MEDICINE

Life-Saver from Burns

Cortisone may prove to be stop-gap aid for the exhaustion of the adrenal gland which occurs in severe burns.

➤ CORTISONE, adrenal gland hormone famous for its beneficial effect in arthritis, may prove life-saving in cases of severe burns.

The death rate can be halved if this hormone is given along with treatment for shock during the first critical days after the burn, it appears from studies by P. O. Crassweller, Dr. A. W. Farmer and W. R. Franks of the Royal Canadian Air Force Institute of Aviation Medicine and the Hospital for Sick Children of Toronto.

Their studies were made with mice. Because of the scarcity of cortisone itself, they did not use the pure hormone. Instead they extracted material with cortisone activity from human urine.

This was injected twice daily for the first four days after the burn in one group of 69 mice. These mice also were given serum albumin to control shock. The death rate for these mice after eight days was about 15%. Another group of 69 mice were given albumin for shock but no cortisone. At the end of eight days, more than twice as many of this second group, over 30%, were dead. And among mice that got no treatment for their burns, between 40% and 45% were dead at the end of the eight days.

Among the mice that died, the untreated ones survived, on the average, only eight hours. Those that got treatment for shock survived for 12 hours. Those that got cortisone plus shock treatment survived 19 hours.

Treatment for severe burns, the scientists point out, has improved greatly during recent years, due to new drugs for treating infection and plasma and albumin for overcoming shock. But there are still patients who recover from shock and have no infection, but die between the third and tenth days after the burn. This period is called the "toxic" period and there has so far been no satisfactory treatment for it.

These deaths, the scientists think, are due to exhaustion of the adrenal gland. The exhausted gland can no longer make enough cortisone. Giving the hormone would help tide the patient over this critical period until his own gland has recovered and can function again.

ACTH, cortisone's twin for arthritis treatment, would not help because this hormone, from the pituitary gland, acts by stimulating the adrenals to produce cortisone. If the adrenals are already exhausted, ACTH could not help and might make matters worse.

If cortisone is used for burn patients, the scientists warn, doctors must be careful not to give too much, particularly if the patients will need early skin-grafting operations.

Details of the study are reported in the BRITISH MEDICAL JOURNAL (July 29).

Science News Letter, August 12, 1950

PHYSICS

Universe Very Much as Now At End of First Half Hour

➤ THE first half hour of the life of our expanding universe found the world well started toward its present makeup, Dr. George Gamow, theoretical physicist of George Washington University, suggests in a report to the American Institute of Physics, published in its journal, PHYSICS TODAY (August).

Combining the mathematics of Einstein and the new information on how heavy atoms can be built up by combinations of neutrons and protons which has come from atomic energy studies, Dr. Gamow projects the line of development backward to the beginning of time as we know it. He deduces a very dense hot gas which began to expand sometime between one and four billion years ago.

Borrowing from the dictionary an extinct word "ylem" for this hypothetical material, he traces its expansion from the billions of degrees temperature with which it started, and the combinations of its neutrons and protons into the elements which make up the universe today.

Half an hour is enough time, Dr. Gamow calculates, to account for the small amount of uranium in the universe, in contrast to the large quantities of hydrogen and helium throughout the atmospheres of the stars. He finds no end to the expansion of the universe into infinity.

By collision of two particles at a time, Dr. Gamow can account for formation of the light elements through helium. There is a gap in the elements because helium, whose weight is 4, comes next in order to beryllium whose weight is 6. There is no element with atomic weight 5, although all other weights are represented among the elements.

Dr. Gamow thinks it more likely that a now unknown kind of carbon, mass 10, once existed, formed by collisions of lithium 6 successively with four neutrons or beryllium 7 with three neutrons one after the other. Aside from this difficulty the formation of all the elements, in about the quantities that now exist in the universe, can be explained by processes now known.

Science News Letter, August 12, 1950

ASTRONOMY-ENGINEERING

Meteor Trails Trace Winds 80 Miles Above Earth

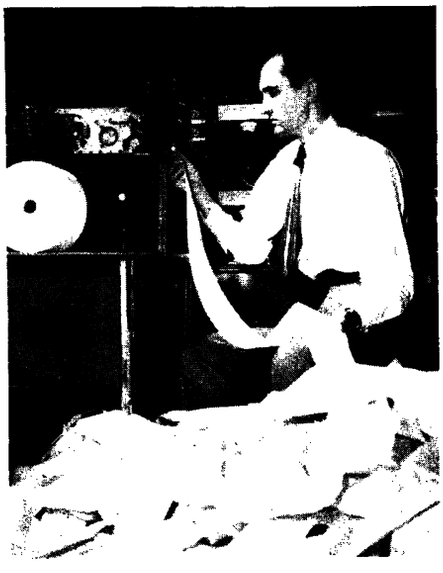
➤ HIGH above the earth where only meteors and rockets are able to signal what is happening, there are variable winds ranging from a brisk 30 miles per hour to gales of 125 miles per hour.

These wind observations at 55 to 80 miles altitude have been made by a new electronic method of analyzing the drift of meteor trails devised by L. A. Manning, O. G. Villard, Jr., and A. M. Peterson of Stanford University's Electronics Research Laboratory, financed by the Office of Naval Research.

Meteors are small particles of matter that come into the earth's outer atmosphere and burn with a flash. They cause electrical disturbances due to their heat and these meteoric "smoke puffs" are efficient reflectors of radio waves and may be detected by radar-like method.

Although these disturbances last only a second or two, they drift like a smoke puff in the outer atmospheric winds, allowing them to be measured.

Knowledge of high altitude winds promise to help engineers designing rockets for peaceful or war purposes. Meteorologists



"SMOKE PUFFS" RECORDED—Prof. L. A. Manning of the Stanford Electrical Engineering Department examines a paper tape recording of the drift of meteoric "smoke puffs" detected by radio equipment. The drift gives clues to the speed and direction of upper atmosphere winds.