MEDICINE

ACTH Cuts Burn Cure Cost To Less than Half

➤ ACTH, pituitary gland hormone that helps arthritis patients, is showing itself a relatively cheap as well as effective treatment for severe burns. Used to treat a patient with 70% of his body burned, it kept the cost of all treatment to $1,500. Cost of conventional treatment for one patient with a 40% burn is $4,000.

These figures are cited by Dr. M. James Whitelaw of Phoenix, Ariz., in his report (JOURNAL, AMERICAN MEDICAL ASSOCIATION, Jan. 13) of the now famous case of the young rancher with gasoline burns who was one of the first burn patients to get ACTH treatment. (See *SNL*, Dec. 9, 1950)

Besides giving the comparative costs of treatment in dollars, Dr. Whitelaw gives the comparative figures for supplies and personnel as follows:

Needed to treat one man with 40% burn by conventional methods: 42 tanks of oxygen, 36 pints of plasma, 40 pints of whole blood, 104 pints of fluid, 2.7 miles of gauze, drugs such as morphine and penicillin, three nurses and two physicians.

Needed to treat one man with 70% burn by ACTH: no oxygen, 21 pints of plasma, one pint of whole blood, four pints of fluid, half a mile of gauze, one nurse and one physician.

Science News Letter, January 20, 1951

ENGINEERING

New Cotton Cutter Makes Short Lengths

➤ SMOKELESS POWDER and other explosives for war uses can be made from ordinary cotton chopped into very short lengths by a novel machine developed in the Southern Regional Research Laboratory of the U. S. Department of Agriculture in New Orleans.

The short fibers obtained from cottonseed after ginning are commonly used in making guncotton and smokeless powder. The supply of this material is not great enough to meet emergency demands. There is plenty of low-grade, short-staple cotton available as an alternate source, but it has to be cut into lengths of about one-tenth of an inch so that it can be readily nitrated to make explosives. Until this machine, there has been no satisfactory device for cutting it.

The machine is a high-speed, multiple-blade rotary cutter, equipped with a feeder of radically new design which opens up the cotton prior to cutting. Development of the machine began during World War II as insurance against an expected shortage of cotton linters.

After several models had been constructed, a machine capable of cutting 10.5 tons of cotton lint or linters per hour was perfected and installed at Memphis, Tenn., to provide an adequate supply of raw materials to a government cellulose-purification plant.

A new development is a modified form of the feeder unit. It loosens and fluffs matted tufts of baled cotton and permits more thorough cleaning. This will aid in the production of better cotton fabrics, especially from hard-to-clean, mechanically-harvested cotton. Development of cutter and feeder gives assurance of ample supply of suitable cotton to make explosives for any emergency.

Science News Letter, January 20, 1951

CHEMISTRY

Wild Rubbers Usable With New Process

➤ WILD rubber having a high resin content can be converted into a product comparable with plantation rubber by a simple method developed by chemists of the National Bureau of Standards.

There are many types of wild rubber in tropical America and Africa which are rated as low-grade because of resin content. Some are of such inferior quality that they are mixed with better grades of rubber before put to use. By use of the new process a large portion of the resins in them can be extracted, making them suitable for direct use.

Investigations which led to the new extraction process were carried out by J. W. Wood and Rachel J. Fanning of the Bureau staff. They used two Mexican wild rubbers obtained from the shrubs of Chilte and Guayule. The extraction process involves a solvent and a modified commercial solvent-tight mixer. Two S-shaped stainless steel blades rotate within the extraction chamber while the solvent is added from a glass distilling apparatus.

Science News Letter, January 20, 1951

AGRICULTURE

Tomato Mildew Blight In Worst Outbreak

➤ A MILDEW disease of tomatoes called late blight ran rampant across the eastern half of the United States in 1950.

Year-end summaries by the U. S. Plant Disease Warning Service revealed the most widespread distribution of the blight ever recorded in this country. With losses to tomato growers equalling or exceeding the destructive outbreak of 1946, the disease moved westward into Arkansas, Missouri, Iowa and Nebraska, states where it was previously unknown.

In many cases untreated fields of tomatoes were completely destroyed, the report said. Last year's warm winter, followed by a cool spring and a wet summer, provided ideal conditions for the blight. These were only partially offset by the nation-wide warning service and prompt use of chemical sprays and dusts.

Science News Letter, January 20, 1951

IN SCIENC

PUBLIC HEALTH

Sticky Tape Captures Hayfever Pollen

➤ A STRIP of sticky tape may prove a boon to hayfever sufferers next spring and summer. It is used in an improved portable device, developed by R. L. Stenburg and Lawrence B. Hall of the U. S. Public Health Service's Communicable Disease Center, Atlanta, Ga., to collect pollen samples from the air.

The samples so collected will be used to investigate the relation between ragweed pollen in the air and hayfever. When the device is in operation, air is drawn across the adhesive side of a strip of transparent tape by suction from a fan. The tape then passes through a staining bath. The stained surface is covered with another strip of tape. The specimens so trapped are then studied under a microscope.

Science News Letter, January 20, 1951

MEDICINE

Nerve Operation Relieves Heart Pain

➤ SATISFACTORY relief of the severe, suffocating chest pain of the heart disease called angina pectoris has been achieved in 10 cases by a nerve-cutting operation, Drs. James A. Evans, James L. Poppen and James B. Tobias of the Lahey Clinic, Boston, report. (JOURNAL, AMERICAN MEDICAL ASSOCIATION, Dec. 23.)

Relief was complete in five of the 10 patients except for a remaining sense of throat constriction in three. The patients were operated on from three months to three years ago. All of the patients had high blood pressure. One also had diabetes.

One 47-year-old woman operated on nearly three years ago still has occasional pain in the throat and left arm on exertion. But she wrote the doctors: "I feel much better, do much more work, have adopted a baby and am kept very busy."

Another patient had been incapacitated for 18 months, unable to do any housework or to walk in cold weather. Almost a year and a half after the operation she reported a new pain in her throat radiating to her lower jaws but she does all her housework and goes shopping in any weather.

Poorest result was obtained in the first patient who died of coronary occlusion three years after the operation.

The operation itself is similar to those that have been used for some years to relieve severe high blood pressure, but nerve paths higher in the chest are cut.

Science News Letter, January 20, 1951

E FIELDS

PHYSICS

Honored for Work on Structure of Protein

➤ SYNTHETIC protein food is an ultimate goal of the work for which the top scientific award for women, worth $500, was presented.

Dr. Gladys A. Anslow, professor of physics at Smith College, Northampton, Mass., won the high honor for her paper on the structure of protein molecules. Sigma Delta Epsilon, national women's scientific fraternity, presents the prize to a member for the best paper on original research during 1950.

An understanding of the protein molecules is essential to the synthesis of proteins. Dr. Anslow's work on the ultraviolet spectra of amino acids, the building blocks of proteins, is helping this understanding of how proteins and other complex biological substances are held together.

Preliminary results of her research, supported by the Office of Naval Research and the Research Corporation, show that the specific groups involved in the basic fabric of the various proteins may be identified by their ultraviolet spectra.

Science News Letter, January 20, 1951

AGRICULTURE

Disease Threatens Texas Grazing Land

➤ A PLANT pest is threatening thousands of acres of cattle-grazing rangelands in Texas. Scientists there are trying to beat off the attack of this parasitic pest with another parasite imported from Hawaii especially for the purpose.

Looking very much like small tufts of cotton, the plant pest, known as Rhodesgrass scale, attacks over 40 varieties of grasses, on some of which cattle feed, sapping the grasses' vitality. The weakened plants are then easily killed by grazing cattle or by drought, whereas, alone, neither would be likely to kill the healthy plant.

Counter-attack weapon is a wasp-like insect imported two years ago from Hawaii, and specially bred and released in large numbers. A parasite, it feeds on the plant pest which is also a parasite.

The plant pest spreads by hatching out tiny, mite-like forms that then crawl around the plant searching a suitable spot. When located, the pest digs in, covers its body with cottony material and begins to suck the juices from its host.

Scientists of the Department of Agriculture's Bureau of Entomology and Plant Quarantine experimental station in Weslaco, Texas, in cooperation with the Texas Experiment Station, are seeking other means besides the imported Hawaiian insect to control the plant pest. Its biology and the effect of various insecticides are being investigated.

Although the scale is not spreading too fast at present, a survey in 1950 revealed that it was found in more parts of the country than had been realized. Texas, Louisiana and Florida are the most afflicted states.

Science News Letter, January 20, 1951

MEDICINE

Navy Produces Color Atlas of Disease

➤ THE NAVY has just produced a new atlas, in color. Instead of showing bays and harbors and ocean currents, this atlas gives medical students and doctors charts to the course of various diseases through blood, bones and other tissues of the human body.

THE COLOR ATLAS OF PATHOLOGY, as it is called, took six years to produce. (*Lippincott*). It is said to be the first comprehensive publication of this kind in the world. Rear Admiral Lamont Pugh, Deputy Surgeon General of the Navy, directed preparation of the atlas, with Dr. Charles F. Geschickter, of Washington, wartime head of the Navy Medical School's pathology department, and Comdr. W. W. Ayers, present chief of the department, in direct charge of the work.

The Army Institute of Pathology and Georgetown University, Washington, and the Johns Hopkins Hospital in Baltimore contributed important material for the atlas.

Science News Letter, January 20, 1951

STATISTICS

U. S. Maternal Deaths Hit New Low Point

➤ THE CHANCES of an expectant mother in the United States surviving the birth of her baby are now better than 999 out of 1,000. (JOURNAL AMERICAN MEDICAL ASSOCIATION, Nov. 25.).

This marks the first time in history that the maternal mortality rate for a large nation has been pushed below the apparently irreducible minimum of 1 maternal death per 1,000 live births, states an editorial.

The figures, for the year 1949, have been compiled by the American Medical Association's bureau of medical economic research.

Reasons for the low death rate given by the association are: (1) an increasing percentage of births in hospitals and improvements in medical care in home births; (2) development of prenatal care; (3) health education; (4) sulfa drugs, penicillin and other antibiotics, and whole blood or blood derivatives; (5) improvement in training of physicians in obstetrics.

Science News Letter, January 20, 1951

SEISMOLOGY

Water Level Shows Far Away Earthquakes

➤ YOU CAN tell if there has been a very destructive earthquake on the other side of the earth by measuring the change in water level of a well near your house.

Although scientists are using quite sensitive instruments to record water level fluctuations, you can tell about a severe quake from the meter stick that is ordinarily used to keep track of water in a well.

Hydrologists of the U. S. Department of Interior's Geological Survey report that in one well in Texas, the water level rose and fell more than two feet from the normal level on the day of the mountain-crumbling quake in Assam last August. This is just one example of many changes in water level in wells that occurred on Aug. 15, 1950.

That nearby earthquakes cause well water levels to rise and fall has been known for some time, but such marked effects from a distant earthquake have not been noted before. The Assam quake has been ranked as one of the most destructive on record. Its magnitude was 8.6, the top rating given.

Science News Letter, January 20, 1951

PHYSICS

Robot Measures Exploding Atoms

➤ A ROBOT that measures exploding atoms is helping California Institute of Technology discover the secrets of living matter.

Day and night an ingenious automatic Geiger counter does a non-stop analysis of specimens in which their protein compounds have been tagged with radioactive carbon 14.

Dr. Geoffrey Keighley became tired of seeing many hours wasted in routine measuring of radiation with instruments that his fellow scientists had to read and record. So he constructed the automatic device that whisked one specimen after another into range of the counter. The counting device, similar to the instruments used by prospectors to find uranium, responds to each particle from the exploding carbon atoms, and then the hundreds of thousands of atomic disintegrations detected are plotted on paper tapes that can be studied later.

A hundred samples can be fed into the machine and each of them can be automatically watched for 30 minutes or any desired period.

The robot Geiger counter can be used on any problem but it is now aiding the study of the synthesis of protein, important substance in human and other living bodies. Twenty-four complex chemical compounds, called amino acids, are used by nature to make proteins of various sorts. By knowing how living systems manufacture protein, scientists hope to come closer to understanding the chemical basis of life.

Science News Letter, January 20, 1951