

AERONAUTICS

Field Offices Issue Student Pilot Certificates

➤ STUDENT PILOTS will now have flying certificates issued to them at field offices of the U. S. Civil Aeronautics Administration where they take examinations instead of the central office in Washington.

It is a simplification procedure, resulting from a CAA-Industry conference recently held in Oklahoma City, one object being to encourage more private flying, particularly on the part of young people.

Written examinations taken by would-be pilots will be corrected by CAA agents at the field offices instead of being sent to Washington to be graded. This not only shortens the time required, but enables the examiner to explain to a student his weaknesses in aeronautical knowledge as revealed by the examination. Temporary medical certificates from local physicians may soon be accepted.

CAA is taking several other steps to offset what some regard as a serious lack of interest in flying on the part of young men. There is, it is claimed, danger of a future shortage in manpower to fly America's civil aircraft. CAA has just held in Washington a conference of aviation officials and educators in the hopes of creating a greater interest in aviation on the part of school and college students.

Also it has recently sent to the high schools of the nation a circular urging the establishment of aviation courses. Its Office of Aviation Development is prepared to outline a one-year vocational course called "Exploring Aviation." It includes a half-year studying the materials of aviation and a half-year devoted to personnel in aviation pursuits.

Science News Letter, August 23, 1952

TECHNOLOGY

High-Speed Photography Aids Research on Steel

➤ HIGH-SPEED MOTION picture cameras, greedily devouring film at the rate of 3,500 frames each second, are helping scientists learn more about what goes on in blast furnaces.

R. A. Buchanan of the United States Steel Company's research laboratory reported to the Photographic Society of America meeting in New York that "the blast furnace has been in use for many hundreds of years, but surprisingly little is known of the processes taking place inside the unit."

Small, built-in peep-holes allow steelworkers to peer inside the furnace and to observe the fiery mass of coke and molten metal. But forced-air drafts shoot sparks throughout the furnace so rapidly it is difficult for the eye to follow them. High-speed movies "slow down" the sparks, allowing researchers to study draft patterns.

The size of coke particles being shoved into the furnace has a direct relationship to the operation of the furnace. The super-

slow motion movies have permitted studies of these particles. Sometimes the furnace may be as hot as 3,400 degrees Fahrenheit, and the brilliance of the luminous coke keeps observers from seeing it clearly.

By photographing the coke lumps and then projecting the films on a suitable viewer, it is possible to measure the lumps to obtain needed data.

High-speed photography also has revealed answers to questions regarding welding electrodes. The films showed the number of arc extinctions each second and whether the metal transfer from electrode to plate was globular or spray, Mr. Buchanan said.

The research movie camera uses a rotating prism and Kodachrome Type A color film. It photographs the blast furnace's insides through a four-inch lens. Two portrait attachments are added for electrode studies. The lens is set at f/22 when electrodes are being photographed, but an exposure meter is used when blast furnaces are being studied because of changing luminous intensities of the fiery mass within.

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PUBLIC HEALTH

Get Your Right Dose of Exercise

➤ TAKE YOUR exercise this summer in the right-sized dose for you, advises the Illinois State Medical Society.

In the right doses, exercise can be one of the greatest stimulants in good, healthful living. Intelligently planned and controlled exercise speeds up all body processes.

Old cells are broken down, new cells are formed, the blood flow is increased, breathing is extended, and other body functions are stimulated. Muscles are kept in good tone. Thus the chief value of exercise is improving the coordination of nerves and muscles, and stimulating the normal processes of the body for circulation and elimination.

Excessive exercise, however, can be harmful. The office worker who takes part in running races at a picnic without being in good muscular trim is, the medical society states, asking for hours of pain. Unused muscles tighten up in knots which can actually be felt and the so-called "Charley horse" is the result.

Sudden, unaccustomed exercise can put too much strain on the heart. Many persons with heart trouble can play golf and engage in other kinds of exercise. But the ones who do this safely are those who have been examined by their physician and follow his directions about the dose of exercise for them.

Not all heart patients can take the same exercise, and not all people in the older age groups can take the same amount. The smart person, therefore, will go to his doctor for a physical examination and exercise prescription. Chances are, too, that the doctor will give a prescription for exercise doses to be taken daily or weekly the year around and not just in the summer.

Science News Letter, August 23, 1952

IN SCIENCE

MEDICINE

"Brain Fever," Forgotten Disease, Exists Today

➤ "BRAIN FEVER," well known in medical reports and novels of the 19th century but almost forgotten since then, exists today, Dr. Louis Casamajor of the Neurological Institute of New York and the College of Physicians and Surgeons, Columbia University, declares.

He reports four modern cases in the *Journal of the American Medical Association* (Aug. 16).

Like the cases in the old medical books and fiction, these were cases of severe brain inflammation. All four patients recovered completely, which was also the rule in the historical cases.

Convulsions, loss of consciousness, paralysis, lack of coordination and a sort of bulbar palsy are the signs and symptoms Dr. Casamajor found in his patients.

In the old cases the patients were almost all children. The patients Dr. Casamajor saw were 11, six and one-half, seven and eight years.

The child may show abnormal behavior and have headaches and fever for some time at the start of the disease, or the attack may come rather suddenly after a blow or bad bump on the head.

Brain wave records are of the greatest value, Dr. Casamajor reports, in diagnosis of the condition.

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TECHNOLOGY

Well-Drilling Rig Operates Off-Shore

➤ JAMES McNEILL of Placentia, Calif., was issued patent number 2,606,003 for a method of drilling oil and gas wells from barges floating in rough water of depths of 400 feet or more. He assigned his patent to the Union Oil Company of California.

A barge with the drilling apparatus is anchored securely over the drilling site. Suspended from a crane, the drill operates in a semi-flexible case that accommodates the usual pitch and roll of the barge due to heavy waters. Although other drilling methods can be used, rotary drilling is preferred, the inventor says.

Barges with high superstructures often are sunk on location when off-shore wells are to be drilled. The drilling equipment is operated from the top of the superstructure. But that system is limited by the depth of the water at the drilling site and also by the chopiness of the water. Mr. McNeill's invention is intended to overcome these difficulties.

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E FIELDS

MEDICINE

Ragweed Tough, So Drought No Pollen Aid

► THE DROUGHT has not brought any relief for hay fever sufferers. Ragweed, which produces most of the hay fever-causing pollen, is tougher than either corn or cotton in surviving a long, dry spell.

If pollen counts are low in your city, it is because the minute grains are only now being flung into the atmosphere. Labor Day weekend usually brings top counts for the pollen season to communities not ragweed-free.

Ragweed plants come in two varieties, tall and short. The tall kind is broad-leaved, the short a distant relative of the chrysanthemum, whose pollen is also sometimes bothersome to hay feverites. Both varieties, however, are simple and easy to kill with 2,4-D sprays.

The pollen count tells how many grains of pollen are found in a cubic yard of air. The grains are picked up on slides coated with petroleum jelly and exposed for 24 hours, then counted in a laboratory.

Allergy experts have learned that pollen counts cannot be predicted accurately, even from one day to the next, but they do know that the higher the humidity, the fewer the number of grains floating about.

Daily changes in the weather can shift the pollen count substantially. If, for instance, clouds cover the sun during early morning hours when pollen grains are usually flung out, little pollen will be released that day.

Best relief for hay feverites is to go to a pollen-free area. Next best is air-conditioning, either in public places or at home. Shots and drugs, particularly if taken well before the season starts, help to relieve the sufferers' misery.

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MEDICINE

Liver Damage Found in Chromium Plate Workers

► WARNING of a new danger to workers in the chromium plating industry appears in a report to the *Journal of the American Medical Association* (Aug. 9).

The report is from Drs. Luke R. Pascale, Sheldon S. Waldstein, Gertrude Engbring and Paul B. Szanto, and Alvin Dubin, M.S., of the Hektoen Institute for Medical Research of Cook County Hospital and Stritch School of Medicine of Loyola University, Chicago.

These scientists discovered signs of liver damage in five workers in a chromium plating factory. Liver injury has not previously been considered a likely result of in-

dustrial exposure to chromium compounds, although these are known to damage skin, nose and mouth linings and kidneys.

In four of the five workers examined, no symptoms of liver damage had developed. The fifth worker came to the hospital with jaundice, lack of appetite and other symptoms suggesting liver disorder. Eight of her fellow workers in the plant were then examined and four found to have some liver damage without symptoms. The five had been employed in chromium plating for from six months to five years.

The subtle nature of this chromium poisoning of the liver suggests, the Chicago scientists point out, that other cases may have been overlooked. Discovery of existing cases shows need for greater preventive measures.

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ENTOMOLOGY

Another Poison in DDT-Prostrated Roach

► THE BLOOD of a roach prostrated by DDT contains another poisonous substance besides the DDT, Drs. James Sternburg and C. W. Kearns of the University of Illinois, Urbana, discovered.

The nature of this other poison and its relation to the way DDT acts to poison, as well as the effect of temperature on the other poison, are now being investigated.

Studies showing the existence of the second poison in roach blood are reported in *Science* (Aug. 8).

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GENETICS

Cells Can Transform into Cancer in at Least 6 Ways

► NORMAL BODY cells may be transformed into cancer cells in at least six different ways, Dr. T. M. Sonneborn, geneticist at Indiana University, Bloomington, believes on the basis of his studies of paramecia, single-celled animals that live in water.

"In my opinion, there is no one universal cause and mechanism of origin of cancers," he declares in a report to the American Cancer Society which has supported the research.

"The basic fact is cellular transformation, and this is now known to occur in at least six ways: 1. changes of cell state that reproduce themselves independently of mutations or viruses; 2. mutation of viruses from an inactive to an active form; 3. the action of viruses in changing the concentration of cellular enzymes; 4. changes in susceptibility to virus infection due to gene mutation; 5. increases in virus concentration due to mutation of a principal controlling gene, or to increase in dosage of that gene; 6. persistent slowing up of cell growth, due to mutation of any gene, which acts both to increase cellular concentration of virus (when a virus is present) and to produce cell transformations that are independent of viruses."

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PHYSIOLOGY

Red Better Than Yellow For Air-Sea Rescue Gear

► LIGHT, BRIGHT scarlet is a better color than yellow for rafts, lifeboats, life-preservers and other air and sea rescue gear, Navy medical researchers find.

The light scarlet, scientifically known as Munsell 7.5 Red, can be seen at greater distances than the bright chrome yellow now in use.

Even people with the best of color vision are color blind to yellow and blue under certain conditions, the Navy tests showed. Both colors appear as gray. But the colors on either side of yellow in the spectrum, that is, green and red, can be distinguished.

Procurement problems for bright green colors are difficult, so red, which is easily obtainable in brilliant values, becomes the most efficient and practical for far-distance visibility.

Reason for the original choice of bright yellow for life-saving equipment was that at closer ranges or when the yellow area is very large, bright yellow is the most conspicuous and has the most attention-getting value. Even at fairly close range, however, yellow life rafts were found to blend with the bright reflections of the sun on the water, while the red ones remained visible.

The spot of color is more easily detected when it is lighter than the background than when it is darker, the studies also showed. This means that in the case of air-sea rescue equipment, choice of color must be guided by the kind of weather likely to occur and, therefore, the apparent color of the sea in the region of likely use.

The findings are reported by Lt. Comdr. Dean Farnsworth and two of his assistants, research psychologists Florence L. Malone and Mary S. Sexton of the Naval Medical Research Laboratory at New London, Conn., where the studies were made.

Science News Letter, August 23, 1952

MEDICINE

Acute Bursitis Helped By Treatment With ACTH

► ACTH, PITUITARY gland hormone famous as an arthritis remedy, is good medicine for bursitis, Drs. Charles LeRoy Steinberg and Andries I. Roodenburg of the Rochester, N. Y., General Hospital find.

Five patients with acute bursitis and one with chronic bursitis of the shoulder got relief of the excruciating pain within a few hours after an injection of ACTH, the doctors report in the *Journal of the American Medical Association* (Aug. 16).

The five with acute bursitis of the shoulder got back normal function of the shoulder, and the one with chronic bursitis got almost completely normal function.

Two injections of the hormone on the first day and one on each of the two succeeding days seem to be enough treatment in the usual case.

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