SCIENCE NEWS

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THE PONS WINNECKE COMET

DESPITE the excitement it occasioned last summer when it came within 4,000,000 miles of the earth—closer than any previous comet—the Pons Winnecke Comet had the distinction of possessing the smallest nucleus that has ever been observed in such a body. Probably it was not more than two or three miles in diameter. This is announced by Dr. V. M. Slipher, director of the Lowell Observatory at Flagstaff.

Dr. Slipher took advantage of the close visit of Pons Winnecke to watch it carefully with the observatory's big refracting telescope, with a lens two feet in diameter. He had, he says, the best opportunity in years to make a measurement of the size of a comet's nucleus, the center which is supposed to supply the rest of its material. On most occasions "the nucleus of the comet was found to be perfectly stellar, *i.e.*, very small and sharp." At such times "it was possible to distinguish the nucleus from stars only by its motion."

Even through the highest power telescope a star appears as a point of light. First, Dr. Slipher compared the cometary nucleus with nearby stars. Then he took stars of similar brightness in another part of the heavens, near the planet Jupiter, and compared them with the large moon of that planet. As the size and distance of the Jovian moons are known, it was thus possible to estimate the size of the nucleus. Its distance from the earth was also known, and thus it was possible to get a rough approximation of its diameter. This, he found, was not more than two or three miles.

Other studies of the comet were made by Dr. Slipher with the aid of a spectroscope attached to the big telescope. In this way, by analyzing its light, he found several very peculiar features. It has been supposed that comets are excited to great activity as they get near the sun, but the studies of Dr. Slipher of Pons Winnecke as well as other comets, seems to contradict these views.

The spectrum showed very strongly the same dark bands that are revealed in the spectrum of the sun. This shows that the comet's light consisted largely of reflected sunlight. Also, in the band of spectrum there appeared rather weakly the bands that are associated with cometary light. A spray of light which projected from the nucleus towards the sun gave off more light of its own than any other part of the comet.

Besides having its activity reduced by approach to the sun, Dr. Slipher believes that its close approach to the earth may have also reduced the comet's light. In 1910, he said, it was found that the light emissions from Halley's Comet were reduced as it approached the earth, and they became more intense as it drew away. Previously, it has been supposed that the earth has little influence on the activity of comets coming near it. If this is the case, it would account for the fact that Pons Winnecke, despite its close approach to the earth, was much fainter than some astronomers had anticipated.

AN EARTHQUAKE IN ALASKA

AN earthquake of severe intensity shook an area on the Alaska-Canada boundary, about 75 miles north of coast of Yakutat Bay, a region of mountains and wilderness. The exact time of the shock was Monday, October 24, at 10:59½ a m. (Eastern Standard Time).

News of this earth disturbance was brought to civilization through the vibrations within the earth's crust that were created by the shock itself. These seismic waves were recorded on the delicate seismograph at the Dominion Observatory, Ottawa, Canada; the Meteorological Observatory, Victoria, B. C.; the U. S. Weather Bureau, Chicago, Ill., and Georgetown University, Washington, D. C. Their reports were telegraphed to Science Service, and with the cooperation of the experts of the U. S. Coast and Geodetic Survey were used to locate the center of the earthquake.

The geodetic location of the center is 61 degrees North latitude and 140 degrees West longitude.

One of the most severe earthquakes of the earth's history occurred in Yakutat Bay in 1899. This disturbance is listed as "the earthquake of the century." Another severe earthquake shook the region on February 21, 1925.

It may take weeks for the news of the quake to be transmitted from the region to the outside world. The Alaskan coast in this locality is only sparsely settled with natives. One native village and a federal school is located at Yakutat Bay, but this is sufficiently far from the zone of greatest disturbance to arouse no fears as to its safety. Communication is limited to a coast-wise steamer that plies as far as Seward on a monthly schedule, but weather conditions at this time of year make even this meager contact unreliable.

A seismographic station of the Coast and Geodetic Survey is located at Sitka, some 300 miles away, and probably felt the shock.

The great Yakutat shock of 1899 caused vertical displacements of the earth of as much as 40 feet. While changes of the earth's surface of this extent are not likely as a result of the present shock, the configuration of the ocean bottom in that region may have been changed causing navigation to be menaced.

THE CAUSE OF THE COMMON COLD

THAT old familiar remedy, baking soda, has found a new use as a preventive for the common cold. Dr. Volney S. Cheney, medical director in one of the large packing firms of this city, has reported to the American Public Health Association.

Eleven years spent in an exhaustive study of colds have convinced Dr. Cheney that this too common malady is not infectious, as is commonly believed, but that the organisms usually regarded as the causative factor in colds are only secondary invaders in the latter stage.

The primary cause he ascribed to be a condition of mild acidosis that is brought about by too much protein in the diet, lack of exercise and infections already present anywhere in the body. Dr. Cheney maintained that colds can be prevented and even cured by keeping an alkaline balance in the body through proper diet and carefully regulated doses of sodium bicarbonate or alkaline waters along with small quantities of calcidin and iodin.

"My experience of many years," said Dr. Cheney, "among the aborigines of the Southwest convinces me that colds, as we know them, are a product of civilization."

The infectious origin of a cold is only an unproved theory, and a theory based upon a false premise because in the early stages of a cold the secretions, from the nose particularly, are frequently sterile and the organisms usually regarded as being the causative factor are only secondary invaders of the latter stages.

Climatic variations are a contributing factor only so far as they inhibit our normal activities and decrease our utilization of protein foods which are always in excess of what we normally require. We eat too much and exercise too little in cold weather. Colds are less frequent in warm weather because we eat less of high protein foods and exercise more.

"The time of greatest incidence of colds in our industry is on a Monday and days following holidays, and also days following banquets or parties where there is an abundance of good things to eat. I have also observed that colds are very prevalent in our traveling salesmen or men who are on the road a great deal. After these trips, upon inquiry, I have ascertained that always while traveling there has been a decided change in the daily routine compared to the one they maintain while at home; a proneness to overeating of high protein foods and sometimes overdrinking of alcoholic stimulants; increased mental strain; lack of proper exercise and loss of sleep. Statistics show that about 45 per cent. of absenteeism in most of our large industries is caused by colds or their after-effects."

IMPROVED FRUITS

THANKS to tin cans and fruit breeding experiments, inhabitants of the United States should not lack for fruit any month of the year.

Apples that will bear the year after planting, strawberries all the year around and raspberries that will grow in the South, where raspberries have been conspicuous by their absence, are recent fruit achievements described by George M. Darrow, of the U. S. Bureau of Plant Industry, in a report on fruit breeding to appear in a forthcoming issue of *The Journal of Heredity*.

Several varieties of plum have been developed at the South Dakota Experiment Station that will grow in the Upper Mississippi Valley, where little or no fruit of this sort would flourish before. A blight-resistant, hardy pear has been produced that shows great promise in this same region. The season of the McIntosh apple has been extended so that variations of this well-loved variety are available through several months of the year. Best of all, the U. S. Department of Agriculture has to its credit a bush cherry bearing delicious fruit that is a partial realization of the pomologists' dream of achieving a sweet cherry that will grow wherever sour cherries are hardy.

Of the hundreds of new fruit varieties introduced by experiment stations several have attained an outstanding commercial position. Prominent among these is a red raspberry, known as the Latham, developed from a cross made at the Minnesota Experiment Station in 1908. It was introduced in 1914 and is now cultivated throughout many eastern and northern states.

In 1926, it is stated, the income derived by Minnesota growers was more than four times the total amount expended by the state on the fruit-breeding farm since it was established in 1908.

NEW POTATO DISEASES

TWO new and mysterious potato diseases, one causing midgets and the other making a broom-shaped aerial monstrosity, have reached the critical attention of government potato experts.

Both diseases are problematical in origin and serious in their potentialities. The English science defier, dubbed "leaf-curl" in the mother land, has the puzzling habit of throwing the plants' vitality into weedy stalk growth, the while robbing the tubers of their normal size and strength. Hundreds of acres in Lancashire have been devastated by the disease, though its existence has not been announced in America.

The other, a product of Utah, resembles that other peculiar potato disease, "witches' broom." The latter causes unduly numerous but poorly grown stalks, the upper plant actually resembling the conventional conception of a witch's broom. Small or "aerial" tubers thrive on the plant above the ground. They are squashily pulpy, sometimes are no bigger than a man's thumb, and have an unhealthy greenish shade. Plants affected extremely early in their development sometimes fail altogether to produce tubers.

The American disease affects both the early and the late crops, though the infestation is generally less heavy and somewhat severe in the latter case. Experiments indicate that the outbreak of the disease has no association with the source of seed potatoes, making it apparent that some other agency is responsible. Early in the field study of the disease an apparently new kind of insect was noted on affected plants.

Concerning the English monstrosity, Dr. Freeman Weiss, potato expert of the U. S. Department of Agriculture, will make no definite statement until more complete facts are forwarded. However, he points out that the disease may be synonymous with the common "leaf roll" in America, which shows somewhat similar symptoms. Moreover, the English term "leaf curl" is virtually obsolete in this country, though it was once used to designate many potato irregularities, some complex and some simple. It is likewise possible, Dr. Weiss points out, that climate and soil conditions may have produced the freakish tubers.

CRIME DETECTION METHODS

PRESENT methods for utilizing scientific knowledge in attempts to solve medicolegal problems, such as cases of

doubtful paternity, murder and the like, are inadequate in this country, in the estimation of Dr. Ludvig Hektoen, director of the John McCormick Institute for Infectious Diseases, who has devoted considerable attention to the study of forensic medicine.

Dr. Hektoen believes that before society can reap anything like full benefit from the advances of science in this direction there will have to be great improvement in medicolegal organization and equipment throughout the country.

Under the archaic system of county coroner, he explained, which still prevails in most states, the routine medicolegal work is entrusted for the most part to political hangers-on who have not the required fitness or interest for their task. The standards of post-mortem examination and records in most places are disgracefully low. There has been and is a lack of interest on the part of officials, physicians and lawyers in building up the various departments of forensic medicine which consequently falls far short of its possible social value.

With the single exception of the Massachusetts Medico-Legal Society and its journal, we have no societies or periodicals of any consequence devoted to medicolegal practice and research. In the medical schools the formal teaching in this field is perfunctory and as a rule wholly didactic; as yet no effort has been made in any of our universities to coordinate and develop actively the medicolegal instruction in their schools of law and medicine. There is in this whole country not a single, fully equipped and adequately manned medicolegal institution. But our medicolegal problems are not falling off in number or importance and there is increasing need for better medicolegal work and for a more active development of forensic medicine in the United States.

To stimulate interest and research in medicolegal problems and to raise the standards of practical medicolegal work, there is needed, it seems to me, an organization of national scope to include all the various phases of forensic medicine, and there will be needed also perhaps increased facilities for publication. It is encouraging that the American Medical Association is planning to introduce a session on medicolegal topics in one of its sections. Owing to constant progress in the contributing sciences there is particular and continuous need of integrating these various branches in their medicolegal relations. The situation demands not only replacement of the coroner system by one far more effective, such as the Massachusetts system, but also the establishment of fully equipped medicolegal departments or institutes designed to meet the needs of city and state.

ITEMS

BURNING sulphur deposits on the shore of the Dead Sea may have been responsible for the strange luminous fog that swept over Jerusalem a few nights ago and caused a two-hour period of choking discomfort to the inhabitants. This opinion was hazarded by Dr. Immanuel Friedlaender, a European student of volcanic phenomena, founder and director of the Volcanological Institute at Naples. There is little likelihood of the sulphurous mist having come from a volcanic source, for though the region was once volcanic there have been no eruptions within historic time. However, there are large exposed deposits of sulphur around the Dead Sea, which have long been pointed out as part of the brimstone from heaven that destroyed Sodom and Gomorrah. Since Jerusalem is only fifteen miles west from northern end of this great salt lake, a fire accidentally started on the sulphur beds when the wind was blowing toward the city could easily give rise to fumes of sufficient strength to be distinctly disagreeable to its inhabitants.

SMOKE in its relationship to pneumonia, the most prevalent and fatal of all acute infectious diseases, was discussed in a recent report by Dr. W. C. White and the U. S. Public Health Service to the American Society of Mechanical Engineers. The fact that Pittsburgh, one of the smokiest cities, has the highest constant death rate of any community in the world, and that the pneumonia death rate of the city by wards is higher where the smoke content of the air is densest, indicates that smoke has a large influence on this disease. Definite proof of this correlation is still lacking. Further research in the field is necessary, with doctors and engineers cooperating, to determine the effect of smoke upon health. Dusts associated with carbon in smoke are probably much more important than the carbon. It is probable that smoke has an evil influence on the prevalence of pneumonia, but that it bears no relation to the tuberculosis death rate or to the death rate from cancer. Pittsburgh has a low tuberculosis death rate and a comparatively low death rate from cancer.

THAT absolute alcohol by the gallon should be kept on hand in chemical plants as a remedy for burns is recommended by a German chemist, according to a report to the American Chemical Society. Pure alcohol has been found to be a particularly efficacious treatment for the severe burns that result from contact with sulphuric acid and other strong reagents used in industrial chemical processes. The quicker the cases are treated the more effective are the results. Blisters never develop, it is said. Due consideration must, of course, be given to possible risk from the inflammability of alcohol.

The problem that immune carriers of virulent diphtheria germs present to the community has been met by Dr. E. H. R. Harries, medical superintendent of Birmingham City Hospital, by the procedure of removing the tonsils of the innocent offenders. Ordinary gargling and swabbing with antiseptic and germicidal preparations have little effect on the diphtheria bacilli in such cases. Diphtheria vaccines have likewise been found useless. While such carriers are not common, the ones that do exist present a serious menace to susceptible children. Consequently, Dr. Harries and his associates decided to try out the idea of removing their tonsils, the principal site where the deadly bacilli accumulate. In a series of 90 cases only one was found responsible for a return case of diphtheria and the responsibility for this was open to doubt. While the method is not the ideal way to contend with this problem in public health, Dr. Harries believes it to be a rational and successful one.