

The principal skeleton in this tumulus was that of a man, stretched out full length, with skull intact. Above it was the skeleton of a woman, and nearby that of a child with a bronze bracelet on its arm. Clustered round were the bones of about a dozen other persons, all adults, and all with their skulls caved in as though by blows of clubs or heavy stones.

Dr. Alexander Seracsin, Vienna archaeologist, who reports the find in the German scientific journal *Forschungen und Fortschritte*, thinks that these battered skeletons may be those of the

chief's wife and son, and of members of his household, who chose (or were chosen) to follow their dead master into the underworld.

Dr. Seracsin reports the excavation of two other burial mounds of later date in the same neighborhood. These belonged to two different periods in the Iron Age. Nearby there is also a very old churchyard of medieval and modern times; so that in this small area there is a continuous record of life, death and burial from Bronze Age times down to the present.

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#### ARCHAEOLOGY

## Scientist Studies Abandoned Mexican Cities on Cliff

**T**WO ANCIENT Indian cities never before visited by archaeologists have just been explored by Eduardo Noguera of the Mexican Department of Pre-Spanish Monuments.

These two sites, Toluquilla and Ranas, some twenty miles apart in the Sierra Gorda mountains of Queretaro, are veritable fortress cities built on precipitous cliffs whose only approaches are defended by double and triple walls of enormous thickness. The abandoned cities, now covered with a dense vegetation, once dominated extensive regions. They are near no modern cities or towns, but because the explorations have revealed that they are probably among the most important ruins in the country, the Mexican government is preparing to clear the site.

The exploration and excavations made by Senor Noguera indicate that these are probably Toltec cities, built by a race which antedated the Aztecs who dominated middle Mexico before the Spanish Conquest. The Toltecs flourished centuries before Columbus discovered America, and were the conquerors of the famous Mayas of Yucatán a thousand miles away.

Toluquilla has two great "ballcourts," rectangular areas enclosed by massive walls of stone, typical of the Toltecs, and found wherever these people once imposed their culture, a most famous example being the Maya city of Chichen Itza which has its Toltec ballcourt. Toluquilla's sister-city of Ranas has two such ancient playgrounds.

Although cornices, facades, and

other architectural details of the buildings of these two cities are distinctly Toltec, there is also evidence of the Totonacs, a people who lived on the coastal plain of Vera Cruz and the Panuco River basin. Such is the discovery in Toluquilla and Ranas of stone "yokes" beautifully sculptured, and typical only of the Totonac culture.

The use of these yokes, known in the Vera Cruz region, has always been a mystery to archaeologists. They resemble yokes of oxen, and some archaeologists think that these great horse-shoe shaped stones might have been hung over the victim's neck to weight the head in human sacrifice. The

#### MEDICINE

## Ordinary Decay of Teeth Is Controlled by Proper Diet

**D**ENTAL CARIES, a disease in which the teeth decay and cavities form, can be controlled by suitable diet, it appears from the report to the American Dental Association of Dr. R. W. Bunting, Dr. Philip Jay and Dr. Dorothy Hard of the University of Michigan School of Dentistry.

These investigators carried on an experiment in caries control for one year with three large groups of children in public schools and orphanages. The children were given a varied diet, fortified by one quart of milk and some



ANCIENT PERFUMER

The head-shaped object pictured above is an incense burner typical of those used by the Toltecs, the race of Indians which flourished centuries before Columbus discovered America. Found in the region of the newly-explored cities, Toluquilla and Ranas, the incense burner is expected to be of value in tracing relationships between these Toltec municipalities.

presence of these typical Totonac objects in an otherwise largely Toltec city suggest that this was the meeting-ground of the two cultures. Early chronicles say that the Toltecs came from the Panuco region, and settled in middle Mexico a while before they ventured south to conquer the Mayas, perhaps some early relatives.

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green vegetables and fruit for each child every day. They were given neither cod liver oil nor viosterol. They had no sugar on cereals or in beverages, very little sweetened preserves and pastries, and little or no candy.

"The elimination of sugar was made on the assumption that the average child consumes more carbohydrate in this form than is required and that such overconsumption of sugar perverts the appetite for other necessary food factors, thus unbalancing the diet," the investigators reported.

In addition to the diet, a mouth wash of hexylresorcinol diluted with three parts of water was used daily.

At the beginning of the experiment, the teeth were carefully examined and their condition recorded, with actual drawings of the approximate size and location of all cavities and fillings. At the end of the year, the children were examined again in the same manner, and the results of the two examinations compared.

In three groups in which fairly adequate diets were provided, active caries was almost negligible and old cavities were quite uniformly arrested. In two groups in which the diets were not carefully planned, the dental disease was very rapid and active in its course. Further similar studies are planned.

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## FORESTRY

## New Woods Sought For Lead-Pencils

THE PENCIL wood supply near large factories is practically exhausted and the industry is now investigating the possibility of utilizing Alaska red cedar, the finest-grained wood of the Northwest. Cedar wood intended for lead pencils must be soft, light yet strong, close and straight-grained and free from defects. The older the tree the better pencil wood it makes. The wood from the heart of aged logs that have lain in deep woods for years makes admirable pencil material.

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## PHYSICS

# Novel Centrifuge Whirls With Speed Triple That of Bullet

## University of Virginia Physicists Invent Device That Has Developed Force Equal to a Million Gravities

A NEW TYPE of centrifuge, whirling so rapidly that its rim travels three times as fast as the bullet leaving the muzzle of an Army rifle, has been devised at the University of Virginia by Dr. J. W. Beams and A. J. Weed. They describe their invention in *Science*.

The principle of the new centrifuge is very simple. The moving part consists of a metal box shaped like a top, with flutings placed at an angle on its underside. This rests in a conical cup, into which a stream of air is forced under pressure from beneath. The air lifts the top, thus serving as a virtually frictionless bearing, and at the same time pushes against the flutings as against the blades of a turbine, spinning it around at terrific speed.

The two physicists state that they have obtained rotational speeds as high as half a million a minute with their apparatus. With one specially constructed model they obtained speeds of such an order that the rim was moving at the rate of about 10,000 feet a second. This is approximately three times as fast as a bullet moves at the instant it leaves the

muzzle of a military rifle. Dr. Beams and Mr. Weed state that they have obtained centrifugal force equal to a million times the force of gravity.

Centrifuges are used in laboratories and factories and on farms for speeding up the separation of things so intimately mixed that they would take a long time about coming apart if left to themselves. The cream separator and the Babcock milk tester are two types of centrifuge in very common use. Devices that whirl the water out of clothes, used in laundries and in some types of home electric washers, are also centrifuges. In scientific laboratories much higher centrifuge speeds, with correspondingly higher forces, are needed for such operations as clearing fine silt out of turbid water, separating cells into their constituent parts, and getting tiny water droplets out of oil.

By means of ingenious arrangements of outlet tubes, the two Virginia scientists are able to operate their centrifuge continuously, feeding new supplies of the material to be separated in through a center opening and obtaining the parts separated out in one or more collectors mounted on top of the apparatus.

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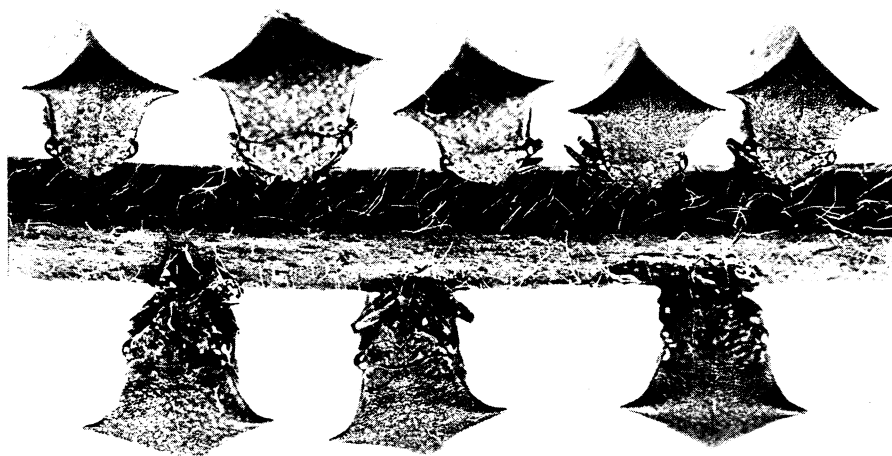
## ORNITHOLOGY

## Italy's First Bird Station Established by Prince

PRINCE CHIGI of Rome, one of the most prominent of Italian ornithologists, has provided ground and buildings upon his property, Castel Fusano, near Ostia on the west coast of Italy, for a bird station. Here bird migration will be scientifically observed. Prof. Raffaele of the University of Rome has been placed in charge.

Nets are used to capture the birds arriving from Africa between March and July. The captured birds are tabulated, banded and set free. In the fall the migrations of the thrushes will be studied.

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### IN THEIR WORLD THERE IS NO UPSIDE DOWN

Solemn as so many capped French judges, this sociable group of buffalo tree-hoppers might be mirror people contemplating their own images, but for the fact that their numbers and positions fail to match. Motionless, for many minutes, they belie their agility. Disturb one, and he leaps away so suddenly that it seems like a magic disappearance.