

MATHEMATICS

Chinese Mathematician To Lecture In America

► HWA LO-KENG, a self-taught Chinese mathematician, is coming to the United States to lecture at the invitation of Dr. Albert Einstein, physicist and mathematician, now professor in the Institute for Advanced Study at Princeton, N. J., according to reports to the Chinese News Service in New York.

Prof. Einstein is starting a series of lectures on unsolved problems in mathematics by authorities from various parts of the world. Both he and Mr. Hwa will serve as directors as well as lecturers of the program. There will be a total of four such directors.

A native of Kingtai in Kiangsu Province, Mr. Hwa is the author of eight dissertations in his field. His two published theses, on much discussed but unsettled mathematical problems, have aroused great interest among the mathematicians of the world.

The young Chinese, lame as a result of infantile paralysis, used to be a salesman at a small cigarette store in Kingtai. Between sales he found time to study mathematics for he was too poor to go to a school of higher education or take lessons from a private tutor. He wrote several articles as a result of his study and contributed them to mathematical periodicals, through which he became known abroad.

Mr. Hwa never went farther in school than junior high. Like the famous inventor, Thomas A. Edison, he was considered dull-witted in primary school, where he failed in every arithmetic test he was given.

Science News Letter, April 15, 1944

PHYSIOLOGY

Nazis Increase Ceiling By Operating on Pilots

► REPORTS are current in scientific circles that the Nazis are enabling some of their fighter pilots to fly to greater altitudes by an operation to remove part of the thyroid gland, according to a statement from New York University.

The same effect may be achieved by small doses of the chemicals, thiourea and thiouracil, experiments at the University's Washington Square College of Arts and Science suggest. These experiments were reported by Dr. Harry A. Charipper, Dr. Albert S. Gordon and Dr. E. D. Goldsmith. (See SNL, Feb. 12)

In these experiments the scientists found that rats given thiouracil for 12

days were able to survive at atmospheric pressures comparable to those at altitudes of 32,000 feet without the aid of oxygen, although untreated animals died at such pressures.

The reason is that thiouracil and thiourea interfere with production of normal thyroid hormone by the gland. This tends to slow body processes including oxygen consumption. The chemicals have been found effective in treating persons with overactive thyroid glands, slowing their metabolic rate to normal.

The assumption is that in the pilots with normal thyroid glands the chemical might similarly slow metabolic activity and oxygen consumption to a below-normal level at which they could get along with the decreased amount of oxygen available in the air of high altitudes.

In the experiments, when the medicine was stopped the rats' thyroid activity rapidly returned to normal. The reports about the Nazi fighter pilots indicate that after the war they will have to get doses of thyroid extract for the rest of their lives to make up for the loss of some of the gland tissue.

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PUBLIC HEALTH

Welding Cannot Be Blamed For Workers' Sterility

► BELIEF that welding may cause sterility in workers through exposure to infra-red, visible or ultraviolet energy is unsupported by evidence, Arthur C. Stern, of the New York State Labor Department's Division of Industrial Hygiene, reported before the occupational disease session of the Greater New York Safety Council meeting.

The alleged effect of welding in producing sterility, particularly among women workers, stems from confusion of ultraviolet used in welding with X-rays and gamma rays which do bring about sterility, Mr. Stern stated.

"There is no exposure to either of these types of rays in welding. Hence the alleged hazard is non-existent."

There appears to be no relationship between welding and kerato-conjunctivitis, or ship-yard eye. The disease is of virus origin, he pointed out, and probably is spread from infected eyes by infected hands, instruments, and goggles.

Nor can welding be blamed for epidemics of pneumonia, Mr. Stern maintains. Fumes released in welding have no adverse effects upon workers and pneumonia must be ascribed to other causes.

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IN SCIEN

MEDICINE

Penicillin May Be Remedy For Infectious Jaundice

► HOPE that penicillin may be an effective remedy for Weil's disease, or infectious jaundice, is suggested by its success in guinea pig experiments conducted at the Mayo Clinic by Dr. F. R. Heilman and Dr. W. E. Herrell with the technical assistance of Miss Constance Carter and Miss Nellie Greenburg.

Cases of Weil's disease have occurred in nearly every civilized country, with deaths running from five to as high as 55 out of every 100.

"The conditions imposed by war may favor outbreaks of this disease," the Mayo Clinic scientists point out.

Epidemics have been associated with armies as far back as Napoleon's campaign in Egypt. The fact that the leptospiras which cause the disease are spirochetes suggested trying penicillin as a remedy, because penicillin has been reported effective in another spirochete-caused disease, syphilis.

In the final experiments at the Mayo Clinic, 64 guinea pigs were infected with heavy doses of leptospira. None of the 32 animals treated with penicillin died of the disease, while 29 of the 32 untreated animals died, a mortality of 91%. This leads the scientists to conclude it is "reasonable to suspect that penicillin will be useful in the treatment of Weil's disease and other leptospiral infections in man."

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TEXTILES

Army Ponchos of Nylon To Replace Cotton Ones

► NEW lightweight Army ponchos of nylon will be issued some time this month to troops in tropical combat areas to replace those of cotton. Coated with the same synthetic resin used on the old-type ones to make them waterproof, they weigh less than two pounds.

The multiple-purpose ponchos are provided with grommets and eyelets which facilitate their use as a tent when two or more are hooked together, a fox-hole cover, a ground sheet, protection from ground moisture or a moisture-imperious bedroll.

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CE FIELDS

METALLURGY

Life of Cutting Tools Lengthened Greatly

► THE LIFE of cutting tools used in machine and other industries may be lengthened from two to 50 times by a process wholly new in metallurgy, declared Axel Lundbye of the Crowell-Collier Publishing Company, Springfield, Ohio, at the Birmingham, Ala., meeting of the American Society of Mechanical Engineers. The process consists of chromium plating and an after-treatment of soaking in hot oil at 350 degrees Fahrenheit for an hour.

In the Lundbye process, which the speaker originated, chromium is plated on steel and given the oil after-treatment to release hydrogen. The chromium then becomes an integral part of the steel and does not peel or scale from the base metal when pressure is applied, he claimed. Peeling and scaling of the chromium in other methods prevented wider use of effective plating.

The company with which Mr. Lundbye is connected has offered to make the process available without royalties to war industries for the duration. Several hundred manufacturers have taken advantage of the offer.

The process is "adapted to use in tools and machine parts which are subject to wear, corrosion, bending, shock and heavy load.

"The process results in an increase in the wearing quality of machine parts, less friction, and easier and smoother operation," the speaker stated.

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CHEMISTRY

Plastic Sheeting Used To Teach Blind Flying

► DAY is turned into night in an airplane cockpit by the use of red and green plastic sheeting in order to train student pilots to fly blind.

The cockpit windows of the airplane are covered with green plastic. Through the plastic, which transmits practically nothing but blue-green light, the instructor can clearly see the ground and sky, although it has a greenish look. He can also see everything inside the plane.

The student pilot, however, wears

goggles with red plastic lenses, which transmit light in the red portion of the spectrum, but filter out light from the blue end. This makes it impossible for him to see the landscape, which appears blue-green through the plastic windows. The student can thus see the instruments, his instructor and other things inside the plane, but cannot look out beyond the windows.

Even on a brilliant day the student pilot cannot see the horizon, landmarks or clouds through the combination of red and green plastic equipment for blind flying. He must manipulate airplane controls in accordance with instruments, radio beam and instructions. But his instructor, who can see out freely, can spot other aircraft nearby and check the plane's course against landmarks, and stands ready to take over the controls instantly should there be any danger of mishandling.

Squares of the red and green plastic sheeting used for this purpose are contained in a kit prepared by Science Service. With these you can build a miniature cockpit and yourself see how light is blocked out when the two are superimposed. The Plastic Pilot Aids Unit of THINGS of science, which contains other specimens of plastic sheeting as well, can be secured by sending 50c to SCIENCE NEWS LETTER, 1719 N. St., N. W., Washington 6, D. C., and asking for unit No. 41.

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METALLURGY

Cold Treatment of Metals At Sub-Zero Temperatures

► THE STRUCTURE of metals subjected to cold treatments at temperatures from 80 to 130 degrees below zero Fahrenheit was described by G. B. Berlien of the Lindberg Steel Treating Company, Chicago, at the meeting of the American Society of Mechanical Engineers in Birmingham, Ala. He presented the results of recent investigations made by him.

"There are several physical changes noted in metals that had been quenched to very low temperatures," he said. "First, there was an increase in magnetic qualities. Also, a volume increase that was permanent at room temperature after such treatment was an important factor. Along with the above two changes, there occurred an increase in hardness sufficient to detect with our conventional hardness indicators, such as the Rockwell machine. The temperature required for these changes ranged from 80 degrees Fahrenheit below zero to 130 degrees below zero. The temperature requirements are governed by the alloy content of the material in much the same way as the hardening temperatures are governed by the same factor."

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TECHNOLOGY

Dishes to Match Mood Predicted for Future

► THE HOUSEWIFE of tomorrow will own not two but half-a-dozen sets of dishes—a set for each mood, J. Gordon Lippincott, New York ceramist, told the American Ceramic Society's war conference in Pittsburgh.

Dishes will be cheap and beautiful, and they will be sold by high-pressure like automobiles and refrigerators, he elaborated.

Before this can take place, Mr. Lippincott cautioned, U. S. glass and ceramic manufacturers will have to go a step beyond traditional handicraft techniques to keep pace with post-war industry.

If there can be developed chipless, flexible porcelains, mass production of attractive low-cost household ware and introduction of steel dies to mold ceramics and glass, these industries will be immune to competition, Mr. Lippincott said.

The basic methods of ceramic manufacture today are the same as they have been down through the ages, he contended.

Plastics and aluminum, encroaching on fields once relegated to ceramics and glass, should provide stimulus to further research on these materials, Mr. Lippincott said.

Synthetic resins are vying with ceramics and glass as vitreous coating to surface steel. Plastics have almost pushed ceramics out of the picture in the manufacture of switching devices, electric light sockets, and translucent substances for the diffusion of light.

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INVENTION

Flexible Wooden Soles For Shoes Patented

► A NEW TYPE of a flexible wooden sole for a shoe has received a patent, 2,345,831, issued to Harold L. Pierson of Rochester, N. Y. who has assigned it to E. P. Reed & Co. of the same city. It consists of a wood tread surface made up of small wood units, each a square except those along the edge of the sole, and having independent movement. They are held to a thin leather split or some other available material with a suitable cellulose cement, with the grain of the wood at right angles with the grain of the split. The wood sole is treated with a waterproofing material to prevent it from swelling in use.

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