



#### YOLK-SACS COMPARED

*Embryos of chick and monkey at comparable stages, as exhibited by the Carnegie Institution of Washington. The monkey embryo is shown as five times the size scale of the chick. The yolk sac of the latter is therefore enormously larger than that of the mammalian embryo.*

PHYSIOLOGY—GEOLOGY—ASTRONOMY

## X-Rays of Human Speech Shown at Carnegie Exhibit

### Relic of the Most Ancient Animal Life and Pictures Taken Through the Interstellar Dust Also Shown

**Y**OUR voice is muffled rather than reinforced by passing through your mouth. And in most voice sounds the supposed resonating cavities of the nose have no part at all.

These discoveries, at variance with what has always been believed about human voice production, were demonstrated at the annual exhibition of the research work of the Carnegie Institution of Washington. They represent the results of research conducted by Prof. G. Oscar Russell of Ohio State University under a grant from the Carnegie Corporation of New York.

X-rays made at the high-speed exposure rate of a hundred and twentieth of a second showed that practically all the sound of the voice is the direct production of the larynx. A flap of soft tissue cuts off the supposed "resonating" cavities of the nose altogether during most of the period of voice production, and the soft linings of the mouth cavity

absorb some of the sound energy as it passes through.

#### Yolk Sac of Embryo

Another exhibit showed the rarely observed yolk sac in a very early stage of development of a monkey embryo. At this stage, future monkey and future man are practically indistinguishable.

The mammalian egg does not have a yolk composing a food reserve, as does the egg of a bird, but the yolk sac is there none the less. It is not simply a useless vestige left behind in the evolutionary process, but serves an important function in the making of blood for the developing young animal.

#### Most Ancient Animal Life

One of the earliest known remains of animal life on earth was shown. It consists of a slab of sandstone containing an excellently preserved imprint of a jellyfish that lived in pre-Cambrian

time, more than 600,000,000 years ago. This fossil was found by Dr. N. E. A. Hinds of the University of California, a research associate of the Carnegie Institution, in the Grand Canyon of Arizona.

The jellyfish drifted ashore and died when the rocks near the bottom of the Canyon were soft sand of an ancient sea beach. There was no skeleton to preserve, but the imprint left on the sand, covered by other sand washed in by the next tide, was left undisturbed while it hardened into rock and was covered deeper and deeper. Later geologic processes resulted in the cutting of the Canyon and the resurrection of the jellyfish.

#### Dust Between the Stars

The universe may still contain as much of chaos as it does of cosmos. Studies at the Mount Wilson Observatory, to be made the subject of one of the exhibits, indicate that there are vast quantities of unorganized matter still drifting about as dust in the spaces between the stars.

This interstellar dust gets in the way of light rays, as does smoke or fog, and thereby obscures the vision of astronomers studying distant star clusters and galaxies. Recently this handicap has been partly overcome through the use of photographic plates sensitive to infrared rays, which have shown clearly the structure of star clusters that have been invisible or only faintly visible to previously used types of plates.

The physical behavior of radiations passing through these masses of space-dust leads to the inference that the average diameter of the particles must be close to one ten-thousandth of a millimeter, or a quarter-millionth of an inch.

*Science News Letter, December 18, 1937*

CHEMISTRY

## Germans Marketing Soap Made From Coal Fat

**N**OW on sale in Germany is soap made from fat that comes from German coal. Large scale production of this soap is reported by *Industrial and Engineering Chemistry*, technical journal of the American Chemical Society.

The "coal" soap, as it may be called, is slightly higher in price than soap made from animal or plant fats but the scarcity of the natural fats lends economic significance to the development. Large scale production, it is hoped, may cut costs so that the new soap can sell at normal price levels.

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