CHEMISTRY

"Giant" Oxygen Molecules Found Twice Normal Size

THE existence of oxygen molecules twice as large as those found in the gaseous oxygen of the earth's atmosphere has been proved in experiments announced jointly from the physical chemistry laboratories of Cambridge University and the University of Berlin's Physical Chemistry Institute by Dr. H. Salow and Dr. W. Steiner. (*Nature, Sept. 22*).

The new kind of "giant" oxygen molecules each contain four atoms of oxygen. Normal oxygen like that which man breathes has only two atoms in its makeup.

Oxygen "giants" are not a common form of atomic existence. Few ever occur, probably, under average conditions. They correspond in atomic circles to the side-show "freaks" seen by man in circuses; for special seats of circumstances produce both circus and atom "giants."

What are the circumstances? In man the malfunctioning of the body glands may be the cause; in atoms it is overcrowding. Drs. Salow and Steiner can produce the double-sized oxygen molecules only when they pack many of them in containers and create high pressures.

Science News Letter, October 13, 1934

FORESTRY

"Rubber Forester's" Life Is Not an Easy Stretch

"RUBBER foresters" have to be tough and resilient and able to stand a lot of knocking around, as their name might imply. Young men now receiving their education in forestry are not given particularly strong encouragement to point themselves for rubber plantation work by J. S. Barnes of the Soil Erosion Service, U. S. Department of the Interior. (*Journal of Forestry, October.*)

There are no openings in rubber forestry at present, because of the depressed condition of the industry. Even when times get better again, the number of fields will still be limited for there are only four rubber companies with plantation systems large enough to justify the employment of professional foresters.

A rubber forester must be able to "take it" in the tropics, which soon lose the glamour they have for the newcomer, and turn into a confining monotony of the same job, the same faces day after day, the same endless need to be careful of what you eat and drink. Mr. Barnes lists no less than thirteen qualifications which the rubber forester should have, if he is to be successful in bucking the jungle, nursing his rows of trees, and keeping satisfactory track of the business details of his job.

And when he gets through with his tour of duty in the tropics, Mr. Barnes adds, he will find that some timber companies in the temperate lands have a prejudice against giving jobs to former rubber foresters. He stands the risk of coming back home only to find himself an outsider.

Science News Letter, October 13, 1934

CHEMISTRY

Make Heavy Water at Only One-Twentieth Former Cost

HEAVY water can now be made at a cost one-twentieth of that produced by the conventional electrolysis method which has been used to make most of this unusual liquid.

Two German scientist-brothers, Drs. A. and L. Farkas, now research fellows at Cambridge, and Prof. E. K. Rideal, colloid chemist at Cambridge, announced their achievement to the British Association for the Advancement of Science.

A catalyst, one of the substances that promotes a chemical reaction without itself participating, is used. Hydrogen gas is bubbled through ordinary water in the presence of this catalyst. The amount of deuterium or heavy-weight hydrogen in the water is increased and the deuterium content of the hydrogen gas is correspondingly decreased.

Then the trick is to divide the water with its enhanced content of heavy hydrogen. One part is used to make hydrogen gas, which is then bubbled through the other part of the water. This process, repeated over and over, finally gives water in which most of the hydrogen atoms are double-weight.

Since the discovery that ordinary hydrogen has a twin or isotope twice its weight only a small amount of the heavy hydrogen or the heavy water made from it has been made.

G. B. B. M. Sutherland told the British scientists that heavy water should solve the troublesome question of how the molecules of water and ice are arranged.

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IN SCIEN

PSYCHIATRY

Scientific Study Could Prevent Crime

IF BRUNO Richard Hauptmann had been carefully studied by a psychiatrist when he was first sent to prison years ago, he might not now be facing trial in connection with the Lindbergh kidnapping. So it appears from the teachings of modern psychiatrists who have studied crime and criminals.

The possibility of a second offense being committed by an individual after he has been released from prison can be predicted in this way, in the opinion of Dr. Alfred Gordon, psychiatrist of Philadelphia. The study on which the prediction of repetition of criminal offenses may be made takes into account the social, hereditary and economic factors in the prisoner's life and his home environment.

While many crimes could be prevented by basing the decision for or against parole or production on such a study, more fundamental efforts toward crime prevention should properly begin with children, Dr. Gordon indicated.

All children who show from infancy vicious or irregular tendencies such as stealing, lying, truancy and extreme aggression should be put down as abnormal from the very beginning, Dr. Gordon said. When these tendencies first appear is the time to take precautionary measures with regard to the child's life at home and in school, in order to prevent his becoming a criminal.

Abnormal or irregular behavior tendencies in children are largely the result of poor heredity, in Dr. Gordon's opinion. He considers poor environment and lack of sympathetic relationship on the part of neighbors and the community the next most important factors in causing criminal behavior.

For this reason, further steps toward crime prevention depend on society's giving a better chance to the abnormal child and also to the released prisoner who is really anxious to rehabilitate himself.

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CE FIELDS

PHYSICS

Cosmic Ray Film Saved From Flight Disaster

SOME four feet of motion picture film recording cosmic ray activity to an elevation of 40,000 feet was saved from one of three California Institute of Technology electroscopes aboard the ill-fated National Geographic-United States Army stratosphere balloon, Dr. H. Victor Neher has announced.

Undaunted by loss of film in the other two instruments, Dr. Neher and Dr. Robert A. Millikan will have one electroscope on the projected Piccard stratosphere flight.

Dr. Neher said that the rescued film has a record that agrees with results obtained a year ago on the Settle flight. Recordings obtained above 40,000 feet were spoiled by fogging. The crash cracked the film magazines of each instrument, exposing the film to daylight.

As Drs. Millikan and Neher most desired cosmic data from an electroscope sheathed with lead, the one on the Piccard ascension will be so encased.

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PSYCHOLOGY

Examination "Cribbers" Found Most Aggressive

LEAVING students alone in an examination room with a book of answers temptingly near on the desk, a psychologist looking through a one-way vision screen was enabled to observe personality differences between those who "cribbed" and those who scrupulously left the answers alone. The results were reported to the American Psychological Association by Dr. Donald W. MacKinnon, of Bryn Mawr College.

A few more than half (54 per cent.) of the men and women students left the answer book alone or looked only at answers at which they were told they might glance. The others all used the answer book.

The "cribbers" were, in general, the ones who got angry at the problems, who swore, pounded the table, stamped feet, kicked the table leg, and even got up and stamped back and forth across the room.

Other, more repressed signs of nervousness were noted in those who did not look at the answers. In general these were the ones who bit finger nails, pulled at their hair, fidgeted, crossed their legs, hunched their shoulders, and so on.

Questioning later on revealed that those who admitted looking at the answers said they had no feelings of guilt about it.

Inquiries as to the punishments the students had received in their youth showed that in general the ones who peeked were the ones who had been severely punished by physical means; the others were those whose parents had selected punishment designed to make them feel "small" and socially disapproved.

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NAVIGATION

Stars and Sun Still Guide Ships in High Seas

THE stars guide the ships of the sea safely from port to port, much as they did in older days, despite modern improvements in sea travel, Dr. Loring B. Andrews, executive secretary of Harvard College Observatory, explained in an address upon the uses of astronomy in navigation.

Sextant, chronometer and radio are used by the officers upon the bridge in determining the location of the vessel once the shoreline drops below the horizon, Dr. Andrews stated.

"Should you ever travel the oceans of the world for the first time or in repetition of many an earlier ocean voyage," Dr. Andrews said, "look aloft at the sun in an azure sky and at the star-studded vault of night and realize that these heavenly bodies are your friends and guides; that on the bridge of your stout ship are the officers who know the ways of observing these objects and computing the vessel's whereabouts and where over the horizon lies the next port of call. Remember that in the observatories of the world astronomers night by night compile the reference data and determine the correct time so necessary to the solution of the problems of navigation."

Dr. Andrews' talk was broadcast over the network of the Columbia Broadcasting System.

Science News Letter, October 13, 1934

ECOLOGY

U.S.S.R. Scientists Compel Sand to Yield Fruit

SAND, proverbially inhospitable to plant life, is being regimented into productivity by scientists of the Repetek Sand Station, working in the desert of Kara Kum, east of the Caspian sea and north of the Persian border. Their first task, to bind the wandering, shifting sand, they have attacked with a plant known locally as "saksaul," which has long, tenacious roots. They are planting this in large quantities.

It has been found that the dunes serve as condensers of atmospheric moisture, so that at a little depth there is a supply of water sufficient to support plant life. With the use of fertilizer, it is stated, rye, wheat, barley and fodder crops can be raised without irrigation. Experiments have also been made with grapes and fruit trees.

Melons, which thrive especially well on hot, sandy soil if they can get enough moisture, have shown considerable promise, the experimenters report. In addition to the ordinary methods of cultivation, they have been experimenting with a trick in melon-growing practised by the Turcoman nomads of the region. This consists in cutting down into the stubble of the tough camelthorn grass and planting the melon seed in the hole. The melon seedlings thus profit by a certain degree of shelter, and especially by the fact that there is always a little more moisture in the spots where the wild plant grows.

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ENTOMOLOGY

Mothball Crystals Useful In War on Japanese Beetle

NAPHTHALENE crystals, the stuff mothballs are made of, have been found a good means of chemical warfare against the Japanese beetle, one of the worst of the introduced insect pests along the Atlantic seaboard.

Experiments by Dr. Walter E. Fleming and Francis E. Baker of the bureau of entomology, U. S. Department of Agriculture, have shown that eggs, larvae and pupae of the beetle can be killed in suitably prepared greenhouse soil, and that when used outdoors a thousand pounds of the odorous crystals per acre of ground will discourage the females from laying their eggs, through it will not stop them from burrowing.

Science News Letter, October 13, 1934