

PUBLIC HEALTH

Cholera At Its Height As Fighting Fills Peiping

PRESENT fighting in China comes just at the time of the big cholera season, Dr. Victor Heiser, formerly of Rockefeller Foundation and author of "A Doctor's Odyssey," said. Chinese health authorities will probably meet this dangerous situation by widespread vaccination with cholera vaccine. This gives pretty good protection against this ancient plague, Dr. Heiser said.

In spite of the disturbances of the past ten years, China has gone ahead in medical and health activities in an astonishing way. Almost the first money the government gets, Dr. Heiser said, goes for health appropriations. About fifty Western-trained Chinese doctors are improving the health picture in China. A modern research laboratory and hospital at Nanking and a modern laboratory at Shanghai are part of China's health defenses.

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BIOLOGY

Cells Excel Factories In Mass Production Output

A MILLION cigarettes for every person on the face of the earth produced each day would be the output of a cigarette factory if it functioned as efficiently as some of the cells in the body. With cigarette factories one of the best examples of mass production and yet yielding far less than such a hypothetical, staggering output, the remarkable productivity of certain body cells can be realized.

While Dr. Corner did not draw the comparison, it is based on facts developed during a discussion at the biological Symposium at Cold Spring Harbor, L. I., of the report of Dr. G. W. Corner of the University of Rochester concerning the amount of internal secretions produced by the body.

Dr. Corner sought to find a quantitative answer to the question, "How much secretion is produced during a day by a given ductless gland, and how much is present in the body at a given time?"

By experiment, Dr. Corner found that the secretion from one corpus luteum, a follicle which has liberated an egg, is sufficient to maintain pregnancy. He also found that it requires about one three-hundred-fifty-thousandth of an ounce daily of the hormone, progesterone, to do the same thing. Dr. Corner, from this, concluded that this minute amount of

hormone was the daily output of a single follicle.

Next the Rochester scientist estimated the number of cells making up the corpus luteum to compute roughly the output of a single cell. Then he calculated the number of molecules of the hormone made by a single cell in a day and came up with the staggering figure of two million billion molecules.

Using the analogy of the cigarette factory, with a molecule equivalent to one cigarette, the factory would have to turn out 1,000,000 cigarettes a day for every one on earth to equal the cell's output.

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POPULATION

Depression's 'Back to Farm' Movement Now in Reverse

THE end of the depression is now showing up in population figures. For the first time since 1930 the number of farming inhabitants of America has declined in statistics issued by the Department of Agriculture. During last year a net loss of 80,000 people was recorded in the drift toward the cities.

Just as man runs for a storm cellar in a mid-west cyclone so do many city people head back to the land and their scene of birth when the going in life becomes difficult. It has been so in the past and the future may be expected to show the same trend.

From 1910 to the end of the World War in 1918 the drift from farm to city was steady with the War producing a sharp peak because of the plentiful supplies of jobs in urban areas. Then the war-time excess swung back to the farms and until 1921 the country gained in population.

From 1921 to fatal '29 the population pendulum swayed the other way and in 1930 there were fewer people on America's farms than there had been at any time since the World War.

The depression again turned the tide toward a farming population increase and 1932 was the peak. For the last four years, reports the Bureau of Agricultural Economics, the farm population has been essentially stable: varying less than a million persons, loss or gain, in any year except 1932.

The result of all the population swings in the last 27 years is that the farm population today is about one per cent. less than it was in 1910. This seems like but little drift to the cities but the significant point is that the nation's population has increased 40 per cent. in the same period.

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IN SCIENCE

GEOGRAPHY

Man Climbs "Devils Tower" Without Scaling Ladders

A FEW live Mormon crickets which cannot fly, some hawks and traces of a small animal, possibly chipmunk, were the only signs of animal life observed on top of Devils Tower, Wyoming, during a recent climb of that natural pinnacle, which reaches 865 feet above the hill from which it springs.

Since the Mormon crickets cannot fly their appearance on the top of the tower, where they were seen walking around, is of particular interest. They apparently are hardy mountaineers, as it is supposed they too made the ascent on foot.

The ascent of Devils Tower by the Alpine Club members was the first successful attempt by humans to scale the great monolith without the aid of ladders or other climbing devices. Fritz Weissner, leader of the party, of New York City; Lawrence Coveney, also of New York; and William P. House of Pittsburgh made the ascent in 4 hours and 48 minutes. They spent forty minutes exploring the top, during which time they met their fellow alpinists, the Mormon crickets, and then made the descent in 1 hour and 32 minutes.

Devils Tower is composed of columnar rock similar to granite, but known as phonolite because of the metallic sound when a thin piece is struck.

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ENGINEERING

New "Tree-Form" Columns Permit Clear Aisles

See Front Cover

THE COVER picture of SCIENCE NEWS LETTER in this issue shows the welding of the new type "tree form" columns now being applied in building construction where wide aisles, entirely free from cross members are needed. The graceful, curving columns are being constructed in the shops of the Austin Company at Cleveland, Ohio. They will be used in the new factory of the International Silver Company at Meriden, Conn., where it desired that the factory will be free from shadows and the light uniformly distributed.

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E FIELDS

GEOPHYSICS

Powerful Magnetic Storm Most Severe Since April

THE MOST severe magnetic storm disturbance since the magnetic fluctuations of last April, which sent compass needles swinging and disturbed communications, has been reported by the U. S. Coast and Geodetic Survey to Science Service.

Despite the large sunspots in the last few days of July magnetic measurements at the Cheltenham magnetic observatory showed surprisingly little fluctuation. Then, from midnight on August 1 to 5 a. m. Monday, August 2, a magnetic storm arrived which sent instruments askew for five hours.

During the five-hour period the range of oscillations in the declination of the compass changed by 63 minutes, or one degree and three minutes of arc. The range of the value of the horizontal component of the earth's magnetic field varied by 196 gammas. The vertical component of the earth's magnetic field had a range of 259 gammas, the highest since the 400 and 500 values during the April magnetic storm.

"Greatly disturbed" was the language of even the cautious scientists who took the observations.

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RADIO—MEDICINE

Short Radio Waves Are New Tools of Medicine

THERE is appeal to the imagination in the fact that very short radio waves can be used as one of the tools of medicine, producing an artificial fever that can be regulated, directed and concentrated.

The struggle and rise of short-wave diathermy to an accepted place in treatment of disease is very recent, for like every new therapeutic measure it underwent its baptism of over-enthusiasm and skepticism. The avidity of the development is shown by approximately 750 articles, books and other publications that have appeared in the last eight years.

As early as 1891 both Nikola Tesla and d'Arsonval showed that a high-frequency electric current produces heat in

animals and human beings and they suggest its medical use. Serious and effective application did not arrive until just a few years ago when, thanks to the growth of short-wave radio, apparatus of sufficient power and higher oscillations was produced. Now 10,000,000 (30 meters) to 150,000,000 (2 meters) oscillations are sometimes used.

Intriguing as it is to imagine the radio waves themselves having an effect, Dr. Tibor de Cholnoky of the New York Post-Graduate Medical School, Columbia University, in a book just issued (Columbia University Press) considers short-wave diathermy as purely a form of heat therapy. It is superior, he finds, to other forms of heat therapy because of its deep action.

The principal field of application is to inflammations. The short waves are analgesic and quietening in their effects but the chief beneficial action is by causing an excess of blood in the afflicted areas. The seat of the disease is vitalized and invading organisms are combatted.

In rheumatism, short waves may even eliminate the focus of infection, arrest the disease and restore the function of afflicted portions of the body.

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BOTANY

Palm Tree Yielding Wine Reported by Expedition

TROPICAL trees that yield "a red wine comparable with the best vintage wines of France" are reported by Llewelyn Williams, curator of economic botany at the Field Museum of Natural History, who has just returned from a six months' exploring trip into the remote regions of lower Mexico.

The wine tree is a species of palm. The natives cut it down, scoop out a small trough in the trunk, cover it with leaves and let it stand for two days. When they return the hollow is filled with a red wine, termed delicious by Mr. Williams, which is formed by the fermentation of the sap of the tree.

Where wine palms do not exist, or when the thirsty traveler is in too much of a hurry to wait two days, he must slake his thirst by sipping water stored in the stem of the teolate vine, often six inches in diameter, said Mr. Williams. A three foot section of this stem provides a refreshing but insipid draught.

The botanical expedition of the Museum, led by Mr. Williams, returned with the most complete collection of wood specimens ever obtained from southeastern Mexico.

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POPULATION

Human Resources Going Four Times As Fast As Soil

AMERICA's human resources are disappearing four times as rapidly as her soil resources are being depleted by dust storms, crop removal, and erosion, Dr. O. E. Baker, agricultural economist of the United States Department of Agriculture, told the International Congress on Population.

Famine of agricultural products is not likely to be a danger in the United States, Dr. Baker indicated.

"From the standpoint of agricultural prosperity, we have too much land in the United States and too few people," he declared.

Despite the large losses in soil depletion, amounting to about five per cent. a decade, the rapidly declining birth-rate which has fallen as much as 20 per cent. in the same length of time makes a shortage of food most unlikely, Dr. Baker indicated. If present trends are not greatly altered, the population will increase only about 8,000,000 in the next 20 years by which time the maximum will have been reached.

No increase in arable land will be needed to feed these additional 8,000,000 persons, Dr. Baker estimates.

"In 1930, a year when exports of farm products required the use of about 50,000,000 acres of crop land, when per capita consumption of farm products was fully normal and when the population was only about 6,000,000 less than at present, there were 41,000,000 acres of crop land lying idle or fallow in the United States, and 109,000,000 acres of plowable pasture, and the area of crops harvested the preceding year was nearly 50,000,000 acres greater than in 1936, in part because of the much greater exports.

"The land that requires only plowing to be put into crops exceeds the prospective need threefold.

"Meanwhile, the use of tractors and the substitution of gasoline for horse feed seems very likely to continue. This process has reduced the area of crops needed to feed horses and mules by about 40,000,000 acres during the last 20 years, and if this rate continues this process alone will release land almost as rapidly as it is needed by the increasing population.

"To feed a horse requires as much land as to feed a human being."

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