



#### SINK OR FLOAT

The essence of the new coal refining process is shown here. Dr. E. F. von Wettberg picks the pure coal from the top of the bowl which is filled with a liquid of a density between that of the slate and the coal. The slate remains on the bottom.

been named, is expected to replace mechanical sorting means now used by coal mine operators to separate some of the coal from second grade material containing slate.

The "jigs" used at present for this purpose, are relatively inefficient, leaving considerable coal on the refuse pile. The process is important economically partly because of the fact that pure veins of coal, particularly anthracite, are inadequate to meet the demand.

*Science News Letter, May 7, 1938*

#### PSYCHOLOGY

### Babies Imitate Without Any Need for Teaching

WHEN baby first says "Da-Da" after his proud father, it is not because he has been taught to imitate, Dr. Wayne Dennis, of Clark University, declares. In an experiment reported by Dr. Dennis, twin babies were brought up with no rewards for imitation and no attempt on the part of adults to imitate the babies. The baby naturally repeats his own actions or imitates himself, and he imitates the adult at the very first opportunity, Dr. Dennis said. The twins very seldom imitated each other, however.

*Science News Letter, May 7, 1938*

#### ASTRONOMY

## New Kind of Star Group Discovered at Harvard

### Egg-Shaped Mass Undiscovered Until Present Because Light From its Thousands of Stars is Extremely Faint

A GIGANTIC star-cluster, unlike any known class of cosmic systems, possibly a member of a whole family of such star clusters previously unsuspected in the universe, has been discovered by Harvard astronomers.

The egg-shaped group is located in the southern constellation Sculptor. Because its light is extremely faint, only the most powerful telescopes can detect the individual star members. This unusual faintness probably explains why the cluster has been hidden from man until now. Otherwise, its tremendous size, including thousands of stars and extending over a range of two degrees in the heavens, would easily have revealed its existence.

Discovery of the group as described by Dr. Harlow Shapley, director of the Harvard Observatory, was largely a matter of good luck, for only the fact that an unusually sensitive photographic plate happened to be exposed on Sculptor on a very clear night, revealed its existence. The exposure was made at Harvard's South African observation station at Bloemfontein.

#### Resembles Three Types

Many characteristics of the new cluster are similar to those of three entirely different types of stellar systems, the globular star clusters, the Magellanic clouds and the spheroidal galaxies. The Sculptor group differs markedly from each of these on many points, however, and thus may be representative of a heretofore unknown class somewhere between these three.

Able to count the thousands of stars now visible in the cluster with relative ease, astronomers have not yet been successful in measuring its distance or size, characteristics essential for proper classification of the object. Astronomers are now photographically combing the cluster for variable stars whose flickerings can be used as astronomical yardsticks in determining these distances.

Except for a small elongation in the east-west direction, the cluster appears roughly globe-shaped, and its individ-

ual stars can be seen and counted easily on the best photographs. They are arranged fairly compactly at the center of the group with the space between each star increasing fairly regularly toward the cluster's rim.

The very brightest stars in the system are only about the eighteenth magnitude, extremely faint, inasmuch as the naked eye can detect stars only up to about the sixth magnitude. In general the brighter stars seem to be bunched more closely in the center, although there is no nucleus to the cluster or any outstanding nuclear stars. Off-center clusters, cloud-like formations or other irregularities which would spoil the system's marked uniformity are also absent.

#### Little Total Illumination

About 10,000 stars are in the group with magnitudes between 18 and 19.5 according to preliminary estimates. Astronomers have no idea how many fainter stars it may contain. Despite this tremendous number of stars, the cluster yields surprisingly little total illumination and Harvard astronomers are of the opinion that some unusual physical characteristics of the stars, or of the group, cause this low brightness. This conjecture substantiates the suspicion that the cluster may be typical of a large family of such objects scattered throughout the universe whose low luminosity has heretofore concealed them.

At first astronomers tentatively interpreted the faintness of the cluster as indicating they had found a super-galaxy, an unusually far-off system of thousands of island universes, each of them similar to and about the size of our own Milky Way, but later photographs showed that the cluster's separate bodies are not individual groups of millions of stars but individual stars.

Most probable of the conjectures offered concerning the nature of the cluster, in the light of evidence so far uncovered, Dr. Shapley said, is the theory that the stars may have an absolute

magnitude of minus 1.5, about that of the brightest stars in the globular star clusters. Proof of this, of course, must await the discovery of variable stars in the group, but if the assumption is correct, the cluster is about 250,000 light-years away and has a diameter of about 6500 light-years.

*Science News Letter, May 7, 1938*

## PHYSIOLOGY

## New Sex Hormones Aid in Studies of Gland Ailments

**T**WO newly-discovered male hormones found in women of the "bearded lady" type were described by Dr. Fred C. Koch of the University of Chicago at the New York Academy of Medicine.

Chemically these two new male hormones are related to one of the female hormones and to the cortical hormone of the adrenal glands. This suggests, Dr. Koch pointed out, that women become "bearded ladies" because of disorders in either adrenal glands or ovaries which lead to production of the new male hormones.

Total number of known male hormones is now seven, Dr. Koch reported. Chemical studies of these hormones may lead in future to tests which will show whether too much or too little of any or all of them are being produced in the body. This would enable physicians to detect various glandular disorders at an early stage without resorting to exploratory operations.

The adult of the human species is unique, Dr. Koch pointed out, in that both males and females excrete from 20 to 100 times the weight of male hormones per liter as stallion, bull, ram or male rats. The total weight of male hormones excreted by men and women in the United States is estimated at between one-half and one ton per day.

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A bee laden with honey cannot sting, even in self-defense.

## ARCHAEOLOGY

## 1,045 Dishes in Tomb Believed New Record

**O**NE thousand forty-five vases—archaeologists counted them—were found when a French expedition dug its way into a tomb in Syria.

Explorers are accustomed to find a pottery bowl or two in primitive or ancient graves. Placing offerings of food and drink with the dead is a widespread custom that began far back in prehistoric times, and that has seemed reasonable even to some well advanced civilizations. Occasionally a burial is found containing a large assortment of dishes. But over a thousand of them, intact—well, that is believed to constitute a record. It would stock a sizable shop.

Explaining why so much pottery was showered on a tomb containing two individuals is a problem for archaeological reasoning. A British archaeologist, M. E. L. Mallowan, suggests this answer:

He thinks the two buried there may have been so venerated that for generations people continued to bring offerings.

Other clues besides pottery point to this theory. There were large quantities of goat bones in the tomb, which may have been remnants of ritual feasting. The tomb was supplied with an entrance like a well shaft, down which offerings and the goat bones could be lowered.

This Syrian tomb is at least as old as the eighteenth century before Christ. Mr. Mallowan regards it as older, possibly as early as 2500 B. C.

*Science News Letter, May 7, 1938*

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