

BIOCHEMISTRY

Gland Chain Reaction

Members of National Academy of Sciences hear reports showing that the very small adrenal glands are important in health functions not yet completely understood.

► ARTHRITIS, SEX and cancer all seem to have links with two very small organs of the body, the adrenal glands. These glands, situated just above the kidneys, have become well known to the layman since discovery that they produce cortisone.

Their other functions in health and disease are still not completely known. Members of the National Academy of Sciences meeting in St. Louis heard and gave reports of facts tending to solve some of the mystery of the adrenal glands.

The sex-gland-stimulating effect of these glands is achieved only when the adrenal glands themselves are sick and their hormone factory out of order, studies by Dr. Carl R. Moore of the University of Chicago suggest. In the sick state, the adrenal gland factory apparently produces chemicals with effects ordinarily attributed to sex glands.

Overgrowth of the adrenal glands is one fairly frequent condition in young men and women. Often it masculinizes the women. Apparently this is part of a complicated gland-hormone-reaction chain of which "only some major links are known," Dr.

Emil Witschi of the State University of Iowa, Iowa City, stated.

By giving large doses of female hormones he was able to produce this condition in tadpoles. The adrenal tissue was increased tenfold and the sex glands of genetically female larvae were transformed into hermaphrodite glands or male sex glands. But when the pituitary glands were removed before the female hormones were given, the adrenals did not enlarge.

The chain reaction, as now known, proceeds like this: The high female hormone concentration apparently decreases the sex gland influence of the pituitary. This in turn leads to an increase in ACTH production and a consequent overgrowth of the adrenals. At a certain level, the hormones produced by the enlarged adrenals reach a masculine level which in frogs is enough to dominate even the sexual differentiation of the male and female sex glands.

Cortisone, famous anti-arthritis hormone of the adrenal glands, can be converted into the biologically active Compound F by the liver, Dr. Albert B. Eisenstein of Washing-

ton University School of Medicine, St. Louis, reported. This discovery, made by incubating rat liver slices in small amounts of cortisone, shows that the liver can not only inactivate steroid hormones such as the sex hormones but may also be able to produce other active hormones.

Science News Letter, November 22, 1952

MEDICINE

Cigarette Smoke Tar Found Cancer-Producing

► TAR FROM cigarette smoke will produce cancer in mice when painted on the skin over a period of about a year, Drs. Evarts A. Graham, Ernest L. Wynder and Adele B. Croninger of Washington University School of Medicine, St. Louis, and Memorial Center, New York, reported to the National Academy of Sciences meeting.

A connection between cigarette smoking and lung cancer had previously been reported by Dr. Graham and by English scientists. These statistical studies, Dr. Graham said, showed that in cases of cancer of the lung there is almost always a history of excessive cigarette smoking for a period of at least 20 years, and that it is rare to find a case in a non-smoker.

Lung cancer, he pointed out, has increased so much in frequency in the past 40 years that it is now the most common internal cancer in the male sex.

Science News Letter, November 22, 1952

NUTRITION

Daily Iron Ration Needs Increasing

► THE IRON ration at present recommended for the daily diet needs to be increased, it appears from studies reported by Drs. Carl V. Moore and Reuben Dubach of Washington University School of Medicine, St. Louis, at the meeting of the National Academy of Sciences in that city.

To get the most out of iron-containing foods, vitamin C is needed, their studies also suggest.

The present recommended ration of about two-tenths of a grain (12 to 15 milligrams) per day is "none too high," these scientists state on the basis of their findings.

Only 10% or less of the iron in foods is actually absorbed, they found from studies with foods containing radioactive iron which could be traced through the body and its assimilation measured. The foods they studied were those which could most easily be produced or grown so as to contain the radioactive iron. These were eggs, chicken and rabbit liver, chicken muscle, mustard greens and spinach.

Healthy persons absorbed less than 10% of the radioactive iron in these foods. Persons on iron-deficient diets did not assimilate the iron from food any more efficiently than normal persons. Giving vitamin C or foods containing it enhanced the absorption of iron from food.

Science News Letter, November 22, 1952

HOME ECONOMICS

Farmhouses That "Grow" Get Experimental Tryout

► FARMHOUSES THAT "grow" with the family currently are being tried out on an experimental basis by the U. S. Department of Agriculture.

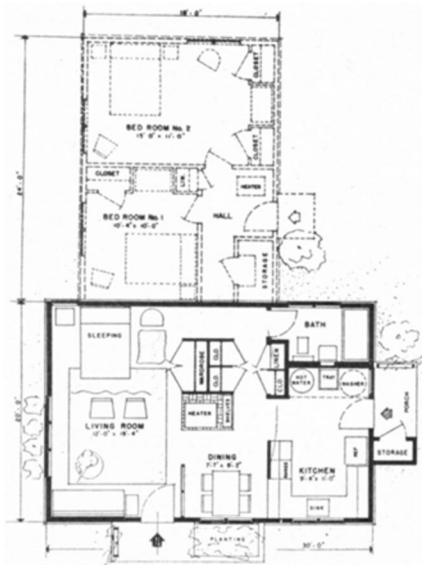
Designed for young couples of modest incomes, the farmhouse starts out as a basic two-room unit to which other rooms can be added as the family grows. The basic unit consists of a kitchen and living room, plus a bath and closet space.

Three such basic units already have been built at the Agricultural Research Center, Beltsville, Md. One has been occupied recently by two house-testers who are advising the designers of the "livability" of the economy houses.

Each of the three experimental houses is built of different materials. Each incorporates different cost-cutting ideas. Later comparisons should reveal which materials and ideas are the best.

Both kitchen and living room of the basic house are "generous" in size so they will match the expanded house later. The living room doubles as a bedroom, and has two lounges, one at each end of the room. When not in use as beds, the lounges are slip-covered and are pushed partly under their headboards.

Science News Letter, November 22, 1952



EXPANSIBLE FARMHOUSE DESIGN—Architect's sketch of the two-room expandable farmhouse which has been furnished by the Bureau of Human Nutrition and Home Economics for tests of living convenience. The basic unit is outlined in black, projected additions by dotted lines.