

erate drinker, who has less than that half milligram of alcohol per cubic centimeter of blood, has no more accidents than the wholly non-alcoholic motorists. This is comforting to those who have worried about the possibility that for safety's sake they would have to give up either motor cars or alcohol.

Scientists recognize that alcohol does affect different persons to different degrees. Should traffic regulations take account of these differences? Prof. Henderson comments that there are also marked differences even among entirely sober persons in the ability to drive a car. Yet there is a 25-mile-an-hour speed limit for all.

What does half a milligram of alcohol per cubic centimeter of blood mean practically? Yale tests show that on an empty stomach 2 ounces of whiskey, such as a highball, somewhat less of gin, as in a Martini, or 1 to 1½ quarts of beer can be taken without exceeding the suggested limit. With or soon after a meal, double these quantities can be taken safely. Keep well within these limits for safe driving, is Prof. Henderson's advice.

Science News Letter, June 10, 1939

TECHNOLOGY

Scientists Make Tiny Holes in Rubber Sheeting

EVER since Charles Goodyear dropped sulfur and crude rubber on a hot stove top a hundred years ago and learned how to vulcanize rubber the industry has been trying to increase the air-tight, water-tight and liquid-tight properties of its product.

Recently, however, the attention of scientists at the U. S. Rubber Company has been turned in the reverse direction. They have been trying to make rubber with holes in it, but holes that have controlled size and spacing with the emphasis on extreme smallness of size.

The objective is to produce a thin rubber filtering membrane which will find wide utility in scientific research. For immediate commercial use the "holey" rubber is finding use in rubber bathing suits and in girdles.

No punching method can produce the holes in rubber desired, for they are so tiny that 6,400 of them are encompassed in a square inch of surface in the extreme case.

Trick of the operation, according to *Business Week*, is a continuous rubber belt whose upper surface is covered with microscopic pits or depressions. As rubber latex is spread over this surface it entraps a small air bubble over each de-

pression. Heat applied to the under surface of the belt expands the air and swells each bubble until it bursts, leaving a uniform hole.

A drying and cooling chamber makes these holes set permanently into the rubber sheeting. By running this same sheet through the device a number of times thicknesses of from five-thousandths to a tenth of an inch can be created. Maxi-

mum width of the sheets is now 42 inches and the maximum length 18 yards.

If the sheets are stretched before vulcanizing it is possible to create oval holes or even slots. The process is applicable either to ordinary stretchy rubber or to hard rubber; the latter a field which interests industrial research as a filtering medium.

Science News Letter, June 10, 1939

CHEMISTRY

Bulk of Important Chemicals Made from Few Minerals

Water, Air, Coal, Sulfur, Mineral Salt, Limestone, Sulfide Ores, Brines, Petroleum and Gas Are First 10

THAT the chemical industries depend on mineral resources for their raw materials is well known, but it is little realized that the great bulk of the most important chemicals are made from a relatively few minerals.

Give a chemist water, air, coal, sulfur, mineral salt, limestone, sulfide ores, brines, petroleum and natural gas and he can make an amazing host of basic and important chemical materials. This list, in fact, represents the "first ten" of the raw material resources of chemistry according to a new survey reported in the current issue of *Economic Geology* by Prof. T. T. Quirke and R. N. Keller of the University of Illinois.

Out of a total list of only 34 mineral sources chemistry can fashion literally thousands of chemicals and, most important, a basic list of 150 bulk chemicals, such as ammonia, glycerine, carbon, chlorine, aniline and so on.

In making the basic 150 important bulk chemical products, it was found by the Illinois study that water, air and coal were needed most frequently. Thus water had a relative frequency of use given by an index number 99. Air followed with an index number 96 and coal was a close third with a rating of 91.

The element sulfur came next with a rating of 88 and the first "ten" ended with natural gas having index number of 16. The remaining 24 mineral sources on the basic list of 34 begins with saltpeter (index 13) and ends with titanium ores of rating 1.

A point brought out sharply by this new study in economic geology is the highly developed inter-dependence of all branches of chemical industry. This re-

sults, state the scientists, in a vertical type of industrial development which includes the basic mining industries.

There is a definite trend in the industry for individual companies to control virtually all stages in the preparation of chemicals from the owning of the mineral resources to the marketing of the final product.

Science News Letter, June 10, 1939

PHYSIOLOGY

New Standards for Taking Blood Pressure Readings

MOVEMENT for better blood pressure readings is under way. It was started a year and a half ago by a joint committee of the American Heart Association and the Cardiac Society of Great Britain and Ireland. It has significance for millions of people.

The movement aims at standardization of blood pressure readings, so that in future your physician will take and record your blood pressure exactly the same way that every other physician in an English-speaking country takes blood pressure readings. At present there is considerable variation in the way different doctors do this.

For example, when an amplifying arrangement was set up so that a group of physicians could all listen at the same time for the same patient's pulse there was a variation of as much as 20 to 30 points in the blood pressure readings for this patient.

This variation may affect the treatment you are given. Suppose your doctor decides to give you a remedy which an-

other doctor has found successful for patients with your blood pressure. But suppose the other doctor's method of taking blood pressures gives readings 20 to 30 points higher or lower than the method your doctor uses. You can see the confusion that may result, especially since your doctor has no way of knowing how the other doctor takes blood pressure readings.

The joint committee found that a large proportion of medical schools did not know how their students were being taught to take blood pressure readings

and many did not agree on how this should be taught. Neither did 100 insurance companies know how their medical examiners were recording blood pressure readings. One examiner might reject for insurance a man who would be passed by another examiner.

Besides lessening confusion over blood pressure readings, the new standard method recommended by the joint committee may call attention to heart ailments now being overlooked and may result in discovery of new facts about blood pressure.

Science News Letter, June 10, 1939

PHYSICS

Light Weight Mesotrons Have A Longer Life

Those With Mass 200 Times That of Electron Are Found To Disintegrate 200 Times as Quickly

IF HUMAN life behaved like the newly discovered mesotron particles of atomic physics one could set up a rule which would read, "If you're light you'll live longer."

The "father" of the mesotron particles—the first scientist to suggest their existence from theoretical considerations—shows this is true in the British science journal *Nature*.

The "father" is the Japanese scientist, Prof. Hideki Yukawa of Osaka University. While the name mesotrons has been given now to the particles of intermediate mass which he postulated, there was considerable feeling that the particles be named "Yukons" in his honor.

In his latest report, with Dr. Shoichi Sakata, Prof. Yukawa shows that observed differences in mass of the mesotrons account for this swiftly-dying particle which has a half-time of the order of a millionth of a second.

The new Japanese report shows that where the mass of the mesotron particle is 100 times that of the electron the radio-active half life is 9.5 millionths and 1.9 millionths of a second for two cases respectively.

When its mass is 200 times that of the electron, however, it disintegrates spontaneously about 200 times as quickly.

A mass of from 100 to 160 times that of the electron appears to agree best with current experiments, the scientists state.

By present theory the disintegration of a mesotron is accompanied by the production of an electron and a neutrino.

The former has been observed, the latter has not. It is now believed that much of the penetrating cosmic radiation which is observed on the earth consists of mesotron particles formed high in the stratosphere by the impact of incoming primary cosmic rays.

The experimental discovery of mesotrons came about through cosmic ray investigations. Virtually simultaneously Drs. Carl D. Anderson and Seth H. Neddermeyer of California Institute of Technology and Drs. J. C. Street and E. C. Stevenson of Harvard University reported the discovery late in 1936 and early in 1937.

Science News Letter, June 10, 1939

ARCHAEOLOGY

Tomb Rich in Copper Saws May Be of Doctor-Pharaoh

EXPLORING a tomb at Sakkara containing boxes packed with copper saws and other tools, Egyptian archaeologists believe they may have discovered the resting place of Egypt's second pharaoh, King Zer, noted for his interest in medical lore.

When entered, the tomb was in badly wrecked state, due to robbers who long ago plundered and burned the place. The burial chamber suffered most, only traces of the wood and copper sarcophagus being left by the fire. The falling roof, however, served to extinguish the fire and protect piled boxes in another room. These boxes contain 35 copper daggers with wooden handles, hundreds of copper needles, 79 copper chisels, copper saws a foot long, copper bodkins, 68 copper vessels, 47 copper hoes, and other valued objects.

Whether any of the tools interested King Zer surgically may never be known, but the pharaoh was famous for his anatomical writings, more than 5,000 years ago. His wife, Queen Shesh, is said to have contributed a hair-restorer prescription in Egypt's famous Ebers medical papyrus.

The tomb is linked with this pharaoh by finding stacks of wine jars, on some of which the name Zer can be deciphered. No other name occurs in the tomb. A tomb at Abydos is also linked with this pharaoh, but it was not unusual for Egypt's kings to plan several tombs.

Science News Letter, June 10, 1939

The Greenland Colony established by Eric the Red in 986 was a republic for 271 years.

