

AWAKE!

THE ANCIENT ART OF BEGGING

History shows the art kept alive through centuries
by the use of many methods

“Out of the Mouth of Babes”

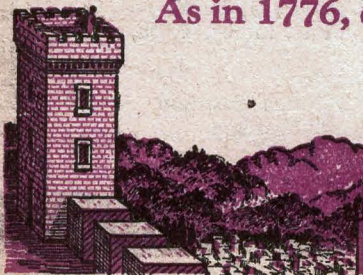
How youngsters teach a parent the facts about Santa

Spare Parts for Your Body

Present amazing replacements of bodily parts
go far beyond mere wigs and false teeth

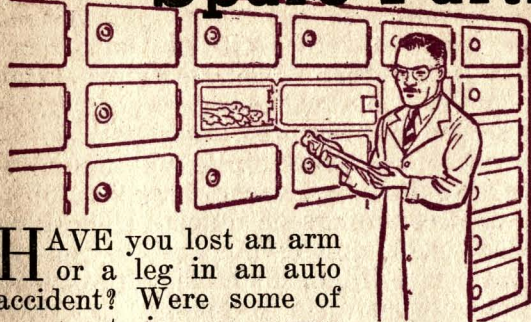
Socialization Through Taxation

As in 1776, can taxation now lead to tyranny?



DECEMBER 22, 1949 SEMIMONTHLY

Spare Parts for Your Body



HAVE you lost an arm or a leg in an auto accident? Were some of your arteries or nerves shot away or shattered in the last war? Do cataracts blind your eyes? Have your teeth or hair fallen out? Has arthritis frozen your joints? Have a hole in your skull that needs plugging up? Need a new roof in your mouth? Or do you need a replacement for your lungs, kidneys or heart? If so, you will be interested to know that there are many shops around the country that are now in the business of supplying "spare parts" for the human body, both natural and artificial.

The best-known natural-replacement part is the cornea for the eye, the clear membrane that covers the iris of the eyeball. If you knock the window out of your house, or if the windshield of your automobile is scratched or cloudy, you get new glass to replace the old. Likewise, if "the windows of the eyes" are damaged or defective they can, in many instances, be replaced by transplanting good corneas from other people's eyes. But few people would sacrifice their sight in order that another might see, and even if they were willing to do so it might lead to double misery; for if the transfer should be unsuccessful, then two persons would be blind instead of one.

This led to the setting up in 1945 of an "eye bank" to which people could will their eyes. At death the hospital is then free to remove such "willed" corneas before decay sets in, and preserve them until needed. It makes no difference whether the corneas are from those of a still-

born baby or from an old man of 70, as long as they are healthy. And not only the corneas are placed on ice in the "bank" but also the humor, the clear gelatinous substance that fills the eyeball. It is bottled and put in a deep-freeze unit for use in eyes where blood clots form.

During the first two years after the eye bank was set up more than 600 corneas were donated. Specialists in grafting sprouted up fast, so that in three years, instead of 10 or 15, there were over 90 capable of performing this delicate surgery. Not all the 250,000 blind people in the country will be able to have their sight restored through transplanted corneas. If their optic nerves or retinas are damaged, or if they have poor muscle control, then replacement of the tiny front window will do no good. Statistics show that many transplantings are unsuccessful, and some cloud up from unknown reasons. So unless a person is practically blind, better to get along with poor sight than gamble with the possible loss of sight altogether.

Need a new jaw or a shinbone, or a vertebra for your broken back? You can now get these replacement parts and many others for the framework upon which you are hung. Heretofore, a person requiring a bone graft had to have a piece of bone taken from another part of his own body, or a friendly donor had to undergo an operation to supply the needed bone. Now all the surgeon has to do is to go down to the deep-freeze compartment in the hospital and select a piece of frozen bone for the job at hand. In 1946 a couple of "bone lockers" were set up in New York hospitals where pieces of bones sealed in jars were kept at temperatures of 10 to 20 degrees below zero. Supplies for these surgical stockpiles were obtained from amputations and from healthy persons who met with sudden death.

The great success in bone-grafting is due to the fact that the replacement part is actually living cells that soon become an integral part of the body. One survey showed that out of 104 cases only 4 developed any complications. A 22-year-old girl, a victim of poliomyelitis, has her spine propped up with bones from nine different individuals. With more and more hospitals throughout the country setting up "bone banks", it will not be long before every community will have its own deep-freeze unit well stocked with a good supply of bones of every size and shape for the repair of local frames.

Other "Second-Hand" Parts

Cartilage is another name for the "gristle" found in different parts of the body. It is a tough, flexible substance resembling to some extent certain synthetic plastics. Most useful in plastic surgery on noses and ears, and for facial repair work, cartilage in times past was taken from the patient's own ribs or hipbone. But now regular cartilage banks are set up. The idea of storing this gristle is not new, but for a long time its storage was unsuccessful because it was hard stuff to preserve. Finally, it was learned that if kept in a refrigerator in a special salt solution which is changed weekly it could be kept for two years without spoiling. A few doctors report great success over a five-year period in which they performed 375 cartilage graftings.

Smaller, yet very important, "bank accounts" have been opened for human arteries and nerves. A good artery from an accident victim is placed as the lining in a metal tube made of vitallium so that the ends of the artery extend beyond the tube. These are folded back to form cuffs over the ends of the tube. The whole is then quick-frozen and kept until needed. In replacing a section the ends of the broken artery are simply slipped over the frozen cuffs, tied with silk, and the whole, tube and all, is sewed up in the body of the patient.

Nerve replacements are even more marvelous when one considers their delicate nature. If only severed, nerves can be "glued" together with special cement, but if a section of nerve is torn away completely, it must be replaced if paralysis is to be prevented. Freshly removed nerves are quick-frozen and later dehydrated in high vacuum and stored in sealed containers until needed. The Russians were among the first to remove such nerve fragments from battle casualties and use them to patch up the war-torn legs and arms of soldiers. Another report tells of 28 peripheral nerve graftings, most of which were very successful. Of these one was outstanding indeed. It involved the connecting together of six nerves from a shoulder with 17 nerve endings in an arm, a feat unparalleled in surgery.

Skin-grafting, for long a slow, tedious and not too efficient operation, has in recent times received a great impetus, thanks for the Brown Electro-Dermatome. This instrument peels as much skin off in 5 minutes as formerly took 30 to 45 minutes. As a result many, many more victims of burns and accidents need not be cursed with scarfaces, but may have their faces and arms patched over with skin as good as new.

A line of research having far-reaching and intriguing possibilities has been that carried on by a number of individuals in an attempt to replace pulled-out teeth with others that will take root and grow. It has been suggested that if such a thing becomes possible then tooth banks could be set up similar to the other spare-part collections. One dentist in California, advancing along this line, replaced extracted molars with young wisdom tooth buds, and out of 35 cases he claims 33 were successful. The operation is limited to those between 12 and 19 years of age, for by that time their jaw formation is about set and their wisdom teeth are still in the budding stage.

Replacing lost blood, the body's most

important fluid, with other people's blood is now almost as common a practice as driving your car into a service station and having a quart of oil poured in. And, as crankcases are drained and refilled, so also is the blood, in some cases, completely changed in a person's body. Sometimes a newborn baby is cursed with the dread disease known as erythroblastis, is jaundiced, and has a red blood cell count only half that of normal—all because the Rh factor of its blood is a different type from that of the mother. The procedure in such cases is to drain out the baby's poisoned blood and replace it with the opposite type.

As to the propriety of this procedure, or, for that matter, blood transfusions in general, much could be said. But the essential thing is that true Christians and believers in the Bible are commanded by Holy Scripture "to abstain . . . from blood". (Acts 15:6-29; Leviticus 7:26, 27; 17:10-12) Blood transfusions violate God's laws concerning the sanctity of blood. If such violate the Life-giver's laws, then instead of being life-savers, blood transfusions are ultimate death-dealers.—See *Awake!* September 22, 1949, p. 25.

Artificial Replacement Parts

Just as a well-equipped repair shop carries stocks of extra parts for the machines it services, so the modern hospital has on hand not only natural spare parts but also many substitute materials with which to rebuild and fix up human machinery. Several metals are used in such repair work in the form of pins, nails, plates, tubing and wire meshing. When brain tumors and abscesses are removed stainless-steel wire mesh is used like the reinforcement in concrete in filling up the hole in the skull, which sometimes is an inch and a half in diameter.

Vitallium, an alloy of cobalt, chromium and nickel, is another metal used for mending breaks in the human body. Like stainless steel it is noncorrosive and

nonirritating, and therefore, in the form of plates, pins or braces, it can be left in the flesh for the lifetime of the body. In one outstanding case, where a 10-year-old girl's throat was almost closed shut with scar tissue following the removal of her tonsils and adenoids, vitallium provided her with an artificial throat and thus saved her life. The cast-metal throat was covered with a film of skin and then put in place and worn by the girl for seven months. When the skin was completely grafted, the metal throat was removed, and after 4 years with no sign of returned scar tissue the girl won a superior rating as a soprano in a state high school contest.

Tantalum is one of the rarer metals of the earth, and, unlike stainless steel or vitallium, it is malleable and soft and can be rolled out into thin foil only 1/4000 of an inch thick, or it can be drawn into wire thread one-fourth the diameter of a human hair. More than 30,000 feet of such suture was used during the war to tie severed nerves and blood vessels together. Wire gauze made of tantalum has been successfully used to repair large ruptures in fat people where their tissues are not strong enough to hold together.

Substitute Joints, Limbs,

Teeth, Eyes, Hair

An artificial hip joint, consisting of an 18-inch steel shaft with a plastic ball on the end, has already been tried out. The shaft is hammered into the thigh bone and the plastic knob fits into the socket of the pelvis. So successful has this proved, it is now hoped that a similar shoulder joint can be perfected.

There are something like 350,000 added yearly to the list of 23,000,000 disabled Americans—victims of poliomyelitis, wars and accidents. Many of these are held together with mechanical braces on their necks, backs and limbs. Plenty of others, one-armed and one-legged people, are hobbling around on artificial

limbs. But instead of turning out the heavy, clumsy old pirate-style peg legs, the modern arm-and-leg shops are producing aluminum-weight, free-riding limbs with knee and ankle joints, sponge rubber toes, and felted soles. In place of the burdensome harness straps, modern limbs are held in place by vacuum. One make of leg even allows the toes of the foot to swing to the side through a 4-inch arc to mimic the natural foot when walking. Thus much of the awkwardness and discomfort of former models is eliminated.

The same is true of the new, powerful, sensitive, lifelike hands and arms that have been invented. When this mechanical hand is covered with a molded plastic glove the deception is practically complete. These gloves come in five skin colors, five sizes and two degrees of vein prominences, with inserted hairs on the backs to match the natural hand on all points.

So common are some artificial devices that only passing mention of them needs to be made. Rotating glass eyes for the one-eyed; toupees and wigs for the baldheaded; false teeth, bridges and plates for the aged; glasses for the dim-eyed; arch supports for the weak-footed; padding for sagging shoulders; girdles for flabby muscles; "falsies" for relapsing breasts. Even the artful powders, rouges, lipsticks, hair dyes, etc., of the cosmetic manufacturer are extensively used as substitutes when the radiant beauty of youth begins to fade.

Artificial Organs

Replacing exterior parts of the human body is wonderful enough, but when machines can take over the duties of organs on the inside it is little short of a miracle. If the hard-working kidneys, which normally are capable of removing poisonous impurities from as much as 800 gallons of blood per day, become overloaded and break down there are artificial kidneys able to take over the job

and thus extend a person's span of life a few months or years. The first of these machines were as big as bathtubs, weighed a hundred pounds, and were able to remove an ounce of urea from the blood in an hour's time. The later models, working on the same general principle of osmosis, are only about a foot square and weigh a mere ten pounds. It is not necessary to remove the kidneys in order for these robots to take over. A tube is simply inserted in the artery of the patient's wrist and after the blood is run through the machine it is returned to the body through a vein. This permits the overworked organs to recover and again take up their normal duties.

Robot hearts and lungs probably represent the height of achievement in substitutes for human organs. In emergency cases there is an external glass lung, no bigger than a clenched fist, that oxygenates the blood and frees it from carbon dioxide. The cardiopulmonary machine, a combination artificial lung and heart, has proved itself capable of taking over the duties of the heart for more than a half hour at a time while surgery is performed on the heart. Venous blood is shunted around the heart, through the machine, and after oxygenating it it is returned to the aorta, or great artery, where it flows to the brain. Most intricate, this machine prevents sedimentation, controls the temperature, removes air bubbles, controls rate of oxygenation, prevents loss of water, separates the blood's red coloring matter, and reduces the sugar in the blood.

But, however wonderful and useful these spare parts may seem, they are still very poor substitutes. This is because man's scientific learning is absolutely incapable of duplicating the altogether marvelous design and efficiency of the human body. Of a truth, only the Almighty God, Jehovah, can and will restore broken and deformed men of good-will to the state of perfection once enjoyed in Eden.