SCIENCE NEWS

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MUSCLE FUNCTIONING IN PARALYSIS

ENCOURAGING results with a new treatment to restore muscle functioning in patients crippled by paralysis, rheumatoid arthritis and injury or infection are reported by Dr. Herman Kabat, of the U. S. Public Health Service, in the *Public Health Reports.*

An elderly woman confined for six years to bed and wheel chair because of rheumatoid arthritis was able after two weeks of treatment to stand up and walk. A man paralyzed on his right side for seventeen years was able, twenty-four hours after starting the treatment, for the first time in many years, to touch the top of his head, the opposite shoulder, the opposite buttock, his mouth, chin, put a cigarette in his mouth, lift his shoulder blade and move his hip. After one month of treatment he could stand up straight with both heels on the ground, both knees straight and only slight humping of his back.

The treatment that brought about these and similarly striking improvements in other patients, when other treatment had failed, consisted in injections under the skin once or twice a day of neostigmine. This synthetic chemical is also known as prostigmine. It has for some years been used successfully to relieve the fatigue and muscle weakness of myasthenia gravis.

Dr. Kabat and Dr. M. E. Knapp, of the Medical School of the University of Minnesota, in 1943 reported trying it in the treatment of infantile paralysis. They found it produced relaxation of muscle spasm, relief from pain, increase in strength and improvement in muscular coordination in the polio patients. This and other studies suggested to Dr. Kabat that it might prove effective in a variety of conditions in which failure of nerve and muscle functioning was causing crippling and disability.

So far he has tried it in fifty-three patients. Some had muscle spasm, contracture, joint weakness, pain and muscle weakness persisting for a long period after sprains, fractures and other injuries or after chronic infection. Some had hemiplegia, which the layman calls a paralytic stroke. Some had Bell's palsy. Others had facial paralysis. Included in the group were five patients with the spastic type of cerebral palsy. Rheumatoid arthritis and bursitis of the shoulder were the other conditions.

Dr. Kabat reports that "Improvement in range of motion, relief from pain and increase in strength and endurance may occur rapidly."

What percentage of patients suffering from these conditions can be helped by the neostigmine treatment can not be stated at present. Further study is needed to determine this. Patients in whom active inflammation, loss of innervation or bony or fibrous consolidation of a joint is the primary cause of the disability can not be expected to benefit from the treatment.

"The results have been encouraging enough to warrant further investigation," according to Dr. Kabat, who states that an evaluation of the treatment is now being made.

ITEMS

A STRANGE-LOOKING plane with a V-shaped "butterfly tail" is being seen these days by residents of Wichita, Kans., and nearby communities as it is taken on test flights. The new tail, a radical departure from the conventional inverted T-shaped tail, was installed on an AT–10 trainer plane to investigate the possibilities of simplified structure, the elimination or reduction of compressibility effects at high speeds, and the effect on stability, control, and handling ease, *American Aviation* reports.

A NEW device, known as a "sky-hook," will soon be dropping supplies of food, medicine and mail from cargo planes to military personnel in isolated spots. It is better for this use than a parachute, since in ordinary winds it will land almost directly beneath the point of release. Developed by the Matériel Command, Wright Field, the sky-hook drops to earth with the floating movement of the winged seed of the maple tree. The moment that the sky-hook is released it begins spinning directly towards earth without foreward motion. Various models can drop loads ranging in weight from ounces up to a hundred pounds. The heavier the load, the faster it spins as it drops to the ground. Sky-hooks are made in several models of steel, aluminum and plastics. They look like a woman's large hat box with a wing stuck on one side. They are about 10 inches thick and 18 to 20 inches in diameter. The cargo container is circular in shape with a slightly rounded bottom. It has a capacity of 2.5 cubic feet, or about 17 gallons. Each sky-hook has a wing made from spruce or balsa wood attached to the top of the container. The wings can be quickly removed and are interchangeable among various models.

FORTY per cent. increased output in synthetic rubber plants in the United States producing GR–S rubber is now possible by a new process developed by the Goodyear Tire and Rubber Company at its laboratories at Akron, Ohio. It is a continuous polymerization process to replace the older so-called batch type of operation. GR–S rubber is made by polymerizing or uniting the molecules of two materials, butadiene and styrene. It is done in large glass-lined tanks known as reactors. The temperatures in the reactors must be carefully controlled. In the batch type operation, each reactor is handled as a separate unit. In the new continuous process method, the reactors are connected together by pipe lines in groups to form a continuous chain. Carefully timed pumps admit the ingredients in a continuous stream in the exact portions needed. The reaction takes place as the mixture moves through the chain of reactors and GR–S latex pours forth from the last one in a constant stream. Ingenious controls keep the temperature exactly right in each reactor. They are operated at 100 per cent. full at all times, instead of 90 per cent. full as in the batch method, and no time is lost in filling or emptying the glass-lined tanks.