door," giving hope for further experiments.

Science News Letter, August 1, 1942

METALLURGY

Silver in Place of Tin Recommended for Solder

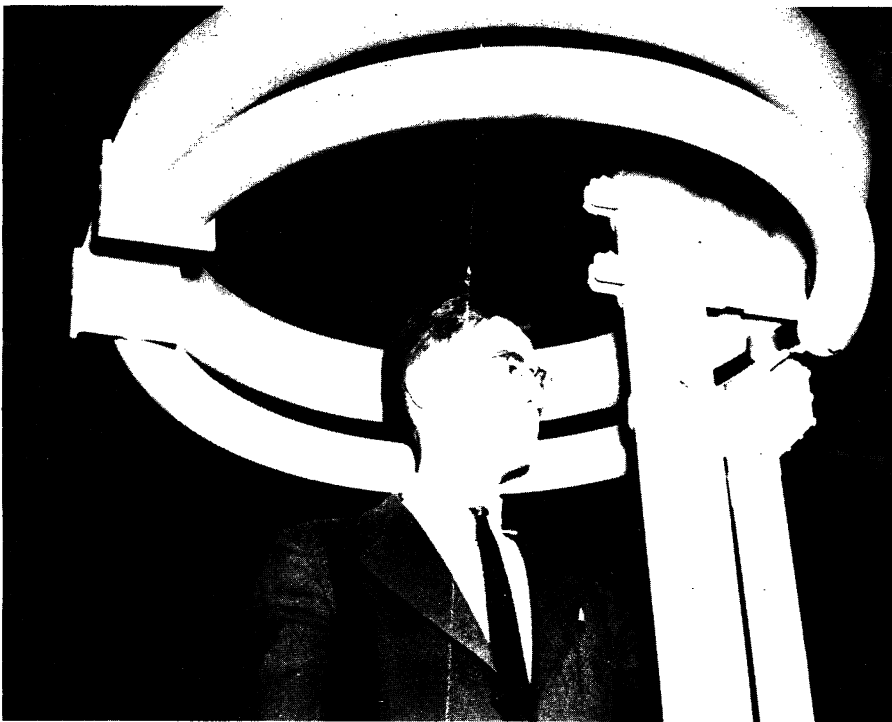
LEAD-SILVER in place of lead-tin soldering for tin cans is one of the recommendations of the War Metallurgy Committee and its Advisory Committee reported by Dr. Frank B. Jewett, president of the National Academy of Sciences, in a survey of the work of the two committees for the past eighteen months.

The substitution of lead-silver for lead-tin solder has been made in some fields. But in certain canning processes, difficulties are encountered which must be overcome by research before the substitution in this field can be ordered, the report stated. Nevertheless, since a large proportion of the total consumption of tin is still used in soldering, such substitution in the canning industry is urgently needed.

The War Metallurgy Committee has at its disposal for war work more than 10,000 metallurgists in this country, research men, technicians, engineers. Their combined experience represents well over 125,000 man years. Heads of industries, university and research organizations also contribute their knowledge and experience. The results of Canadian and English research are made available.

The Committee functions as a nerve center for the coordination and correlation of all this work, preventing duplications and mistakes and thus saving time and money. It portions out the work to various sub-committees and to organizations and groups best suited to carry on the particular kind of work needed. It serves also as a clearing house for the appraisal of new thoughts, new ideas, new short-cuts that may come from anywhere—and are coming in fast.

The chairman of the War Metallurgy



FOR FM

This novel looking radio antenna, developed by M. W. Scheldorf, General Electric engineer and exhibited at the Institute of Radio Engineers summer convention in Cleveland, is designed to provide equal radiation of the radio waves in all directions horizontally. To produce this equal radiation for frequency-modulation radio transmission, it was previously necessary to install more complicated and costly antenna arrangements.

Committee is Dr. Clyde Williams, director of the Battelle Memorial Institute, Columbus, Ohio; with Dr. Zay Jeffries, of the General Electric Company, as vice-chairman, and Louis Jordan, as executive secretary.

Science News Letter, August 1, 1942

MEDICINE

Assembly Line Method Applied to Sun Bathing

MINERS at the Manvers Main Colliery in England now get daily sun baths by an assembly line method called both "revolutionary" and "unique in this country" by its designer, Dr. William Beaumont, of London, England, in a report to the *British Medical Journal* (June 13).

The miners, after their shower-bath, pass through a door and step onto a conveyor belt which carries them along a corridor which has mercury vapor arc lamps along its walls to deliver ultraviolet light. At the end of the corridor the men step off the conveyer and pass through a door to their clean clothes locker.

The assembly line sun bath is capable of providing sun baths for 50 workers every five minutes. It provides a minimal dose of the artificial sunshine, designed not as treatment but as a prophylactic measure to keep the men in good health in spite of lack of exposure to natural sunlight. The equipment is put into operation by throwing a single switch. Any defect or breakdown automatically breaks the electrical circuit supplying the apparatus.

The problem of providing artificial sun baths for factory and other workers as well as miners who work long hours under artificial light and lack opportunities for spending the week-ends in the open "for some time has been exercising the minds of those responsible for the health of the workers and also those whose main concern is production," Dr. Beaumont points out.

Both the Germans and Russians, he adds, faced this situation long before the war. The Krupps mines at Essen, he says, have a "splendid installation" built in the early days of the Hitler regime and the value of sun baths in factories was recognized in Russia years ago.

Science News Letter, August 1, 1942

In some states 1942 *auto licenses* will be renewed by windshield stickers for 1943 use.

MEDICINE

Cancer Institute's Personnel At Disposal of War Agencies

Chief of Institute Also Announces Now Possible To Convert Normal Mammalian Cells into Cancer Cells

THE NATIONAL Cancer Institute has been authorized by the National Cancer Advisory Council to put "at the disposal of the appropriate war agencies the facilities and personnel available for research aiding the war effort," it was announced following the Council's meeting.

Dr. Carl Voegtlin, chief of the National Cancer Institute, reported work showing for the first time that it is possible to convert normal mammalian cells growing outside the body into can-

cer cells. This was done by exposing the normal cells to the action of powerful cancer-causing chemicals. It is expected to aid understanding of how cancer is caused in the human body. The experiments were started in 1936 by Dr. Voegtlin and Dr. Wilton Earl.

Four grants-in-aid, totalling \$21,300, were made to the Chicago Tumor Institute, the University of California, Cornell University and Michael Reese Hospital, Chicago.

Science News Letter, August 1, 1942

ENGINEERING

New Sources of Ultraviolet Several Times More Effective

Chemical Coatings on Bulbs or Tubes Transform Wavelengths and Increase Brightness of Fluorescence

TO AID America's war effort, new sources of ultraviolet or black light have been perfected which cause fluorescent materials to glow several times more brightly than previously possible, E. W. Beggs, Westinghouse lighting engineer, told the American Optical Society meeting at the Massachusetts Institute of Technology.

The new sources, which range from a walnut-sized bulb to a four-foot glass tube, use a new chemical coating that transforms short-wave ultraviolet to near ultraviolet. Chemical coatings also sift out the visible light.

Fluorescent materials glow when illuminated with ultraviolet light and cease to glow when the black light is turned off.

Thus an ultraviolet spotlight may pick up fluorescent markings in the dark which until then had been invisible. Maps, which must be read under black-out conditions, can actually be made to glow in several different colors. Fluor-

escent dials in an airplane will glow without the glare that might attract the attention of the enemy, and even this glow can be dimmed or extinguished at a moment's notice.

Phosphorescent materials, on the other hand, are like storage batteries of light. Activated for less than one minute by the ultraviolet light, they continue to glow for several hours afterwards. Other artificial sources may be used for this activation, but none is so efficient as the new mercury vapor fluorescent lamp.

Trail-blazing with fluorescent powders or paints is another one of the important new possible uses for black light, Mr. Beggs reported. By this method, markings left on trees, stones and bushes remain invisible until picked out in the darkness by ultraviolet spotlights.

Science News Letter, August 1, 1942

Testing is now being conducted to determine the practicality of canning *cheese*.