

used by American troops and flyers in high-altitude B-29 Superfortresses and other planes use compressed oxygen prepared at mobile oxygen-generating plants and stored in metal cylinders until needed.

One of the Japanese systems consists of six units, a battery, two electric buttons, a container for the oxygen generator, a gas meter, the mask and rubber tubing connecting the generator, meter and mask. Two special chemical oxygen generators are inserted in the container,

which is fitted with a metal door opening at the top. When ready for use, one of the electric buttons is pressed down, igniting the generator. Oxygen begins to flow in five seconds. After generation has once started it does not stop for 75 minutes. By using both generators, enough oxygen to last a man for two hours is produced. The meter tells the Nip fighter how much oxygen he is getting.

The Japanese also use the compressed gas system, and the chemical system may be used as an auxiliary.

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PHYSIOLOGY

Youth Can't Be Kept

Searchers for the fountain of youth in pills from the drug store are doomed to disappointment. Aging process involves more than decline in "sex hormones."

By DR. EARL T. ENGLE

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► WHEN people reach middle age they begin to be fearful of growing old. They have no faith in the famous lines from Browning, "Grow old along with me! The best is yet to be," but make a frantic effort to regain their vanished youthfulness.

The magic in the words vitamins or hormones is attractive to many of this great group of our people. The advertising agencies and the facile and uninformed journalists do much to keep before the public the hopes that youth need not be lost, or once vanished, that it may quickly be restored.

At the present moment the so-called "sex hormones" are being exploited by the ready-worded writers. The term "sex hormones" represents an historical inaccuracy, which was quickly dropped by medical men, but is persistent in the lay mind. This group of substances, called steroid hormones by the chemist, contain among others two general categories of hormones. These are the estrogens, formerly called "female sex hormones," and androgens, once classified as "male sex hormones." This latter usage is repeated in the title of a new book. These estrogens and androgens are produced in the gonads, the ovaries and testes, and also elaborated by at least one other endocrine gland, the adrenal cortex.

The estrogens and androgens have considerable importance in causing the

development of the secondary sex characters in girls and boys, respectively, at the beginning of adolescence. They are not sex specific, however, since both are present in varying amounts in both normal men and women. Paradoxically the stallion, one of the most "masculine" of animals, produces an extremely large quantity of estrogens, the hormones formerly called female sex hormones.

Another connotation which is erroneous is associated with the word "sex" hormones. Sex may mean maleness or femaleness, but to most people sex means just what the boys in the smoking room mean by sex. It is in the latter sense that the word sex hormone is inaccurate. Sexual behavior in the human is a complex, as everyone knows, composed of acquired behavior patterns and of a very large and important psychological component. To a degree the hormones play a necessary part, but only a part in the behavior pattern. The functions of these hormones are not restricted to sex or reproduction but also are important in other physiological phases of the bodily economy.

While these hormones have an important role in the development of the bloom of youth, they do so only within the limits of the inherited constitutional qualities and the nutritional state of the individual.

The actual clinical use of these hormones is limited. They are used as insulin is used in diabetes or as thyroid substance is used in hypothyroidism, that is, when there is definite evidence of a lack of the appropriate hormone.

Thus androgen may be used in young men who have lost both gonads by surgery or disease. In women, particularly those who have reached the menopause or "change of life," either estrogens or androgens are widely prescribed by physicians to aid the woman in making necessary physiological adjustments incident to the cessation of menstrual life. This treatment is frequently most necessary in women of the younger age groups who have lost the ovaries because of disease or tumorous growths. Estrogens are frequently used in older men who have a cancer of the prostate gland. In such a

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seriously malignant disease, either the removal of all source of androgen or the administration of estrogen causes some amelioration of the pain and other symptoms of the patient. Such treatment is palliative only; it does not "cure" the cancer.

When androgen is administered to older men with diminishing sexual activity, the effect gained is usually more psychological than physiological. In the minds of many physicians there is always the knowledge that cancer of the prostate, referred to above, is at least activated by this hormone.

Estrogens and other steroids are frequently used in attempts to correct disorders of menstruation, though without marked or uniform success.

Thus the only clinical indications for the use of these hormones is where a distinct lack of the particular hormone is shown.

The process of growing old, and the loss of vigor of men and women, is more complex than a decline in estrogenic or androgenic hormones. The elasticity of the arteries and of the skin changes after middle life. The tone of the muscles and recovery from fatigue changes with age. Experimental medicine is greatly concerned with these matters, and many experiments have been made in the use of androgens and estrogens. Some of the experiments have been carefully and precisely done, with constant checking with that god of the experimentalists, the control experiment. A most useful control in such experiments is in the elimination of the power of suggestion. While men may "feel lots better and peppier" when being given androgen treatment, they frequently show just as marked improvement when being given an inert and harmless substance. They are better merely because they believe and wish it so.

And the woman who won't admit to 50 years and invests in hormone preparations to avoid the wrinkled cheek is being not only deluded, but is dealing in self-medication with a drug which is potentially dangerous.

The man past 60 who hopes to restore his aging arteries and consummate the dreams of by-gone years by using the chemists' magic steroid hormones will be, at best, disillusioned.

Workers in experimental medicine are interested in these problems both for their theoretical and their practical value. When new methods are found for preventing undesirable features of growing old, the public will then be told authoritatively. Until then, we will continue

the search instituted by Ponce de Leon for that limpid spring—but the source of that spring is not to be found in a

MEDICINE

Still Have Jaundice

► **ALTHOUGH** the great majority of soldiers who suffered from jaundice in connection with vaccination against yellow fever have probably fully recovered, about 12% of them still have some evidence of the liver disease.

Detailed study of a group of 200 soldiers returned from overseas because they had failed to convalesce satisfactorily is reported in the *Journal of the American Medical Association* (June 2), by Col. Julien E. Benjamin and Major Ralph C. Hoyt, of the Medical Corps, Army of the United States.

"As a group, they were pale, thin, exhausted and utterly devoid of animation," these medical officers report. "Their reactions, mental and physical, were slow and indifferent."

Part of the group were found to be suffering from a neurosis. In many cases, the men had been neurotic before the attack of jaundice or even before induction, or they had had a latent neurosis which was aggravated or brought on by the illness and the long hospitalization.

This group was greatly benefited by a carefully planned program of rehabilitation. They were put into uniform, became once again part of the armed forces and spent a portion of each day at the sports arena indulging in graduated games and calisthenics.

However, 37 patients, 18.5% of the group studied, were extremely weak and exhausted, and suffered from nausea and vomiting brought on by the first bite of food or by walking even a short distance. Fingers and feet were icy cold, yet it was not unusual to see perspiration actually dripping from the tip of each finger. Even the effort of shaking hands would bring on a tremor of the hands.

The medical officers term the weakness of these men as "devastating and overwhelming."

"For example," they report, "it was impossible for many to complete the writing of a postcard without resting at least once, nor could they dress themselves without noticeable exhaustion."

This group of 37 patients showed but little improvement under rehabilitation. They failed to gain in weight, and sweating of hands and feet was still excessive. The tremor remained constant. There

bottle of hormone tablets at the corner drug store.

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was, however, objective evidence of improvement in the liver functions and at the end of the period of observation, 23 had fully recovered in this respect.

Whether all will eventually recover completely, only further time will tell, the investigators conclude.

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ORNITHOLOGY

Hummingbirds Must Learn To Get Food from Flowers

► **YOUNG** hummingbirds apparently do not realize that honeysuckle, larkspur and bird-of-paradise blossoms offer an inviting source of food until at least two weeks after they have left the nest, Frank Bene of Phoenix, Ariz., reports in the *Condor*, a magazine of Western ornithology.

The earliest acts of the young birds which bear any semblance to feeding behavior, Mr. Bene finds, are extension and retraction of the tongue, and probing twigs and leaves with the bill, at first while perched on a twig and later while hovering about it on the wing.

Hummingbirds seem to recognize flowers as a source of food only after



NOT BY INSTINCT—This black-chinned hummingbird seemed to recognize the honeysuckle blossom as a source of food only after it had acquired sufficient strength for sustained flight. Photograph by Frank Bene.