

MEDICINE

Recovery of 114 Burn Victims Effected With Sulfadiazine

Revolutionary Treatment May Eliminate the Need for Skin Grafting and Plastic Surgery to Efface Scars

SPRAYING sulfadiazine, one of the new miracle sulfa drugs, directly onto burns is being hailed as the most effective method of treating burns yet devised.

At the Johns Hopkins Hospital 114 badly burned patients were swiftly healed by the new method announced by Dr. Kenneth L. Pickrell, of the hospital's surgical department, in a report to the *Bulletin of the Johns Hopkins Hospital*.

Burned areas "healed more rapidly than with any form of treatment previously used at the Johns Hopkins Hospital," surgeons on the hospital staff declare. Some of them believe the sulfadiazine method will revolutionize the treatment of burns, eliminating the need for skin grafting and plastic surgery to efface scars and correct deformities.

No infection occurred in any of the 100 patients with second degree burns involving no more than one-fifth of the body surface who were treated in the out-patient department of the hospital. In only two of the 15 patients so badly burned they had to be admitted to the hospital was there any evidence of infection.

Toxic effects of the drug were seen in only one case, a four-year-old child brought to the accident room at the point of death with the entire body burned except for parts of the feet and ankles. This child, who died 48 hours later, was the only patient in the 115 who failed to recover.

No preliminary washing or cleaning of burned areas is needed in the new treatment. The nurse starts spraying the sulfadiazine while the surgeon is scrubbing his hands in preparation for removal of blisters and loose tissue. The sulfadiazine allays a great deal of the patient's pain and a narcotic may not be needed.

Patients with only second degree burns who do not have to be kept in the hospital are kept in the accident room for two hours during which the spray is frequently used. Before being sent home

their burns are covered with either sterile vaseline gauze or a sulfadiazine ointment. The patients return for more spraying and new dressings until the burns have healed.

In the more serious cases, the patients are treated for shock and put to bed on sterilized sheets under a heat cradle to keep them warm. The sulfadiazine spray is continued, every hour at first, for four days. By this time a thin transparent scab forms through which the doctor can watch the healing of the burn and the growth of new skin tissues. The scab, though pliable, is strong and tough enough so that it does not break and the patient is encouraged to exercise and to use his arms, legs or other burned parts of the body. This keeps the skin and tissues from being pulled down or shrunk into the disfiguring and sometimes deforming scars called contractures.

After about 10 days the edges of the scab begin to loosen and separate from

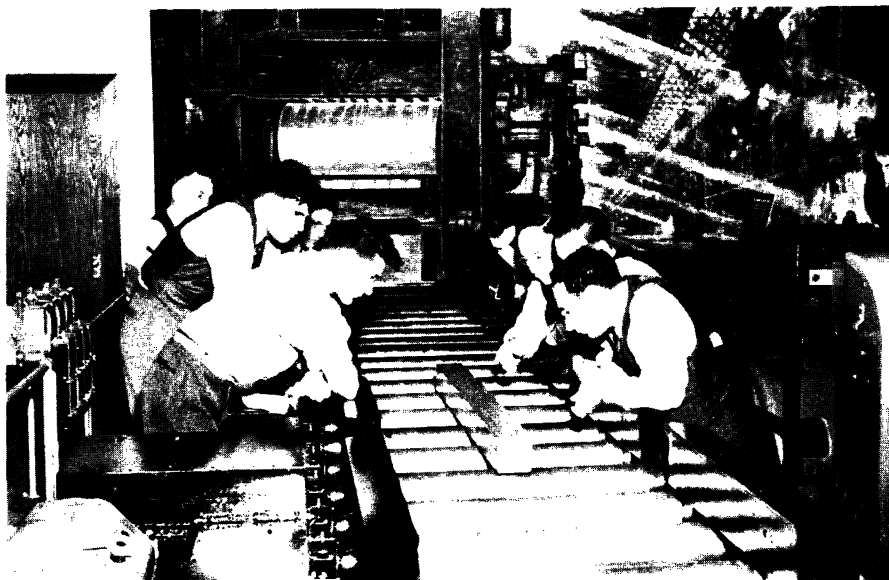
the skin beneath. At this time sulfadiazine compresses can be applied and in many cases sterile mineral oil sprays followed by salt solution compresses allow the scab to be removed in large sheets. In third degree burns the scab is left in place for at least two weeks.

Infection is a serious complication of burns which doctors have long tried to prevent, Dr. Pickrell points out. Among the preventive methods previously used are local application of tannic acid; gentian violet, a purple dye; and a combination of gentian violet, with two other dyes, brilliant green and neutral acriflavine.

The great effectiveness of the sulfa drugs in combating infection suggested to Dr. Pickrell that they might prove useful in preventing infections in severe burns. Use of sulfadiazine was started last January "with results which were so gratifying that this method has been applied routinely to the treatment of all burns that have since come to this hospital," he reports.

"This method of treatment has been found to be much superior to any of the other methods of treatment previously used here."

The sulfadiazine for the spray is used in a solution of 3.5% sulfadiazine in 8% triethanolamine. The ointment for covering burns in patients not requiring hospitalization consists of 5% sulfadia-



MODEL USED FOR TRAINING

This model steel mill manipulator which was operated by many visitors to the Westinghouse exhibit of the New York World's Fair, is now contributing to the defense program by serving for instruction in a defense training class at Buffalo's Seneca Vocational High School.

zine and 8% triethanolamine in a stearin base. No scab or slough forms unless the burned area is exposed as in hospitalized patients.

The sulfadiazine solution has a pH value of about 9. It is clear with a faint yellow color which may darken unless stored in dark bottles. It does not stain, is almost odorless, has a bitter taste, does not injure skin, mucous membrane or granulating surfaces and can be used safely in and around the eyes. It is a

powerful penetrant and can be detected in the blood within several hours after having been sprayed on burned surfaces. For this reason Dr. Pickrell advises daily blood tests for sulfadiazine concentration in patients receiving multiple daily sprayings. After the scab has formed the amount of the drug in the blood rapidly approaches a minimum even though spraying is continued, and the drug can then be given by mouth if desired.

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In these days when our whole American world has greater meaning for us, says Dr. Vaillant, we can think more deeply about the Indian colonists who built a new world in their time in the continent.

Science News Letter, August 30, 1941

PHOTOGRAPHY

Deterioration of Films Not Due to Cosmic Rays

THAT the deterioration of photographic films and plates with time, which requires an early development after exposure, is not due to cosmic rays, is shown by experiments of Wayne T. Sproull of the General Motors Research Laboratories in Detroit. (*Journal of Applied Physics*, August)

If the deterioration is principally due to cosmic ray action, then it should be shown more markedly by film manufactured expressly for use with X-rays, and therefore more sensitive also to cosmic rays, than by ordinary film. The effect shows itself principally as a general fogging of the film. The cosmic rays, which pour down continuously upon the earth and penetrate whatever wrappings or coverings protect the film, would be capable of such an effect.

In 1939 Mr. Sproull purchased some Eastman "Verichrome" film and some Agfa X-ray film. One half of each type of film was stored in a mine shaft 2057 feet below the surface of the ground where measurements by V. C. Wilson had previously shown that the cosmic ray intensity was about one twenty-thousandth of that on top of the ground. The remaining films were stored in an ordinary place in Detroit.

Two years later (1941) some of the mine-stored X-ray films were developed along with some of the X-ray films stored in Detroit, and a piece of new Agfa film. The films were developed and fixed together. The new film of course showed no fogging, but the other two were about equally fogged, showing that the cosmic rays were not a major factor in this deterioration.

Similar tests with the Verichrome film gave similar results.

If the cosmic rays were a major factor in film deterioration, the author states, there would be little prospect that a way could ever be found to prevent such deterioration. But since it appears to be due to temperature and humidity effect, there is still hope that a remedy will eventually be found.

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ARCHAEOLOGY

Lack of Unity Sapped Defense When Aztecs Fought Spain

America's Famous Fighting Indians Were Defeated By Intrigue and Loss of Morale in Leaders

HOW America's famous fighting Aztec Indians suffered from paralyzed morale, when they went down to defeat before a handful of bold invaders from Spain, long ago, is told for modern America's information in a new book, *Aztecs of Mexico* by Dr. George C. Vaillant of the American Museum of Natural History. (*Reviewed, SNL, this issue.*)

Pronouncing conquest of the Aztecs the greatest feat in European occupation of aboriginal America, Dr. Vaillant states that the Aztecs put up one of history's most desperate defenses. How long Indians might have held off Europeans who had guns and other superior fighting equipment, no one can say. But beleaguered Aztecs struggled through a nightmare of psychological fears and political troubles strikingly like those that hasten downfall of nations attacked today.

"There seems to have been in the air that same sense of paralysis that the French knew to their cost in 1939 and 1940," writes Dr. Vaillant.

Montezuma, the Aztec war chief, had had his nerves shaken by a soothsayer's prediction that strangers would rule the land, and by a series of follow-up bad signs.

Lack of unity prevented Aztecs from marshalling their tribute-paying satellite tribes, to resist the invaders. The so-called Aztec Empire, says Dr. Vaillant, was really a multitude of independent city-states seething with intrigue and

war, and separated further by differences in language, dialect, physical type and geographic economy.

Montezuma has been called an appeaser, says Dr. Vaillant. But the Aztecs were democratic in their theory of social organization, and Montezuma was no authoritarian ruler, but one who had to depend on group decisions and allegiances of vassal states.

Add to such problems, the Aztec pattern of war in which single battles often began and ended a campaign and ritual rules governed fighting. Europeans, then as now, fought realistically and pursued the old time-tried tactics of splitting an opposing army and destroying the weakened parts.

The Aztecs' war against the Spanish Conquistadores," writes Dr. Vaillant, "is an elusive example of the paralysis of the national morale, followed by a defense carried on with that courage found in forsaken men, in this case abandoned by their very gods. We have seen, in the bitter year of 1940, the same pattern repeated when France collapsed and England found a new strength in despair."

Describing the Aztecs' archaeological past and history of Spanish conquest in the Valley of Mexico, Dr. Vaillant, who has made many archaeological discoveries in the region, points out that since then the "Mexican Indians have endured and have done the work of Mexico for four centuries." Their role in Mexican affairs grows more active.