

## VITAL STATISTICS

**Chances to Have Large Family are Very Slim**

**T**HE PROBABILITY that a boy born in the United States today will grow up to have a very large family is very slight indeed, it is indicated by a table of chances included in a report by Dr. Alfred J. Lotka, a life insurance statistician of New York City, to the Washington Academy of Sciences.

The newborn boy has only one chance out of 10,000 of eventually marrying and having 18 children. He has less than 972 chances out of 10,000, not quite one out of ten, to have a family of just three children. But there are 3,686 chances out of 10,000 that he will have no children at all.

The chances of having a son to carry on the family name are, of course, even slimmer. The chances for the population in general are 4,981 out of 10,000 that no son will ever be born to today's newborn boy. They are 2,103 that he will have just one son, 1,270 that he will have just two sons, and they gradually dwindle until they number only 5 out of 10,000 that he will have ten sons.

In a particular family, Dr. Lotka points out, the chances for sons may be greater or less, because of the fact that there is a marked tendency, due undoubtedly to physiological causes, for some families to have a considerably larger proportion of one sex, either boys or girls.

For the general population, however, the chances are nearly nine out of ten that the male succession and hence the family name for that particular branch will die out.

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## GENERAL SCIENCE

**Wells Sees Economics As Branch of Biology**

**"E**CONOMICS is a branch of ecology."

With this definition, H. G. Wells, literary campaigner for more organized knowledge diffused more widely, put biological science in a position basic to the science of ordered civilization.

Ecology, Mr. Wells explained to questioning reporters in an interview at Washington, is concerned with the relationship of the living being to its environment. It is an area within the broad field of biology. And Mr. Wells views

economics and sociology, potential saviors of a faltering civilization, as based on biology.

Asked whether our present civilization contains within itself the means to cure its economic ills, Mr. Wells said that the popular notion that economists always contradict each other is not true. The growing body of economic and political science is not so operative in present day life as physics and biology, but, in Mr. Wells' opinion, it must become more effective.

If it is desired to build a new electric power plant, Mr. Wells explained by analogy, it is not planned by taking a popular vote but instead experts are called in. He foresees that our social structure will become more and more planned by economic and sociological experts.

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## GEOLOGY

**Earthquakes Responsible For Undersea Canyon**

**E**ARTHQUAKES brought into existence the canyon under the Mediterranean Sea, or, in the language of the geologist, the "submarine trough," recently discovered off the east shore of Cyprus. This is the view expressed by Prof. J. W. Gregory, noted British geologist, in a report to the *Geographical Journal*.

The trough was discovered when officers of H. M. S. *Ormonde* were making a survey of waters east of Cyprus. The trough is half a mile long, quarter of a mile wide, with flat, slanting floor and remarkably steep walls. The floor of the chasm is between 700 and 980 feet below the surface of the sea.

The hydrographer is quoted as saying, "I do not recollect having seen on a chart such an abrupt and deep cleft like this."

"As the trough is opposite the ruins of Salamis," writes Prof. Gregory, "the first suggestion was naturally that it might have been made by the earthquakes which overthrew that city."

Taking into consideration the geological features of the Island of Cyprus, Prof. Gregory finds two possible ways in which the trough might have come into existence. One is by excavation wrought by river or sea. The other is by foundering of the sea floor in some geologic convulsion. The latter is more plausible, the British geologist considers. Cyprus has had earthquakes both in ancient and modern time.

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**IN SCIENCE**

## MEDICINE

**Rat-Bite Fever Germ Reported from Manila**

**T**HE CASE of a native child who developed rat-bite fever after being bitten by a rat has been reported by Ana Vazquez-Colet of the Bureau of Science at Manila to the *Philippine Journal of Science*.

The disease has been known for a long time in China and Japan and a few cases have been reported in the Philippines, but this is the first time that the organism causing it, *Spirocheta morsus muris*, has been found in a case at Manila.

The patient, a girl four years old, was bitten on the forehead by a rat while in bed. The bite healed, but a week later she developed fever and the skin around the healed bite became swollen and red. The fever came and went, with periods of about two days in between when there was no fever. She was brought to the Bureau of Science for Pasteur treatment. A few drops of blood and some bits of tissue were obtained from the forehead near the bite. The organism causing the disease was discovered in examination of these specimens. The child recovered after about six weeks.

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## CHEMISTRY

**Potatoes That Blacken Detected by New Test**

**I**F YOU HAVE a lot of potatoes that turn black when they are cooked, you can at least partly overcome this troublesome tendency by putting a little vinegar in the water while they are being boiled.

This practical household hint is a by-product of an investigation by Dr. C. K. Tinkler of King's College for Household and Social Science at London. His primary objective was to work out a simple chemical test which would enable large-scale handlers of potatoes to detect such tubers as possess this value-damaging defect.

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# E FIELDS

ENGINEERING

## Floodlights to Illuminate Washington Monument

**S**OON the Washington Monument, 555-foot marble obelisk, will never be left in darkness.

To eliminate the hazards the monument presents to aviators, twenty new floodlights will be switched on about November 15, completely illuminating it for the first time. But all twenty will be regularly used only on foggy nights. Tests showed too much light gave the monument a rounded appearance, thus reducing its visibility.

Engineers, in considering illumination schemes, at first doubted the effectiveness of floodlights. They favored searchlights, located several hundred feet from the monument.

Experiments with both types showed the searchlights to be unsuited. Instead of concentrating on the monument itself, their beams extended across the road about the monument grounds. Now floodlights, in groups of five, will be placed forty feet from each side of the monument.

For years the only means of illuminating the tapering shaft, searchlights will still help drive away the darkness. The shape of Washington Monument is such that floodlights cannot reach the top, which veers off sharply to a point. Hence two searchlights located on nearby buildings will serve to keep the monument's peak clearly visible.

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ARCHAEOLOGY

## Pueblo Battle Trophies Concealed Underground

**C**ONCEALED in underground chambers in Pueblo villages are battle trophies which Pueblo warriors took from the Spanish conquerors in hard fought battles four hundred years ago. These old leather shields and spear heads, swords and halberds, have been seen by only a few white men, scientists engaged in research work. Some of these visitors have been allowed to look, but not touch, when they were

brought to the hiding places of the trophies.

"Certain of these old Spanish arms are at the present time in underground chambers in the old, nearly deserted village of Oraibi," reports Arthur Woodward, of the Los Angeles Museum, who has been visiting the Pueblos. "Some of the weapons have been given to 'the Old People' who are the spirits of the departed Hopi Indians. The Spanish arms have been given them along with old masks, old pottery vessels and other bits of sacred paraphernalia, to be used by them when they return at intervals from the Underworld to hold ghostly dances in the old plaza at Oraibi. Other pieces of the captured arms have been transported to a nearby village where they are kept hidden."

Until recent years, Mr. Woodward explains, young men of Oraibi carried spears, halberds, and swords in dances.

Three fine old leather shields, which belonged to Spanish soldiers from the Presidio of Santa Fe, and which were captured in battle by Indians of Acoma, are now on exhibition in Santa Fe. The shields were obtained by collectors from the Indians who owned them. The shields are oval with indentations at top and bottom. Upon the faces of these shields, which are made of two pieces of heavy bull hide laced together, are painted the coat of arms of old Spain in red, yellow, and green.

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ENGINEERING

## Pollution in New York Harbor to be Cleaned Up

**T**HIRTY MILLION dollars is being spent as the first move to clean up the most polluted harbor in the world. Work has begun on a new sewage disposal plant for New York to cost that amount.

The new plant will treat a flow of 180 million gallons of sewage daily, purifying part of the tremendous stream of waste water which continually empties into the harbor and its branches, it will be revealed in the forthcoming issue of *Civil Engineering*, published by the American Society of Civil Engineers.

Incorporating features of design applied successfully elsewhere, the plant will serve one-fifth of greater New York. It will be located at Wards Island in the East River. Several years will be required to complete it.

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ASTRONOMY

## Motion of New Asteroid Attracts Much Attention

**A**N ASTEROID that has just been discovered by Dr. K. Reinmuth, of the Königstuhl Observatory at Heidelberg, has attracted the attention of astronomers because of its unusual motion. With an average of three such discoveries every week, one has to be unusual to attract more than a passing interest. The new body, designated as 1931RA, is moving at a very slow speed through the sky. It would take nearly five days to travel the diameter of the full moon. Astronomers at the Rechen-Institut at Berlin, which keeps track of the asteroids, believe that this slow motion is due either to the fact that the new body is among the most distant, or else that it is moving with almost the same speed as the earth. In either event, the body is very interesting, so astronomers have been asked to observe it further.

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OCEANOGRAPHY-METEOROLOGY

## Warm Ocean Indicates Dry Winter in California

**C**ALIFORNIA will probably have a drier winter than normal this year. This is indicated by studies just completed by Dr. George F. McEwen and Dr. A. F. Gorton of the Scripps Institution of Oceanography. Observations over a considerable period of years have shown that offshore water temperatures higher than average are followed by winters drier than average, and conversely, lower offshore temperatures indicate wet winters. This year's offshore temperatures have been appreciably above ordinary.

The indication of the water temperature is reinforced by the position of the 1931-32 season in what is known as the Brückner precipitation cycle. This is a long, gradual swing from wet to dry weather and back again, the total period being from 22 to 33 years. Indications are that this season is the low point of the long precipitation cycle, the two California scientists say.

Scientists are familiar with the seasonal forecasts of Dr. McEwen, which have "hit it right" in a very high proportion of the years for which he has undertaken to offer figures on the indicated seasonal rainfall for typical regions of California.

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