SAFETY

Non-Drivers Found Most Liable to Accidents

THE PEDESTRIAN who knows how to operate an automobile is better able to avoid accidents than his non-driving cousin. This conclusion is reached as a result of reports made to the Highway Research Board.

In Connecticut during 1939 there were 163 pedestrians over 16 years of age killed by motor cars. Only ten of the number were licensed motor vehicle operators. Of the total killed, there were 135 men and 29 women. None of the women were licensed. Most deaths, both for men and women, occurred in the aged 60-69 group.

Records in Wisconsin also show that the non-drivers are most likely to be killed. In that state, 194 pedestrians were fatally injured in 1939. Only 29 of these were licensed. Deducting 46 of the non-drivers who were school children, none of whom was struck at a safety patrol-protected crossing, 81% of the fatalities were non-drivers.

Safety experts consider that these figures show the importance of educating non-drivers, in order to make them familiar with automobile operation.

Science News Letter, July 27, 1940

GEOLOGY

Immense "Mushroom" Found in Mammoth Cave

See Front Cover

HAILED as the greatest discovery in Kentucky's Mammoth Cave since the cave itself was first entered in 1799, the wonders of a large new area of underground scenery have been officially announced by the National Park Service. The Giant Mushroom owes its 15-foot-tall stem and its 10-feet-in-diameter inverted cap to the joining of stalactite dripping from above with compound stalagmite forming below.

In the picture on the front cover, two of the four discoveries of the new area demonstrate dropping from a rope into the avenue. It was by slow and often hazardous squirming, climbing, jumping, and digging that they penetrated the new region. The public will probably get first sight of the discoveries in two years, following National Park Service studies of trail construction, safe entrances and exits, lighting, and preservation of the formations, many of which are delicate.

Gypsum flowers in the fairy-like "gardens," a feature of the new area, have varied shapes. They can be produced only under critically balanced conditions of solution and evaporation.

Guides were seeking blind fish for exhibit up Roaring River, in October, 1938, when they decided to "do a little explorin'" and ventured through a long and narrow stoopway. Surveyors, who have since examined four miles of the find, hope to strike a good short cut for the public from the well-known part of the cave.

Science News Letter, July 27, 1940

PHYSICS

New Automatic Analyzer Speeds Work With Metals

AN AUTOMATIC machine which rapidly and accurately analyzes various materials, an invention expected to prove of tremendous value in accelerating the inspection of metals and alloys in the nation's defense program, has been developed by Prof. George R. Harrison and his associates at the Massachusetts Institute of Technology.

The device, known as an automatic high-speed recording spectrophotometer, not only analyzes materials, as does the spectroscope, but quickly draws the graphs and curves depicting the results of its analysis. It completes the entire process for a given sample in about 100 seconds—less than two minutes.

Heretofore, scientists have used a spectrograph to analyze the material but they have then been forced to interpret this analysis on other machines, a procedure which often required half-a-day or more. The new device makes, records and interprets 20 measurements a second, doing so with an accuracy of one part in a hundred.

The device covers a broad spectral range, making its investigations not only in the visible range of the spectrum but also in the infra-red and ultraviolet regions. It is fairly simple in its operation and, according to Dr. Harrison, could easily be adapted to other similar problems.

Because of the speed at which the device operates, it is especially useful also in studying the progress of chemical reactions. This should be very valuable in such physiological problems as those involving vitamins, hormones and other biochemical substances.

One of the secrets of the apparatus is the use of the methods of television in the form of an electron-multiplier tube in measuring light intensities and a "memory device" to translate various measurements.

IN SCIEN

NUTRITION

New Food Tables Aid Diet Experts

A NEW SET of tables giving the approximate composition of American food materials has just been issued by the U. S. Department of Agriculture. The first such tables were issued in 1896 and a revised and expanded edition of this early set was issued in 1906 and has served as the standard ever since.

A glance through the 1940 tables shows many newcomers among American foods. Passion fruit and papaya are probably still unfamiliar to large numbers of Americans, but such 1940 breakfast standbys as grapefruit and some of the ready-prepared cereals, "puffed" and otherwise, were no doubt equally unfamiliar in 1906, if they appeared on breakfast tables at all. The new tables include such items as these as well as the old familiar pancake flour and sausages.

The tables give the percentages of water, protein, fat, ash, and carbohydrates (sugar or starch) of each of the foods and the fuel value in terms of calories both per 100 grams and per pound.

The present widespread popular concern over food values and diets will probably make these tables interesting to many lay diet planners, but their greatest usefulness will be for professional dietitians.

Science News Letter, July 27, 1940

PHYSICS

Uranium Releases Power Without Human Aid

ATOMIC power is released from uranium spontaneously without atom-smashing bombardment with neutrons, two Leningrad physicists report (*Physical Review*, July 1). However, the observations of the two Soviet scientists, Flerov and Petrjak, hold out no hope that there will be any practical utilization of this energy from the splitting of the uranium atom. Only six fissions an hour were discovered.

Science News Letter, July 27, 1940

CE FIELDS

CHEMISTRY

Boosts Production Of Synthetic Rubber

PRODUCTION of one of the most useful of the artificial rubbers, which is more resistant to oils and solvents used in industry than natural rubber, will be increased with larger yield of acrylonitrile, a chemical essential in its manufacture. B. W. Henderson, manager of the rubber and rubber chemicals division of the American Cyanamid and Chemical Company, announced that their output of acrylonitrile had been doubled and that further increases are expected as the demand grows.

Acrylonitrile is derived from cyanamide. It is combined with butadiene, a petroleum product, in the manufacture of artificial rubber. Still other uses for it are expected to be found with its added availability.

Science News Letter, July 27, 1940

AVIATION

New U. S. Warplanes To Cost $7.50 a Pound

THE THOUSANDS of warplanes Uncle Sam is ordering for defense will cost about $7.50 a pound. The announced goal of 50,000 a year means the production of 500,500,000 pounds of airplanes, engines, and propellers. Cost will be about $3,500,000,000, a sizable slice of the nation's income. And this does not include the men to pilot them, the bombs they will carry, the extensive ground crews to maintain them, and hundreds of other incidental and essential costs.

These figures are from an authoritative analysis of the program by T. P. Wright, engineering vice-president of Curtiss-Wright Corporation, now specialist to the National Defense Commission. (*Aviation,* July).

Time is of the essence. But there are no wild dreams of great flocks of warbirds overnight or even in a few months. It took Germany four years to go from 4,300 to 31,000 total air strength. It is estimated that an airplane production rate of approximately 2,000 a month, or 24,000 a year, can be achieved in two and one-half years or by January, 1943. Over 4,000 planes a month, or 50,000 planes a year, can be realized in five years or by July, 1945.

It will require about $500,000,000 in new plants—some 75,600,000 square feet—to carry out the program. Men needed will be about 800,000, as compared with 100,000 now employed in the aircraft industry. Research will have to be speeded and amplified, because if we do not improve designs as we go along, the planes will be obsolete and easy prey to more advanced production. As we build airplanes we shall have to recapture aviation research leadership from Germany and Italy.

Comparison figures: The cost of aircraft plant expansion, half a billion dollars, is what France spent on her ineffective Maginot line. The cost per pound, delivered, of ordinary popular priced automobiles is about 30 cents, contrasted with the $7.50 per pound for airplanes.

Science News Letter, July 27, 1940

AGRICULTURE

Few New Farm Areas Opened By White Men

FARMING in the Western Hemisphere has not materially extended its area over that occupied by Indian farming before the white man came, declares Prof. Carl O. Sauer of the University of California. With the exception of the Far West in North America and the Pampas of Argentina, no really new land, not previously cultivated, has ever been broken in either of the two western continents.

Not only did the Indians realize nearly to the full the geographic possibilities of American agriculture, but they had worked out a series of cultivated plants excellently adapted to all accessible soil and climate types, that excelled contemporary European crops, says Prof. Sauer.

No Old World grain, for example, was equal to the various types of corn originated by Indian breeders. Neither did white men of pre-Columbian days have any root crops that would compare with potatoes or manioc.

Indian cultivation methods, involving numerous irregularly distributed hills rather than straight, even furrows, was better calculated to avoid the evil of all cultivation—erosion. Nevertheless, erosion did take place, and may have played a considerable part in the downfall of more than one native culture.

Science News Letter, July 27, 1940

PSYCHOLOGY

Blackout Raising New Psychological Problems

ENGLAND'S blackout is raising new psychological problems for the scientist. Some of them are pointed out by K. J. W. Craik (*The Scientific Worker,* June).

Serious emotional effects of the continued darkness can be traced to inability to use vision and other senses for warning of danger. Normal confidence, Mr. Craik explains, is largely due to our possessing sense organs that indicate danger before it is too near. If we are standing in the middle of a field we are reasonably certain that we shall receive warning of the approach of a bull or a runaway motor car. Suddenness of approach is startling and fear-producing.

The blackout provides two causes of fear. The senses that normally serve as a sort of antenna warning of danger are limited and strange objects have a way of popping suddenly and unexpectedly into "sight."

Blackouts are also emphasizing the limitations of perception—the way humans "recognize" objects on the basis of very faint cues. This may lead to error in broad daylight, but the mistakes made in inky darkness may be tragic or amusing.

Lamp-posts must have received, and not returned, innumerable apologies in the blackout, says Mr. Craik.

An exceptionally large person could always be recognized in the blackout. His friends collided with him, apologized, stepped aside, walked forward, and still ran into him!

Science News Letter, July 27, 1940

BOTANY

Many Living Plants Found in Dead Sea

THE DEAD SEA is not so dead as it is commonly believed to be. The usual statement is that no living thing is to be found in its sullen waters. Yet Dr. B. Elazari-Volcani, of the Daniel Sieff Research Institute at Rehovoth, Palestine, has found 17 species of the one-celled lower plants known as algae in sediments brought up from the bottom at a point about 10 miles southwest of the mouth of the Jordan river.

The water in which the specimens were immersed contained nearly one-third of its weight in mineral compounds, mainly the chlorides of magnesium, sodium and calcium.

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