

tory with pictures of "congenital amputees" and requests for advice on prosthetics.

One father objected to this technically correct term when asked if his son was a "congenital amputee" and answered, "No, he was born like this!"

Dr. Fred Leonard, scientific director of the laboratory, recently returned from India where wooden legs are still widely used, but where scientists are asking for advice on more modern prosthetics.

Work is being done on mechanisms to guide hands, feet and legs above as well as below the elbow or knee. Hydraulic and electric means of operating prosthetic devices have proved successful in cases where the patient cannot manipulate his prostheses through his own musclepower.

## Electric Elbow

For example, an electric elbow was designed so the amputee's deep breathing under the strap across his chest would trip the switch and activate the electrically operated elbow lock.

The Veterans Administration has developed a "revolutionary" type of artificial leg that is being issued to eligible veterans who had amputations above the knee. It has hydraulic knee mechanism and contains the same kind of fluid composition as that in planes taken to the Arctic. The ankle and knee motions are coordinated to make walking easier.

As far back as 1948, at the National Academy of Sciences, Washington, D. C., was demonstrated among the then new artificial limbs and materials a suction socket that makes a leg feel like a part of the amputee's own body. The prosthetics program, badly needed following World War II, was sponsored by the Army, Navy, Air Force and Veterans Administration. The materials were developed by Government, industrial and university laboratories and continue to be developed with the aid of this biomechanical laboratory.

• Science News Letter, 85:42 Jan. 18, 1964

## BIOTECHNOLOGY

### Cars Steered by Flicks Of Muscles Foreseen

► BY SKILLFULLY FLICKING back and chest muscles, an armless person could drive a car and an astronaut could control his craft despite tremendous forces pressing on him.

Such a possibility is foreseen by Amos Freedy, engineering student from Israel, at the University of California at Los Angeles, who is working in a team trying to see if amputees can learn a new way of controlling artificial limbs with greater skill and less effort. Electronic aids for paralyzed persons also are forecast.

The study involves following a weaving dot on an oscilloscope using only the play of a chest and a back muscle for tracking.

"You might get an idea of the complexity of the operation if you took an armless man trying to use two levers, one for side motion, the other for up-and-down movement, to hit a bobbing duck in a shooting gallery," Dr. John Lyman, head of the UCLA biotechnology laboratory, explained.

Two transducers made from silicone rub-

ber impregnated with carbon powder are glued to a chest muscle and a back muscle. One muscle controls horizontal movement, the other vertical motion. By coordinating the frequency and force of the muscles' pressure on the transducers, a person can track the dot on the oscilloscope.

"By the same method and power an amputee could use his artificial limb to grasp something with his fingers and rotate his wrist simultaneously," Dr. Lyman, professor of engineering and psychology, said.

The research is supported by the U.S. Office of Vocational Rehabilitation and the Veterans Administration.

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## MEDICINE

### New Plastic Promises Better Facial Repairs

► EASIER and better-looking repairs of facial deformities are promised by a new plastic material which can be injected under the skin and molded to the desired shape before it hardens.

Tests of the material, called "room temperature vulcanizing (RTV) Silastic" were described to the American College of Surgeons in San Francisco in a paper by Drs. Thomas M. Biggs, Bromley S. Freeman and Arthur C. Beall Jr. of the department of surgery, Baylor University College of Medicine, Houston.

Silastic, a trade name for dimethylpolysiloxane, a type of synthetic rubber, has been used for many years in plastic surgery, but only in its solid form.

In liquid form, he said, it can be injected under the skin with a hypodermic needle. It hardens in about ten minutes, during which the surgeon can mold it to the desired shape.

Dr. Biggs said the material is readily accepted by the tissues, which simply form a light fibrous sac around it. It will not "drift," he said, as some waxes used several years ago have done.

Dr. Biggs said he has tried the material so far only in dogs, and in a very few clinical trials on human patients. He said it has been used in clinical trials on humans by Dr. Herbert Conway in New York and Dr. Ralph Glocksman in Grand Rapids, Mich.

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## Do You Know?

In the U.S. each year about 6,000 to 7,000 *children* under 15 die as a result of accidents that take place in the home.

Unidentified seasonal factors influence the transmission rate of flu *viruses*.

Many species of *fungi* may be potential sources of edible protein.

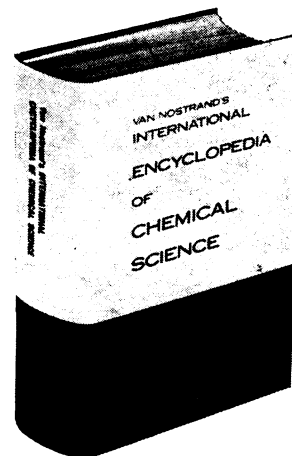
Nylon is now produced in 120 plants in 38 countries.

Help in predicting growth patterns of *lung cancer* may now be obtained from digital computers.

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