BIOTECHNOLOGY

New Muscle Control Aid

➤ OF POTENTIAL VALUE to astronauts as well as amputees, a new technique of muscle control is being explored in a University of California, Los Angeles, engineering laboratory.

The research is aimed at training men to contract individual muscles and then convert the contractions to mechanical or electrical power for lifting artificial limbs or operating a space capsule.

The process has been developed during the past three years by Dr. John Lyman, Dr. Hilde Groth, Dr. Gershon Weltman and Franklyn C. DeBiasio at the UCLA biotechnology laboratory.

Here is how the technique works for a test subject named Joe:

Joe sits in front of a man's silhouette which resembles a well-punctured rifle target crossed with a pinball machine. Each hole contains a light and represents an individual muscle. Electrodes are attached to one group of muscles, for instance Joe's shoulder muscles, and connected to the same muscle group on the silhouette.

Joe then tries to contract one specific muscle, such as the deltoid muscle. In the beginning, he will have a hard time separating the deltoid from the rest of the shoulder muscles, and the whole muscle group will light up. But with continued practice, he will be able to isolate and contract the deltoid alone, as confirmed immediately by a single light flashing on the silhouette.

Backed by research funds from the U.S. Veterans Administration and Spacelabs, Inc., the investigating group hopes to convert the trained muscle power to practical uses in the medical and space fields.

One promising approach, says Dr. Lyman, lies in using transducers and an amputee's muscles contractions for simple and skillful manipulation of artificial limbs.

Another possible use is seen for astronauts maneuvering under high gravity conditions. By amplifying the tiny electrical charges of muscle contractions thousands of times, spacemen may be able to raise their arms automatically or even turn on switches, through different muscle contractions.

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MEDICINE

Filariasis Control Begins

➤ GETTING under way in American Samoa is a program to eradicate filariasis and its crippling, disfiguring complication, elephantiasis—the mosquito-borne scourge of the South Seas.

The project is being carried out by the Department of Infectious Diseases of the University of California, Los Angeles, Medical School at the request of American Samoa Governor Rex Lee. Dr. John Kessel is project director, assisted by Dr. Flavio Ciferri and Gary Long.

The program will also provide field experience for participants in a tropical medicine training program supported by the National Institutes of Health.

The project involves a drug administration program and mosquito control. The drug, which has been donated by the American Cyanamid Company, acts against the tiny parasitic worms that cause the disease. Mosquito control programs are designed to eliminate transmitters of the infective organism.

Dr. Kessel and his group successfully conducted a similar program in Tahiti in cooperation with the French Overseas Medical Service. No new cases of elephantiasis have appeared during the last five years. A few years ago 30% of all persons over 50 and 7% of the entire Tahitian population were afflicted. Elephantiasis is a late complication of filariasis and is characterized by grotesque enlargements of various parts of the body.

A preliminary survey of Samoa indicated that filariasis has become an increasing problem. Since 1948, the time of the last extensive survey, the incidence in many villages has increased more than 50%. This increase was especially noted among people in the early thirties.

Many of the people in this group have the disease in its early stages and fortunately can be successfully treated, Dr. Kessel noted.

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VETERINARY MEDICINE

Leptospirosis Infection May Be Spread by Fish

➤ FISH MAY have an important role in spreading the disease leptospirosis in animals and humans, two U. S. researchers reported in Nature, 195:719,1962.

Culture of *Leptospira,* a genus of spirochetes, were placed in tap water containing goldfish, with resulting prolonged infection of the gills and kidneys after a 17-day septicemic stage.

This suggests the possibility of the microorganisms being shed into the surrounding water, and strongly supports the possibility of fish causing spread of the infection in certain environments.

Although leptospirosis is mainly a danger to livestock, causing some $200,000,000 loss in cattle through abortions, fever, poor milk production and kidney ailments, a certain type of *Leptospira* causes Weil's disease, a dangerous human jaundice.

The *Leptospira hebdomadis* causes seven-day fever in Japan. Also a human menace is the unpasteurized milk of infected cattle. Swimming in streams polluted by infected fish could possibly be a direct means of infection of humans.

Drs. G. Maestrone and M. A. Benjaminson reported the study of *Leptospira* infection in the goldfish as a result of work in the Animal Medical Center, New York, which was supported in part by a grant from the National Institutes of Health.

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MEDICINE

Nursing Hazards Reduced In Radiation Treatment

➤ LEAD screens to protect the nurse while on duty in a radium ward have been installed in the University College Hospital in London.

The average nurse is shielded from thigh to thorax by "formica" covered lead screens placed beside the beds of patients who have had radium inserted into uterine cavities to combat cancer. In this way the nurse can remake the bed and care for the patient without dangerous exposure.

Other protective measures include cutting up food before it is brought to the bedside, the use of anesthetics that require short postoperative care whenever possible, the quickest possible bedside attention, including friendly visits.

During four days of a patient's radium treatment, a nurse who spent time visiting a lonely patient beyond the necessary nursing procedures, received more than 1,000 milliroentgens.

Reporting the study in the British Medical Journal, Aug. 18, 1962, were Dr. S. B. Osborn, now at King's College Hospital, London, and Patricia Howes. The investigators said the radiation received by nurses in the gynecological radium ward had been reduced to 30% of its previous level by the lead shields.

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VITAL STATISTICS

Heart Disease Deaths Due to Increase in Aged

➤ THE OVERALL rise in the recorded death rate from all forms of heart disease combined during the past ten years is due to the increase in the number of aged persons, the Metropolitan Life Insurance Company has reported.

A five percent drop in heart disease mortality is seen when allowance is made for this aging factor, statisticians pointed out.

Early childhood is the other group showing an increase in death rate. This is believed due to the fact that congenital heart injuries benefit by modern treatment so that infants survive until preschool age.

Men lose much more time from work because of heart disease than women do. In the survey year ended in June, 1960, a daily average of 52,000 men and 10,000 women were absent from work because of heart conditions. More than 15,000,000 work days were lost during the year.

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