GENERAL SCIENCE

U. S. Grants Visa to Nobel Physicist Dirac

➤ PROF. P. A. M. DIRAC, England's famed 1933 Nobel prize winner in physics, has been granted a visa to visit the United States, SCIENCE SERVICE has learned.

Last May, Prof. Dirac's application for entry to this country to spend the academic year at the Institute for Advanced Study, Princeton, N. J., was denied, although he had previously visited the Institute in 1934-35, 1946-47, 1947-48 and 1949. (See SNL, June 5, p. 357.)

Dr. J. Robert Oppenheimer is director of the Institute.

A re-hearing has now been held on Prof. Dirac's visa application and permission granted by the State Department for the top-flight physicist to enter the U.S. He is expected to arrive at the Institute next April, a university official said. Prof. Dirac will also visit Canada, Japan and India on his trip.

He holds the highly prized chair of Lucasian Professor of Mathematics at Cambridge University, England, to which he was appointed in 1932.

Another physicist who has had difficulties entering the United States, but who has now been granted special permission to visit this country, is the atomic scientist Dr. M. L. E. Oliphant, professor of physics at Australia's National University, Canberra.

Dr. Oliphant has since canceled his proposed trip, and is not expected to take advantage of his transit permit.

In 1951, administrative delays in passing on his visa application prevented Dr. Oliphant from attending an international conference of nuclear scientists in Chicago.

At least 50 foreign scientists, including Nobel prizes winners in fields other than physics, have been refused visas in the last two years. (See SNL, July 10, p. 24.)

Science News Letter, October 2, 1954

PATHOLOGY

Safer Shots in Arm, Thanks to Dishwasher

➤ SHOTS IN the arm, whether of a vaccine, penicillin or some other remedy given by hypodermic injection, can be safer to get and easier to give in the future, thanks to a laboratory dishwasher at the Army's biological warfare center at Camp Detrick, Md.

One danger of such injections is that the injecting needle has not been thoroughly sterilized between injections and could, therefore, carry disease germs from one person to another. Among the germs believed transmitted in this way is the virus of viral, or serum, hepatitis.

To be really safe, such needles should be autoclaved, that is, sterilized under steam pressure, not just boiled.

However, the nuisance of taking a batch of needles from the sterilizer, wrapping them in gauze and putting them each in a small glass tube and then re-autoclaving them was what started the Detrick dishwasher on his invention.

The invention itself consists of a steel disk with dozens of small holes into each of which a hypodermic needle fits. Covering this is another disk with only three holes. These holes each have a small cap. By removing the cap and turning the top disk, the hole comes over the hole holding a needle. The hypodermic syringe is stuck into the needle and the needle removed. The covering disk is then moved on to the next needle as one is wanted.

The device saves time and trouble not only for the dishwasher but also for a scientist or doctor making many injections, one after the other, as in the case of mass vaccinations. Since the whole device with its needles must be autoclaved, it gets around the danger of boiled-only needles. The device was shown at the International Congress of Pathology in Washington.

Science News Letter, October 2, 1954

ENTOMOLOGY

Scientists Identify Newest Cotton Pest

➤ ENTOMOLOGISTS HAVE identified the newest pest to attack Texas cotton.

Dr. Paul W. Oman, entomologist at the United States Department of Agriculture Plant Industry Station, Beltsville, Md., has determined that the pest, known locally in Texas as the brown cotton leafworm, is *Acontia dacia Druce.*

Responsible for damage to 5,000 acres, this is the first year that the insect has attacked Texas cotton. Dr. Oman believes that the insect has probably been a part of normal insect life in Texas, but fed on plants other than cotton heretofore.

An unusual amount of dry weather is believed to have caused the insect to switch its diet. The moth lays its eggs on the cotton leaves. When hatched, the larvae or brown cotton leafworms, cause considerable ragging of the leaves.

Damage first appears as small buckshot-sized holes in the leaves. The holes become larger as the worms continue to feed. If unchecked, plants may be completely stripped.

Reddish-brown in color, the larva crawls along the leaf with a looping motion. When it is full-grown, it is about one and one-quarter inches long and has a black spot on each side with an irregular pale yellow line running from the black spot to the end of the body.

The insects attacked large areas of cotton plants in eastern, coastal and south-central Texas, and the parent moths have been tentatively identified in Louisiana.

Field tests indicated that parathion in quarter-pound-per-acre lots and endrin in one-third-pound-per-acre lots have proved effective insecticides. Chlorinated hydrocarbons, effective with most other cotton pests, were ineffective during field tests.

Science News Letter, October 2, 1954

IN SCIEN

METEOROLOGY

Human Activities Cause Ice-Fog in Alaska

➤ HUMAN ACTIVITIES near airfields in the subzero temperatures of the far north can cause "ice-fog," which seriously reduces visibility over large areas.

Only very small amounts of water are needed to saturate air at very low temperatures, and the vapor added to the air by various human activities is sufficient to make the ice-fog, weathermen attending the American Meteorological Society meeting in Columbus, Ohio, were told.

Drs. E. Robinson, C. Steffens, W. C. Thuman and E. J. Wiggins of Stanford Research Institute, Stanford, Calif., reported results of their studies at Eielson Air Force Base near Fairbanks, Alaska.

The cutting down of visibility by ice-fog is due principally to small, nearly spherical ice particles, called "droxtals," they found. These are believed to result from rapid freezing of supercooled water droplets.

Larger, well-developed ice crystals may also be present in small numbers, but their studies showed that these caused little reduction in visibility.

Science News Letter, October 2, 1954

PHYSIOLOGY

Exercise, Wheat Germ Oil for Middle Aged Men

➤ ATHLETES AND middle aged men show better heart action, physical performance, and heart and blood vessel condition when on regular doses of wheat germ oil plus regular exercise, Prof. T. K. Cureton of the University of Illinois reported to the American Physiological Society meeting in Madison.

Wheat germ oil contains vitamin E, which some years ago was reported beneficial for the heart. Later, that idea was discarded as unsound.

By itself, without exercise, the wheat germ oil produces no measurable benefits, Prof. Cureton reported. His findings were made with four test groups of men. Two groups received capsules containing the wheat germ oil and two groups received similar capsules containing an inert substance.

One of each of the groups followed a training program including calisthenics and swimming three to five times a week. The men in training who received the oil showed significantly better performances and condition than those not receiving it. Of the groups not training, neither showed any improvement.

Science News Letter, October 2, 1954

CE FIELDS

OPHTHALMOLOGY

Eyestrain From Stress Of Modern Living

➤ THE TENSION and strain of modern living is to blame for eyestrain in large numbers of persons who have healthy eyes, Dr. Neil L. Murray of Pretoria, South Africa, charged in a report to the International Congress of Ophthalmology meeting in New York.

He mentioned specifically, among other things, the following: the wide availability of books, periodicals and daily newspapers to an extent undreamed of a century or two ago; the conglomeration of machines and instruments requiring close observation (and fatiguing bad posture) in daily duty; the flicker of cinema, television and radar screens; the fast-moving vehicles and aircraft requiring visual attention for their control; the almost universal provision of electric light, available at the flick of a switch, which has turned night into day and imposed longer hours of work on human eyes and constitutions that have not been fully prepared for it.

Wearing eyeglasses does not help relieve eyestrain, Dr. Murray stated, if the coordination power of the eyes is not strong enough to meet the demands of their occupations. The poor power of convergence, however, can be improved by treatment using prisms.

Science News Letter, October 2, 1954

GENETICS

Special Rights Urged for Twins

➤ SPECIAL PRIVILEGES for twins, such as resorts, clubs and libraries reserved for twins only, may help researchers understand all of mankind.

This is one recommendation for a worldwide twin study made by Dr. Luigi Gedda, director of the G. Mendel Institute in Rome, at the World Population Conference in Rome.

Twins offer scientists a better opportunity to study human traits by subjecting one twin to changes and using the other twin as a standard of comparison. Often this happened in the course of their lives.

The Italian geneticist said that society, to better understand itself, should give special favors for twins. He advocated the establishment of sea and mountain resorts, social services, movies or theatrical performances with no single-born allowed to attend, as well as "twin clubs where the well-to-do help the needy, libraries etc."

He reported that "in Italy several of these social measures have been promoted, and they have been found very useful in obtaining the cooperation of twins in medical and psychological studies."

To implement his study of twins, Dr. Gedda outlined a complete program including:

World birth registry for twins.

Keeping of special records by hospitals, doctors, institutions and insurance companies.

Setting up of office and clinical facilities to permit standardized medical examinations of large numbers of twins.

Establishment of twin study centers at schools of education and psychology.

Science News Letter, October 2, 1954

ENGINEERING

Device "Tests" Engine On "Drawing Board"

➤ AN ELECTRONIC device will make it possible to test the performance of jet engines, nuclear reactors and the like while they are still on the drawing board.

The device, developed by N. E. Friedman, a University of California at Los Angeles engineer, can simulate the thermal behavior of materials under the influence of intense and rapid temperature changes.

Adapted to an electronic computer, it enables the "brain machine" to predict the performance of a proposed structure from design factors and known material properties.

The new gadget simulates thermal behavior by exhibiting a corresponding electrical behavior under the influence of the electrical current. It makes use of readily available, inexpensive elements called semiconductors, which carry current in only one direction.

With the use of the "simulator" in the computer, it will be possible to solve any problem pertaining to the thermal performance of existing or new designs. The simple principle of analogy is employed.

The device is economically important in that it can eliminate building and testing of costly models of proposed engines.

Science News Letter, October 2, 1954

CHEMISTRY

New Synthetic Rubber Stands Boiling in Oil

➤ A SYNTHETIC rubber, designed for use in military aircraft, can be boiled in oil and still not be hurt.

Christened Poly-FBA, its development was announced to the American Chemical Society meeting in New York by P. J. Stedry, chemist of the Minnesota Mining and Manufacturing Co., St. Paul, Minn. The new rubber is now being produced experimentally on a small-scale. Chemically, it is 1, 1-dihydroperfluorobutyl polyacrylate.

Poly-FBA withstands oils, gasoline and temperatures up to 400 degrees Fahrenheit. It works well with the new non-petroleum lubricants that are used at high temperatures in jet and rocket engines.

Science News Letter, October 2, 1954

CHEMISTRY

Can Step Up Atropine's Anti-Nerve Gas Action

➤ A CHEMICAL that can step up the anti-nerve gas action of atropine two and one-quarter times has been discovered.

The chemical is called pentamethonium, short for pentamethylene bis-trimethyl ammonium dibromide. It is related to one of the newer drugs used for lowering very high blood pressure, hexamethonium.

Its ability to increase the life-saving effect of atropine in laboratory animals poisoned by a nerve gas type chemical, paraoxon, is reported by Drs. C. A. de Candole and M. K. McPhail of Suffield Experimental Station, Ralston, Alberta, Canada, in *Nature* (Sept. 18).

Atropine has heretofore been considered a specific antidote, and the only antidote, for nerve gases and other anti-cholinesterase chemicals such as some of the newer insecticides.

"Pentamethonium bromide significantly increases survival of fully atropinized animals—mice, rabbits and cats—poisoned with paraoxon," the Canadian scientists state.

Its good effects come through its aid to breathing. In this respect it produces better results when given with atropine than atropine alone does.

Clue to the trial in animals of pentamethonium as an auxiliary antidote to nerve gas type chemicals came from findings of other scientists that it showed competitive antagonism with acetyl choline at nerve centers. Nerve gas type chemicals, by blocking cholinesterase, allow too much acetyl choline to collect at such centers.

Science News Letter, October 2, 1954

BIOPHYSICS

Combines Sonar, Radar And TV for Diagnosis

➤ THE PRINCIPLES of sonar, radar and television have been combined to make a new device for detecting cancers and other tumors, cysts and goiters, the Veterans Administration has reported.

The instrument is called the "Somascope." It was devised by Dr. Douglass H. Howry, former VA resident in radiology and now an instructor in radiology at the University of Colorado Medical School.

The Somascope is an ultrasonic photographing device expected to give well-defined pictures of cancer and other diseases of the body's internal soft organs and tissues that cannot now be seen by X-ray or fluoroscope. It is intended to supplement but not replace the X-ray and fluoroscope.

The person to be somascoped is placed in a tub of water. Tissues with different consistencies reflect sound waves through water differently. The ultrasound beamed at the patient is reflected back through the water, and the echo waves are converted into electrical signals that are made to produce a picture on a TV screen.

Science News Letter, October 2, 1954