

researches led to the rejuvenation operation.

Dr. Steinach's emphasis on sex hormone treatment is in line with the work of American medical scientists, many of whom have been extremely critical of the results claimed for his operation. Sex hormone treatment is now being used by a number of American doctors with good results not so much in rejuvenation

of elderly people, but in stimulation of normal sex gland activity when this has been lacking in young people.

For the future, Dr. Steinach says his work points to a prospect of "no land of eternal youth, but one of bearable old age in which within natural limits the optimum physiological conditions of life prevail."

*Science News Letter, May 11, 1940*

## GENETICS

## Double Blessed Event More Likely For Older Fathers

IF YOU are an expectant father, your chances for having twins instead of one son or daughter are slightly greater with each year of your age, it is revealed by a statistical study conducted by the National Institute of Health and reported (*Human Biology*, Feb.) by Drs. J. Yerushalmy and S. E. Sheerar.

Older mothers are more likely to give birth to twins than are younger women. And twin births occur with much greater frequency in families already large than they do as first or second births.

But the fact that older fathers are more likely to have twins cannot be explained by the fact that older women are more likely to have older husbands. When only the births to young mothers are considered, there is still a considerable increase in the proportion of twin births to total deliveries with advancing age in the father.

The influence of age of mother and order of birth, although showing up clearly when all twin births are considered, seems to apply principally to the births of non-identical twins, those resulting from a double ovulation rather than the dividing of a single egg cell.

Mirror imaging in twins, the trick of nature that makes one twin look like the other's reflection with reversed

handedness, hair whorl, and so on, is explained by Dr. H. H. Newman of the University of Chicago, in the same issue of *Human Biology* as being due to environmental rather than hereditary influences.

Such reversals, whether superficial ones like hair growth or fingerprint patterns, or even having the heart and other organs on the wrong side, are much more common in joined "Siamese" twins than in separate identical twins, and in joined twins occur much more frequently in the right-hand member. Joined twins are due, it has been found, to twinning so late in the development of the embryo, that production of two complete and separate individuals is impossible.

Mirror imagery often accompanies the occurrence of defects in development and is probably due, Dr. Newman concludes, to growth-depressing agents.

*Science News Letter, May 11, 1940*

## CHEMISTRY

## Derivative of Castor Oil Now Used in Fly Spray

ADD to castor oil's usefulness: a new fly spray is made from it. A derivative of castor oil is being used to

replace part of the pyrethrum in commercial fly sprays. Large quantities of pyrethrum obtained from a species of chrysanthemum plant are used in suitable hydrocarbon oil bases as fly sprays. The most important of the chief sources of pyrethrum is Japan and the supply is adversely influenced by the war. Castor oil when subjected to heat is broken down into undecylenic acid, heptaldehyde and residues. The undecylenic acid is separated by distillation and treated with isobutylamine to form isobutyl undecylenamide. This, when used in combination with small amounts of pyrethrum in a suitable base oil, is an excellent fly spray, better than either pyrethrum alone in the base oil, or isobutyl undecylenamide alone.

*Science News Letter, May 11, 1940*

## PHYSICS

## Exiled Woman Scientist Continues Work on Uranium

OUT of war-threatened Stockholm comes the latest news on uranium fission—the amazing splitting of this heavy element by weak neutrons with the release of enormous amounts of atomic energy.

Reporting in the British scientific journal, *Nature* (March 16), is Dr. Lise Meitner, exiled German Jewish woman scientist, who first suggested to Prof. Otto Hahn in Berlin that his pioneer experiments really showed that uranium was split by neutron bombardment. Dr. Meitner, for years before the coming of Hitler to power in Germany, had been a close associate of Prof. Hahn in his researches.

At the Research Institute for Physics in Stockholm Dr. Meitner has been carrying out experiments on the capture "cross-sections" of atoms of lead, thorium and uranium exposed to the neutrons.

The problem of cross-sections is a vital one in nuclear physics for it helps to determine whether a bombarding particle like a neutron will be scattered by the nucleus or captured.

One may visualize "a capture cross-section" by a baseball analogy. The area over which a player, standing still, can catch a baseball thrown at him would be his "capture cross-section." All players would have different capture cross-sections for baseballs, just as the nuclei of atoms have different capture cross-sections for neutrons. This is a rough picture intended only to give a partial idea of the meaning of a cross-section as physicists use it.

Dr. Meitner says that the nucleus of

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lead atoms has a cross-section of 2.5 units of atomic cross-section area.

By comparison thorium has a cross-section over twice as large, or 6.0 units.

Finally, uranium with mass 238 (the kind that releases atomic energy) has a cross-section of 1.5 and is thus small by

comparison, so that having neutrons hit uranium atoms and split them is no easy task.

The unit of atomic cross-section used is equal to  $10^{-24}$  square centimeters, or 0.000,000,000,000,000,000,001 square centimeters.

*Science News Letter, May 11, 1940*

## CHEMISTRY

## Nylon, Rival of Silk, May Soon Compete with Wool

### Versatile Synthetic Fiber Enters New Field With Process To Make It Heat-Insulating, Moth-Proof

**N**YLON, versatile synthetic fiber material which is now entering the fine hosiery field because of its silk-like qualities, may next tackle natural wool as a competitor.

A new patent, issued by the U. S. Patent Office, covers the production and processing of a crimped wool-like fiber made from nylon. The new patent is issued to John Blanchard Miles, Jr., scientist of E. I. du Pont de Nemours and Company, and is assigned to du Pont.

The new wool-like nylon is said to approach, "and may even equal" wool in its heat-insulating properties. Other claims of superiority include strength, heat stability, dyeing characteristics, elasticity, mothproofness and immunity to any harmful action by common cleaning fluids or processes.

E. K. Gladding, manager of the nylon division of du Pont, says there is no immediate commercial production planned for the new wool-like nylon fiber. Such production will require new types of manufacturing equipment, all of which must yet be designed and built.

The patent covers the conversion of filaments from synthetic linear condensation polymers, particularly polyamides, into wool-like fibers by mechanical methods of "crimping" either prior to, during, or following the "cold-drawing" process which is used in making nylon yarn. In general the patent states that at least four crimps to the inch are required to obtain a wool-like material.

The retention of the crimp quality after the stretching that occurs in normal use is improved by hot water or steam setting treatments. The new fiber lends itself to the preparation of mixed fibers and its luster can be controlled in manufacture to improve its appearance.

Nylon is the chemical material which in fine filaments can be made into sheer, strong and water-repellent hosiery which will be on the market May 15. In thicker filaments it is being used for fish lines and leaders, and coarse bristles of nylon are appearing in toothbrushes. The application to a crimped wool-like fiber is the newest achievement of this versatile chemical material.

*Science News Letter, May 11, 1940*

and which says that the Pacific Ocean is a scar on the earth—created when the moon was torn away 10,000 years ago by a powerful tidal force.

Some of the loose matter which was pulled away with the moon did not fall back immediately to earth, Dr. Rufus says, but rather continued to revolve out in space for some time. These particles, he believes, were similar in composition to the matter which is contained in Saturn's rings today, and are the same glassy "tektites" found in the Pacific area.

The composition of the primitive earth at the time of the moon's fission is not known today, but it is generally believed that the rupture occurred while the earth was beginning to solidify. According to Dr. Rufus' explanation, the earth was made up of an upper layer of hard granite with a lower layer of glassy basalt beneath the granite.

"When the fission occurred," the astronomer continues, "it seems very probable that the mass of the moon stripped the Pacific area of its granite layer and probably lifted some of the material from the glassy layer. The glassy part being deepest, it was the last to leave the earth and would therefore constitute the material which formed the detached fragments."

These particles were drawn into the earth's atmosphere at "speeds sufficient to produce the typical forms which are characteristic of tektites today."

Further evidence to support Dr. Rufus' contention is the series of large trenches on the floor of the Pacific Ocean, parallel to the area in which the tektites are found. These trenches are thought to extend deep into the glassy area.

*Science News Letter, May 11, 1940*

## CONSERVATION

## Trumpeter Swans Saved From Threatened Doom

See Front Cover

**G**RACEFUL white swans, that glide through many a popular song, almost lost one of their most beautiful native American species a few years ago. The trumpeter swan, once down to a doubtful score or so of birds, responded to the 1939 census with 199 specimens, with every hope of further increase. The bird shown on the front cover was photographed by a member of the U. S. Biological Survey on the Red Rocks Migratory Waterfowl Refuge in Montana. The entire trumpeter swan population of the world is concentrated there and in Yellowstone National Park.

*Science News Letter, May 11, 1940*

## ASTRONOMY

## New Theory Shows Moon Once Part of South America

**T**HOUSANDS of small glassy objects, called "tektites," discovered on the southwestern shores of the Pacific Ocean are important evidence that the moon was once a part of the earth, according to a theory advanced by Dr. Carl W. Rufus, of the University of Michigan astronomy department.

These tektites have been studied by scientists for more than 150 years, but there has never been a satisfactory theory for their origin.

Dr. Rufus' explanation of the phenomena is based largely upon the general "fission" theory of the origin of the moon, developed by Sir George Darwin,