SURGERY

Sterilized Atmosphere for Surgical Operations

TUBES which deliver a "barrage" of germ-killing rays into the operating room are being used to make surgical operations safer at Duke Hospital, Durham, N. C. A report of this latest contribution to surgery, which has been called epoch-making, appears in *Modern Hospital* (June).

The tubes were devised by Dr. Deryl Hart, surgeon-in-chief at Duke Hospital, with the aid of experts of the Westinghouse Lamp Co. Their use in cases of chest surgery was reported by Dr. Hart to the meeting of the American Association for Thoracic Surgery.

Operating room infections, fairly common before these tubes were installed at Duke Hospital, have practically disappeared, Dr. Hart reported. Patients suffer less pain after operation, have less fever, their wounds heal more rapidly and their stay in the hospital is shortened.

Open plates of germ culture media standing about seven feet from the center of the radiation tubes for an hour during a chest operation collected enough germs for only three germ colonies. Plates exposed the same way during an appendix operation performed without the radiation tubes collected enough germs from the air to make nearly a hundred colonies.

The surgeon and his assistants are protected from the rays by goggles of plain glass and hoods of starched cloth.

Science News Letter, June 13, 1936

PHYSICS

Neutrons Found in Air 12 Miles Above Earth

NEUTRONS, the most elusive members of the family of atomic building blocks which make up atoms and hence all matter, have been found twelve miles up in the air above the earth's surface.

The stratosphere neutrons are not as potent in energy as some of those created in the scientific laboratories but they are much more numerous at the high altitudes, according to Dr. L. H. Rumbaugh and Dr. G. L. Locher of the Bartol Research Foundation of the Franklin Institute (*Physical Review*), who based their announcement on months of study of the records obtained on the stratosphere flight, last fall, of the National Geographic Society-U. S. Army Air Corps balloon Explorer II.

The neutrons were found among the primary cosmic radiation detected at the extreme stratosphere heights reached by the balloon. They accounted, however, for only one per cent. of the total cosmic ray intensity. Nevertheless, in the rarefied heights of the stratosphere they were more than 2,000 times as numerous as the highest observations on the land at the top of Pike's Peak.

In order to determine neutron intensities at even greater heights a series of flights are now being made with small Cellophane sounding balloons, without human pilots, by which it is hoped 100,000 feet elevation will be reached.

Science News Letter, June 13, 1936

PHYSICS

Chandler Medal Awarded For Research on Cold

FOR his research in devising the method whereby science makes its "coldest" cold, Prof. William Francis Giauque of the University of California has been awarded the prized Chandler Medal of Columbia University.

The "coldest" cold involves that temperature region in the neighborhood of one degree above absolute zero. On the Centigrade scale of temperature absolute zero is 273 degrees below freezing point.

Prof. Giauque's method uses the ability of a magnetic field to extract heat from certain magnetic salts which have already been cooled to within a few degrees of absolute zero by other methods.

In his technique, Dr. Giauque puts the sample material to be cooled inside a Dewar flask filled with liquid helium at a temperature of minus 268.9 degrees Centigrade. The space between the sample and the walls of the flask is filled with gaseous helium to conduct the heat away.

The magnetic field is then applied and the heat evolved by the magnetization of the sample is conducted to the surrounding liquid helium. Then, keeping the magnetic field constant, the surrounding helium gas is pumped away. When the sample is thus insulated the magnetic field is reduced and the sample cooled still further.

While not of practical usefulness at present scientists know that the vacuum created as a step in the process is more nearly perfect than that obtainable in any other way.

Science News Letter, June 13, 1936

IN SCIENCE

SEISMOLOGY

Quake Off Pacific Coast Of Northern California

A SHARP earthquake shook the Pacific Ocean bed at a spot 150 miles west of Cape Mendocino, on the northern California Coast, at 1:15 a.m., Pacific Time, on Wednesday, June 3. Seismologists of the U. S. Coast and Geodetic Survey determined its location as in 41 degrees north latitude, 127 degrees west longitude, on the basis of data collected from a number of observatories by Science Service.

Stations telegraphing reports were those of the Jesuit Seismological Association at Georgetown University, St. Louis University, Fordham University, and Canisius College; the University of California; the private observatory of Mrs. M. M. Seeburger at Des Moines, Iowa; the Dominion Observatory, Ottawa, Ont., and the observatories of the U. S. Coast and Geodetic Survey at Tucson, Ariz., Chicago, and Ukiah, Calif.

Science News Letter, June 13, 1936

TEXTILES

Fabric for Fireproof Garments Made in U.S.S.R.

FIREPROOF fabric knitted out of spun threads of asbestos is the invention of a Leningrad inventor, M. Semenovich. Garments made of the new material are stated to be quite unlike the heavy, armor-like safety suits heretofore made of asbestos; they weigh only about four pounds to the suit, and are as comfortable and well ventilated as wool.

Tests made by workers wearing suits and gloves of asbestos fabric sound like tales of almost demon-like immunity to fire. The wearers picked up red-hot rods of metal and bent them as if they were soft wax. With suitable respirators, firemen walked right through flames to the very heart of the fire they were seeking to conquer.

Large-scale manufacture of the new stuff has been undertaken in the U.S.S.R.

Science News Letter, June 13, 1936

FIELDS

ASTRONOMY

Huge Spectrograph For Eclipse Observation

See Front Cover

THE giant camera shown on the front cover, one of the largest spectrographs ever built, will be used by the joint Harvard-Massachusetts Institute of Technology expedition to observe the total eclipse of the sun on June 19, from a special station at Ak-Bulak, Siberia. The instrument is made of dowmetal, 96 per cent. magnesium and 4 per cent. aluminum, an exceptionally lightweight alloy. The entire spectrograph box, 12 feet by three feet by five feet, with its complex mountings, weighs less than half a ton. Dr. Donald H. Menzel, director of the expedition, is at the right while Henry Hemmendinger, Harvard graduate student who will be a member of the party, is at the left.

The box will house four plane gratings, polished metal surfaces ruled with 15,000 lines to the inch, which will be used, each with a separate lens and camera, to photograph the crescent of the eclipsed sun and the corona in lights of different wavelengths, ranging all the way from the ultra-violet to the infra-red.

Science News Letter, June 13, 1936

CHEMISTRY-AGRICULTURE

Agriculture and Industry Brought Closer Together

CLOSER rapprochement between agriculture and industry in America appears possible through the attitude disclosed in a communication of Secretary Wallace to Francis Garvan, president of the Farm Chemurgic Council, in response to a proposal for coordinating agriculture, industry and science sent to the Department of Agriculture several months ago.

Secretary Wallace pointed out that most of the Council's proposals for the utilization of farm products in industry are either already under experiment in the Department, or have been under contemplation for some time. This is a mild demurrer, by inference, to some of the claims of priority which some members of the Farm Chemurgic Council have been making for certain ideas; but in view of the urgency of the farm market situation, it is probable that neither party will waste much time in crying "I saw it first!" As the Secretary remarks, cooperation is highly important in reaching a solution of the farm problem, and will be welcomed from any quarter.

Two suggestions in the letter offer possibilities of a dual role of cooperation for the Farm Chemurgic Council, which can be highly helpful in both directions. First, there is the opportunity for the Council to gather and transmit to the Department of Agriculture data on the needs of both industry and agriculture, and on the chances of their being gotten together for mutual cancellation. Second, the Council might serve very usefully as a kind of liaison corps, to make more quickly available to industry the results of research conducted by the Department.

While the activities of the Farm Chemurgic Council have sometimes been looked upon a bit suspiciously, as "promotional," Secretary Wallace does not adopt this point of view. Instead, he commends their basically conservative and businesslike attitude in such matters as the spread of tung-oil tree cultivation, on which the Council has for many months been fighting a jackal fringe of "blue-sky" land speculators that threaten to descend on this new Southern rural industry. He even goes beyond them in conservatism, setting down the principle that a nation-wide view must be taken of every move toward the industrialization of farm products, especially where a promising new product threatens to upset an already standing and stable industry.

Science News Letter, June 13, 1936

ICHTHYOLOGY

Fish-Spearing Expeditions Destroy Undesired Species

FISHING parties are going out on Michigan waters with no expectation of bringing home a single fish fit to eat.

Their objective is the spearing of undesired species, like carp, gar, and the primitive species known variously as dogfish, bowfin, mudfish and grindle. These all have a tendency to destroy or crowd out fish of higher sporting and food value.

The parties are organized under the direction of a conservation officer, and with State permission. The boats often return loaded to the gunwales with the spoils of the raid.

Science News Letter, June 13, 1936

METEOROLOGY

Drought Damaging Crops In East and Great Plains

DROUGHT in the East, now spreading into the northern Great Plains region also, is proving damaging to wheat and oats, which are now heading out rather lightly and on too-short stalks. Corn planting is practically complete, but germination is lagging, due to dry soil. In the Southeast, cotton is not in good shape, though in the Mississippi states and the Texas-Oklahoma area the cotton situation is much better. Only the Southwest, once the afflicted "dust bowl," has abundant moisture—in spots, too much.

The weekly summary of crop-weather conditions by the U. S. Weather Bureau also shows that the entire month of May was above normal in temperature and deficient in rains.

Science News Letter, June 13, 1936

ENGINEERING-SPORT

"Electric Judge" to Rule Olympic Fencing Matches

CONTENDERS in Olympic fencing matches this summer will not have to depend on the quickness of the human eye to judge the points they score. Their own weapons, electrically connected to a device which announces each "touch," will tell their own story. (*Umschau,* May 24)

The point of each foil will carry a small concealed electrical connection, held open by a spring. When a "touch" is scored, the connection is momentarily closed. A light cable, led up the fencer's arm and out through the back of his suit, winds and unwinds from a reel behind him, as he retreats and advances. Through this cable the electric announcement of the point is carried to an apparatus on the judges' table, which lights two lamps and rings two bells.

According to Olympic fencing rules, a counter-thrust made within a twentieth of a second of a successful thrust by one's opponent is not counted. The apparatus accordingly is so arranged that after the circuit has been closed it cannot be made to register again until the required twentieth of a second has elapsed.

Fencers in practice have declared themselves very little hampered by being thus "wired for touch," and they are willing to accept the arrangement because it eliminates any possibility of doubt or dispute over the troublesome twentieth-second rule.

Science News Letter, June 13, 1936