

SURGERY

Skin Grafts Made to "Take" by New Method

➤ A SKIN grafting technique that may lead to the successful grafting of skin from one human being to another was reported to the American College of Surgeons' meeting in Atlantic City, N. J.

In animal experiments transplanted skin tissue was made to "take" for strikingly longer periods of time by removing it from the receiving animal after four days and transferring it to a second, third, and then a fourth animal.

If left to grow on the first animal alone, the graft would only stay alive for nine days, but after several transplants the life of the graft is extended to an average of 23 days, Dr. Milton T. Edgerton and Patricia J. Edgerton of Johns Hopkins Hospital, Baltimore, Md., reported.

Successful human skin grafting is now hampered by the fact that skin transplanted from one person to another will not take, and is sloughed off rather than becoming a part of its new "host."

By being removed to a new host every four days the graft may get rid of the substance in it, a form of antigen, that causes the host to build up resistance and intolerance to grafts.

It is also possible that the proteins from each new host enter the graft with each transplant and cause gradual replacement of the original protein. This reduces the "individuality" of the graft, Dr. Edgerton said.

At present there is no limit to the length of time that the skin graft can be kept alive and healthy if it is transferred at short intervals to a new host.

A "surprising feature" of the results was that circulation and blood vessel formation within the graft proceeded more rapidly with each transfer.

"Often on the fourth grafting the circulation in the graft was clearly seen on the day after grafting," the authors reported.

Science News Letter, October 26, 1957

RADIO ASTRONOMY

Begin Work on Site For Largest Radio 'Scope

➤ GROUND HAS BEEN BROKEN for the establishment of the National Radio Astronomy Observatory at Green Bank, W. Va. By 1960, two giant saucer-shaped radio telescopes, one 85-foot and one 140-foot, will be scanning the heavens to discover facts about the earth's atmosphere and outer space.

The 2,600-acre site was chosen for the National center because it offers radio astronomers exceptionally low radio noise-levels that provide excellent radio reception.

The smaller "dish" will consist of a parabolic solid-surface antenna 85 feet in diameter, mounted on two axes so that it can point to and follow the motions of celestial objects. It is scheduled to be in operation by July 15, 1958.

A bigger radio telescope, 140 feet in diameter, is scheduled for operation in 1960.

This "dish," when sweeping the heavens, will be one of the large instruments of its kind in the world and perhaps the most precise. It will be a steerable paraboloid taking up more than one-third of an acre in area.

This second and larger telescope will be the largest in the United States, and with it, U.S. scientists hope to make a strong bid for the leadership in radio astronomy now held by the British, Dutch and Australians. With it, astronomers will be able to pick up radio broadcasts from the heavens on receivers that are similar to those used for television, but 100,000 times more sensitive.

The \$5,000,000 laboratory is being financed by the National Science Foundation and will be managed by Associated Universities, Inc., of New York.

Science News Letter, October 26, 1957

PATHOLOGY

Measles in Pregnancy Safe 9 Times Out of 10

➤ CHILDREN born to women who developed German measles early in pregnancy will be normal about nine times out of ten.

In the past, the number of malformed children reported born to these mothers has been fantastically high and incorrect, Drs. Morris Greenberg and Ottavio Pellitteri of the New York City Department of Health, and Jerome Barton, New York State Department of Health, report in the *Journal of the American Medical Association* (Oct. 12).

Their study, along with several other recent ones, show that the malformation rate was only about 12% instead of the earlier rates which ranged up to 100%.

These new findings make it "medically unjustified" to recommend therapeutic abortions on the basis of the old high rates, they report.

Even so, until more information is obtained on relative risks, they believe physicians owe it to their patients and society to advise parents to expose their young daughters to the illness. This is a mild disease in childhood, rarely causing complications and giving permanent immunity.

The earlier studies on the effects of German measles during pregnancy were wrong because they started out with the defective child. Then the path was retraced to discover what happened to the mother during pregnancy. No attempt was made to determine how many normal babies were born by these women.

Also, the diagnosis of the illness was frequently inaccurate because it was made by the mother and not a doctor.

Even with the lower 12% malformation rate, some young mothers who already had a child or two, and who find it easy to conceive, may not want to take the extra risk.

But an older woman about to have her first child, particularly if she has found it difficult to conceive, will be willing to run the 12% risk, the authors report.

Science News Letter, October 26, 1957

IN SCIEN

ENGINEERING

New Electric Eye Uses Radio Isotope for Light

➤ A TYPE of "electric eye" that uses atomic radiation instead of a visible light beam was reported by two engineers from the Westinghouse Electric Corporation, Pittsburgh, Pa., to the American Institute of Electrical Engineers meeting in Chicago.

The device uses a small amount of the radioactive isotope strontium-90 to replace the light bulb found in standard photoelectric cell systems.

Its advantages are high reliability and long operation periods requiring no repairs, Paul Weisman and Stanley L. Ruby reported.

The present systems require a power supply to light the bulb and cannot be used in places where dust or smoke can obscure the light beam before it hits the photoelectric cell.

The radioactive material furnishes a beam that is unaffected by temperature, shock, or nearly any other environmental condition.

A cadmium sulfide photocell is used to pick up the radiation and a transistor amplifier strengthens the tiny current so that it can operate switches or other types of electronic circuits.

Science News Letter, October 26, 1957

PHYSIOLOGY

Flash Burns Hit Negro Race Hardest

➤ NEGROES are more likely to get serious flash burns, similar to those suffered by atomic bomb casualties in Japan, than are persons with light skins.

This was reported by a group of investigators from the Medical College of Virginia in Richmond to the clinical congress of the American College of Surgeons meeting in Atlantic City, N. J.

They studied flash burns generated by a high intensity carbon arc on Negro volunteers and found that less heat energy was needed to cause all degrees of burns on them than on white volunteers.

The skin of the Negro race absorbs an average of about 20% more of the heat energy than the skin of white people does.

The wavelengths of light included in the flash are an important factor in the production of the burn, but the effects of various wavelengths are less distinct in Negroes. Smaller amounts of infrared energy cause burns in them than in white individuals.

Reporting the work were Dr. James W. Brooks, Frederick H. Smith, Dr. Ray C. Williams and Dr. William T. Hamm Jr. of the Medical College.

Science News Letter, October 26, 1957

CE FIELDS

ANIMAL PSYCHOLOGY

Worms Learn Best In Evening Hours

➤ A WORM can be taught to turn in a special direction, but its learning ability is at its best in the evening hours.

At least this was found true for one particular kind of earthworm, *Lumbricus terrestris*, Dr. Jack Arbit of the U. S. Army Leadership Human Research Unit, Fort Ord, Calif., reports in *Science* (Oct. 4).

The worm was taught by a system of reward for the correct turn or punishment if it went the wrong way. When the worm turned the right way, it found its reward at the end of a pathway a little less than six inches long. The reward was just what an earthworm might enjoy most—some moist earth and moss in a beaker covered with paper to make it dark. When it turned in the wrong direction it was punished by having to crawl over sandpaper and if it persisted in crawling the wrong way it received a mild electric shock.

If the worm failed to move at all, it was urged into action by a gentle tickling with a camel's hair paint brush. If that did not get it started, a flashlight was turned on and held shining just behind it.

The worm was considered to have "passed" on the course if it reached the moist earth without being shocked seven consecutive tries.

The worms who did their lessons in the evening between 8 p.m. and midnight learned in an average of 32 tries. The morning class, between 8 a.m. and noon, required 45 tries.

Science News Letter, October 26, 1957

TECHNOLOGY

Radar Sets Can Be "Blinded"

➤ A COUNTER-MEASURE to radar detection—to "blind its eye"—has been discovered by a British firm. It offers the first possibility that radar warning defense can be defeated, whether the attack is made by bombers or guided missiles.

The new material includes foam rubber panels, rubber sheets bonded to brass and ceramics.

It is claimed that using the material provides new standards of navigational safety for aircraft and shipping by eliminating unwanted radar reflections. Successful tests have already been made on ships' funnels and airport buildings. The structures covered with the material become invisible to a radar beam.

The Plessey Company technicians, developers of the material, explain that the new material cuts the radar pulses off at a critical moment. Instead of bouncing back to the expectant receiver, they are absorbed by the

rubber coverings. As a result, no tell-tale blip shows on the radar screens.

(The basic principle of radar is that it sends out a constant series of pulses, like tennis balls fired in split-second succession. The pulses bounce back when they hit an obstruction or distant object—a ship, airplane or building. The receiver which records the return pulses automatically works out the height, range and position of the detected object.)

Until this material was invented there has been no means of foxing radar detection. It cannot be jammed or bent. But now the "eye" so far relied on as the basis for defense organization is utterly blinded.

British auto drivers are already inquiring as to whether the material can be fitted to their cars to defeat the radar apparatus now employed by the police to detect excessive speeding. It is likely to be made illegal to have an auto fitted in this way.

Science News Letter, October 26, 1957

BIOCHEMISTRY

Secret of Aspirin's Action Is Revealed

➤ ASPIRIN, the most familiar drug in mankind's medicine chest, goes to work when the pituitary gland changes it into an oxidized compound known as gentisic acid, Prof. John E. Christian and Ross Crabtree of the Purdue University School of Pharmacy have found.

They knew that gentisic acid has the same effect as aspirin, minus aspirin's toxicity. They also knew that rheumatic fever patients and others who take large doses of aspirin excrete more gentisic acid than normal people do. So they devised an experiment to discover whether gentisic acid is a breakdown product of aspirin and where this process takes place.

First they induced fever in rats by feeding them a peptone solution. Then they injected aspirin labeled with carbon-14 into the rats. Forty-five minutes later they analyzed the rats' blood, lungs, adrenal and pituitary glands—the places where aspirin accumulates, according to earlier experiments under Prof. Christian's direction.

In the pituitary, the body's "master gland," they found gentisic acid. It was labeled with carbon-14. In none of the other organs in which aspirin accumulates was this combination found.

Gentisic acid is an oxidized product of acetylsalicylic acid, or aspirin. It is less toxic than aspirin because of the addition of a hydroxyl group.

The pituitary gland contains large amounts of vitamin C, which is an oxidizing agent. Further, the pituitary gland is the next-door neighbor of the body's heat control center in the posterior portion of the brain, the hypothalamus.

These findings lead the Purdue scientists to believe that a modified gentisic acid molecule might prove even more useful and safe than aspirin itself.

Science News Letter, October 26, 1957

PHYSICS

Magnetic Phenomenon Yields "Super Magnets"

➤ EXPERIMENTAL magnets with "one track minds" promise to be the first really permanent magnets. They will resist having their magnetic alignment taken away by every method except high temperatures.

The new magnets are made by putting an oxide coating over very small particles of a magnetic material such as cobalt metal. The particles, when packed together at low temperatures in a strong magnetic field, form a very powerful magnet that cannot be demagnetized by another magnetic field working against the first.

The magnets are said to exhibit the phenomenon of "exchange anisotropy," producing effects never before seen in permanent magnets, and the first new magnetic anisotropy seen in 60 years, reported the discoverer of the magnetic substances, William H. Meiklejohn of the General Electric Research Laboratory, Schenectady, N. Y. Anisotropy is an effect in magnets that causes them to have certain "easy" north-south alignments of magnetization.

The rare effect was found to be caused by the oxide coat on the metal particles, which though unaffected by magnetic fields, can at low temperatures pull metal atoms into magnetic alignment. Like railroad tracks, the metal oxide molecules keep the adjacent metal particles "magnetically aligned," but their effect is only good at low temperatures, which favor the oxide's orderly, magnetic "track-like" structure. At higher temperatures, the rows of oxide molecules become disorderly themselves, and can no longer influence the metals.

At present, Mr. Meiklejohn is working on other materials which show promise as anisotropic substances, and hopes that they will exhibit exchange anisotropy at room temperature or higher.

Science News Letter, October 26, 1957

SEISMOLOGY

Earthquakes Show Ocean Floor Differences

➤ THE DISASTROUS earthquakes in Turkey last April have given scientists new knowledge of the crust of the earth under the Mediterranean Sea, it is indicated in a report to *Nature* (Oct. 12).

The earthquake waves picked up on the seismograph at Kivu Lwiro in the Belgian Congo show the structure of the sea bottom is different in the region south of Turkey from what it is south of Greece, Dr. J. Cl. De Bremaecker of the Institut pour la Recherche Scientifique en Afrique Centrale at Kivu Lwiro reports.

Study of earthquake waves at sea in this region is urged by Dr. De Bremaecker. The exact nature of the differences observed would have important implications for our knowledge of the structure of the earth, he says.

Science News Letter, October 26, 1957