

MEDICINE

Nerves From Dead May Help the Living

► A DISTINCT possibility now exists that use of nerves from the dead may help to restore function of nerves in the living.

In animal experiments at the University of California, Los Angeles, Medical School, Dr. Leonard Marmor, an orthopedic surgeon, has developed a technique which employs electron irradiation of a nerve taken from an individual and used as a graft in another.

These are peripheral nerves, which are in the arms and legs and are often damaged or severed in accidents.

The technique may lead the way to nerve banks similar to the bone and artery banks established for several years, he believes. The procedure has been used only in animals, but results of the experiments have led him to hope it will work in humans.

Attempts to graft nerves from one individual to another have been plagued by the same problems that confront all such grafts. The transplanted nerve is attacked by the recipient antibodies as a foreign body, and an inflammatory process occurs which causes the graft to be rejected.

Somehow the electron irradiation process modifies the nerve graft so that the antibodies do not act against it. Dr. Marmor has shown that unirradiated nerve transplants consistently become inflamed while the irradiated ones do not.

The transplanted nerves do not themselves function as nerves. They merely provide a protective channel through which the individual's own nerves can regenerate.

Dr. Marmor notes that investigators at Columbia-Presbyterian Hospital in New York were using a synthetic sheath for this purpose with encouraging preliminary results.

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GENERAL SCIENCE

Soviet Science Assistance To China Reported Ended

► NO RUSSIANS were seen in scientific laboratories in China during a tour by British scientists.

This finding has given rise to reports that all Soviet scientific assistance has been stopped.

Observers believe that the Soviets are deliberately withholding vital key materials and scientific facts from the Chinese on the final preparation and making of a nuclear device. They added that China's backwardness would indicate it would be some time before China could explode a device on her own.

These facts came to light after a two-week visit to China by five scientists from the Royal Society. They toured the country to study the general aspects of the scientific education system of the scientists. The scientists were invited by the Chinese Academia Sinica.

One visitor, Sir Lindor Brown, Secretary of the Royal Society, reported that Commu-

nist China has a fair amount of good scientific equipment in her laboratories and much of it came from America, Russia and Britain.

Sir Lindor said that the percentage of women and girls interested in science was "considerable and growing."

He added that Red China still has a long way to go in scientific research as compared with Western countries. All of the researchers were working very hard and there is certainly a scientific revolution there, but they are still behind.

As to the question of the country having an atomic bomb, one of the scientists said the visit had no connection with the nuclear field.

The group, which included Sir Gordon Sutherland, director of the National Physical Laboratory, Middlesex; Dr. F. C. Powell, Oxford University mineralogist; Prof. F. Waddington, Edinburgh University zoologist, and Dr. H. W. Thompson, Oxford University chemist, visited Peiping, Tientsin, Shanghai and Hangchow.

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MEDICINE

Premature Old Age, Major Effect of Smoking

► THE MAJOR EFFECT of smoking appears to be premature old age, a physiologist reports.

Dr. Hardin Jones of the University of California's Donner Laboratory at Berkeley told a symposium in San Francisco that smoking brings on a shift toward old age earlier in life.

He said records show that the death rate and causes of death of smokers are about the same as those of much older nonsmokers.

Dr. Jones believes that someone who smokes a package of cigarettes a day can expect his life to be shortened by seven years. The smoker begins to lose these seven years as soon as he begins smoking.

The life-shortening process in smokers is in direct proportion to the amount smoked, Dr. Jones said. The extra aging stops whenever the person stops smoking.

While there is no reason to believe that the cancer risk, especially for lung cancer, is reversible if smoking is stopped after some years, there is some evidence that the cancer risk does not increase after smoking is stopped and that the risk for heart disease may decrease.

Dr. Jones told the symposium, sponsored by the Kaiser Foundation Hospitals, that some effects of aging are reversible by exercise, weight loss or gain, reduction of injury and a healthy environment.

Dr. Jones believes that the process of aging leading to death is a stairway of small steps of injury and disease, heading for the one large emergency or chronic disease under which the body metabolism breaks down and death occurs.

An optimistic note was sounded when Dr. Jones said that a young person has an elective plus or minus 25 years to live, depending upon his diet, his compatibility with his spouse (spouseless persons statistically live shorter) and where he lives.

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IN SCIENCE

MEDICINE

Many Survive Cancer Surgery in Past 25 Years

► IMPROVED CARE of cancer patients before and after surgery has led to survival of thousands that would not have lived 25 years ago.

In 1963, 177,000 lives are expected to be saved from cancer, and of this number 44,000 would not have been alive 10 years ago, the American Cancer Society reported at its annual meeting in New York. One out of three lives are now reported saved out of cancer cases that receive attention, and 1,200,000 persons are alive who have survived as long as five years following treatment.

The clinical impact of a quarter of a century of cancer research was the topic of the meeting, which occurred 25 years after the National Cancer Institute in Bethesda, Md., was established by an act of Congress.

Organ perfusion technique is one of the hopeful treatments of the past few years. This means that the cancerous organ is isolated surgically while the blood is pumped through a heart-lung machine, thus permitting a higher concentration of drugs to flow directly to the affected organ without going to the body as a whole. This cuts down the toxic effect of the drugs to the bone marrow, lining of the intestinal tract and other parts of the body.

Surgery, radiation and drugs are the three treatments for cancer, with early diagnosis urged before tumors have a chance to spread.

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PHYSIOLOGY

Too Much Oxygen May Be Aging

► FRESH AIR may be aging, rather than rejuvenating.

Dr. S. M. Siegel of Union Carbide Research Institute reported in New York that evidence shows that oxygen is a major factor in aging of plants and animals. He believes the balance between oxidants and antioxidants in a living system is the governing factor in growth and development, and that lowering the oxidant or increasing the antioxidant components will tend to preserve the juvenile state and delay aging.

Using a greatly reduced oxygen environment (less than five per cent as opposed to a normal 20 per cent) Dr. Siegel has arrested the development of coleus plants in the juvenile state, maintaining them in a sort of suspended animation where they neither gained nor lost a leaf for six months.

His experiments on tadpoles also showed that antioxidants are important to growth and development.

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E FIELDS

MILITARY SCIENCE

Space Flight May Be Disarmament Barrier

► SPACE FLIGHT may prevent an East-West agreement on disarmament, a Nobelist has warned.

An essential condition of any disarmament agreement is outlawing the main means for delivering nuclear bombs, namely rockets, which also are the instruments for space flight, Dr. Max Born, 1954 Nobelist in physics, has pointed out in his book *Physics and Politics*. (Basic Books, \$3.)

Once manufactured, nuclear bombs can be concealed and shielded from detection, but rockets, because of their size, can be detected and therefore their production and storage easily controlled.

Dr. Louis B. Sohn of Harvard, consultant to the U.S. Arms Control and Disarmament Agency, has taken a similar view. Dr. Sohn urged that in the East-West disarmament negotiations priority be given to the consideration of a ban on delivery vehicles rather than continue efforts to achieve a ban on nuclear weapons tests or on nuclear weapons production (see SNL 82:11, July 7, 1962).

A ban on rockets, a halt in their development, undoubtedly would adversely affect exploration of space and would prompt loud and strong objections from space research enthusiasts. However, as Dr. Born has said, "They, and all of us, ought to be clear that objections of this kind will obstruct and may well prevent any agreement of the atomic powers about nuclear disarmament."

The Nobelist said that technical knowledge and skill applied to the space effort is "magnificent" but that the billions of dollars spent on rocket research are made available largely because of military needs.

It is the military applications that make the space race an extension of the arms race. And in space as in the atom, the military applications are what prompt large research support from the armed forces.

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MEDICINE

Respiratory Diseases Higher Among Smokers

► IF YOU HAVE smoked one to three packs of cigarettes a day for the past eight years, the chances of your having chronic respiratory disease jump significantly.

This was one of the important conclusions reached in a survey of a New Hampshire town on the relationship between smoking and respiratory diseases. The study was conducted by Drs. Benjamin G. Ferris of Harvard School of Public Health and Donald O. Anderson of University of British Columbia in Vancouver, Canada.

"It was observed that cigarette smokers

had a prevalence of chronic respiratory diseases substantially greater than that of non-smokers of similar age and sex," the physicians reported in the *New England Journal of Medicine*, 269:787, 1962. A greater than fourfold risk was observed in male smokers.

"Certain evidence from this study supports the hypothesis that there may be a threshold beyond which cigarette smoking materially increases prevalence of chronic respiratory diseases," they emphasized. This "threshold lies above 3,000 and below 9,000 packages or after eight years of cigarette smoking at the rate of between one and three packages a day."

In the study, disease risk doubled after a person had smoked 3,000 packs and tripled after 18,000 packs. Although age alone did not cause an increase in respiratory disease, the effect of life-time cigarette smoking showed a significant increase.

More than 95 per cent of a probability sample of 1,261 Berlin, N. H., residents were surveyed in the study. They answered questionnaires and took breathing tests. The ages ranged from 25 to 74. They were placed in categories of nonsmokers, former smokers, cigarette, cigar and pipe smokers.

Women who smoked the same number of cigarettes had slightly lower rates of increase in disease than men, although the prevalence of disease was higher in women smokers than in non-smokers.

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AGRICULTURE

New Hybrid Wheat Reproduces Itself

► A GENE OR GENES that will restore fertility in male-sterile wheat have been found. A major breakthrough in the development of hybrid wheat, the discovery was announced by Drs. John W. Schmidt and S. S. Maan of the University of Nebraska and Dr. V. A. Johnson of the U. S. Department of Agriculture's Agricultural Research Service stationed at the University.

Although present in corn and grain sorghums, a fertility restorer has been the "missing link" in efforts to produce hybrid wheat.

In order to produce hybrid wheat seed, a seedsman must first grow wheat plants with flowers that are male sterile and therefore cannot fertilize themselves. Plants with this male sterile characteristic must get pollen from a normal plant in order to produce seed. Male sterility can thus serve the same purpose in wheat as detasseling does in the production of hybrid seed corn.

Before a farmer can make practical use of the hybrid seed, from male sterile plants, the seedsmen must make another cross with a plant that will restore male fertility. Otherwise, the plants would produce no kernels.

The male sterility characteristic had earlier been discovered in wheat plants in Japan and at the Fort Hays Branch Station of the Kansas Agricultural Experiment Station. However, until Drs. Schmidt, Johnson and Maan had made their study the fertility restorer in wheat had never been identified.

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MILITARY SCIENCE

Increase in Soviet Power Decreases Threat of War

► THE RECENT increases in Soviet nuclear power and missile capability have decreased the threat of a massive surprise Russian nuclear attack on the West. This is the contention of Prof. P. M. S. Blackett, Nobelist and physicist of the Imperial College of Science at the University of London, in his book, *Studies of War*, just published (Oct. 24) (Hill and Wang, \$3.95).

Because East and West now are nearer in nuclear strength, the feasibility of a surprise nuclear attack has been further reduced and the chances for a nuclear test-ban agreement and some measure of disarmament are more likely.

High U.S. Government officials also have said that the Russians will more likely accept a nuclear test ban when their latest series of H-bomb tests now under way are completed. Just last week, U.N. Ambassador Stevenson spoke hopefully of such a possibility.

The real danger to world security is an "accidental or irresponsible" nuclear war which is greatly increased by the belief, fostered by extremists in both East and West, that a massive surprise nuclear attack could succeed, Prof. Blackett said. A first strike by either side would result in millions of deaths to the country attacked. Both sides have more than enough bombs, bombers and missiles to retaliate against a first strike, which could result in the death of civilization as we know it today.

An accidental war, however, could be triggered off by smaller and less responsible powers who may in the future develop nuclear capability. Only "big and rapid steps in the disarmament process" now will exclude this danger. He urged that Red China be brought into disarmament negotiations now. The Russians have again proposed the admission of Communist China to the United Nations.

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MEDICINE

No Soap Advised Before Operation for Cancer

► TO PREVENT cancer spreading, no soap and water should be used before an operation over the area that could possibly contain cancer, Dr. Warren H. Cole of the University of Illinois College of Medicine said at the scientific sessions of the American Cancer Society's annual meeting, New York.

Wound edges should be covered, and whenever possible, the veins leading to the cancer area should be tied off. Ulcerating tumors of oral cavities should be cauterized, and at the end of the operation, irrigation of wounds appears to minimize the chance of local recurrence.

Dr. Cole reported success in preventing the spread of breast cancer through use of nitrogen mustard as an anti-cancer drug, but this has not been effective with cancer of the rectum or colon.

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