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INTERRELATIONS OF CLIMATE IN INDIA AND CANADA

WHY unusually dry summers in India mean mild winters for Canada six months later and wet summers in India foretell hard, cold winters in Canada is a mystery calculated to tax the ingenuity of U. S. weather experts to explain data recently received from Fred Groissmayr, of Passau, Germany, and Dr. C. F. Brooks, of Clark University.

Examining weather reports for a period of 44 years, Mr. Groissmayr found a remarkable correlation between climates separated by oceans of distance and months of time. Throughout all the period studied when India was unusually wet or dry, winters in Saskatchewan and Alberta have been below or above normal in temperature with but four exceptions.

Measuring the other factors of the Indian climate which might be significant in determining the Canadian winter, Mr. Groissmayr also charted the temperature in various portions of India. Unusually cool autumns in northwest India were always followed by a severe winter at Winnipeg.

Such decided relations led to further study of tropical factors influencing Winnipeg's winters and indicated that not only India's monsoon, but also the flood of the Nile in Egypt, have a measurable effect on distant Canada, while high pressure over India, Egypt and Batavia was later reflected by correspondingly high temperature in Canada. Thus the highest India pressure of 1877 was followed by the mildest winter at Winnipeg. And throughout the period studied, temperature maximum in India was associated with highest temperatures over an immense part of Canada and of the United States as well.

Dr. C. F. Brooks, of Clark University, recommended the findings of Mr. Groissmayr to the attention of Canadian and U. S. Weather Bureau meteorologists. He said: "The extraordinarily high correlation found by Mr. Groissmayr between pressures, temperatures and rainfall of certain tropical regions and the later winter temperatures in the interior of Canada challenges North American meteorologists (1) to test Mr. Groissmayr's claims by applying his formulas to the years after the period he used in making them, (2) to study the physical basis for such a correlation and (3) to explore other possibilities not only for predicting winter mean temperatures but also for other seasons and for all parts of the continent."

In *The Monthly Weather Review* of November, 1929, Dr. Brooks predicted on the basis of the Indian summer that the average temperature in Winnipeg from December, 1929, to February, 1930, would be slightly above normal. Reports subsequently obtained from the Canadian Meteorological Service proved this forecast, based on Groissmayr's formula, to be correct.

This forecast of a Canadian winter is the sixth which Dr. Brooks has made on the basis of the previous summer in India. Of these six, two were nearly perfect, two reasonably successful, one good and one poor.

One of Dr. Brooks's students is now engaged in formulating a forecast of the weather in store for Winnipeg during the winter of 1930–31.

A NEWLY DISCOVERED SUBMARINE VALLEY

TRANSATLANTIC liners now have a new "landmark" to guide them when approaching the American coast, with the discovery of a previously unknown submarine valley in the Georges Bank. This bank runs eastwards from Cape Cod for about 200 miles and the valley is near its eastern end.

Following the earthquake of November 19, 1929, off Newfoundland, which disrupted cable communication, Captain Bone, of the *S. S. Transylvania,* made a sounding to check his position, and found a much greater depth than anything suspected in the vicinity. At first it was suggested that the rift had suddenly appeared as a result of the quake. During recent months the U. S. Coast and Geodetic Survey's survey ship, *The Oceanographer,* formerly J. P. Morgan's yacht, *The Corsair,* has resurveyed the region.

Using the sonic depth finder, which measures ocean depths by the time required for a sound wave to reach the ocean bottom and return as an echo, they found a valley about 8 miles long and 400 fathoms (nearly half a mile) deeper than the surrounding ocean floor. The normal depth in this region is about 100 fathoms.

The survey work was done with the aid of the radio compass. By this means the position of the ship at all times was accurately checked, and it was found that the valley was more than 500 miles away from the epicenter of the earthquake, and the point where the cable breaks occurred. For this reason it is believed that the valley has nothing to do with the quake, apparently it has been there for a long time, but with no careful surveys of the region having been made in the past, its existence was unknown.

Many modern ships, especially the large liners, are equipped with sonic depth finders, so that a sounding can be taken in a few seconds, instead of the much longer time required when a line had to be lowered and hauled in again. For this reason accurate depth surveys are important. Thus it will now be possible for a navigator, when entering the region of the Georges Bank, to tell his position closely, if he finds a sudden drop below him of 400 fathoms.

NEED OF EARLY DIAGNOSIS OF CANCER

PEOPLE generally do not yet know how valuable the X-ray is in detecting disease of almost any part of the body in its early stages, when the chance of cure is greatest, said Dr. Joseph Colt Bloodgood at the meeting in Los Angeles of the Radiological Society of North America. He called on the medical and dental professions to give the public this knowledge.

"It is time for the united, highly educated members of the medical and dental profession to let the people know through the press that at the present time there is no cure or management of cancer, except surgical removal with or without irradiation, or irradiation alone," he said. "The cure of cancer depends upon getting the correct information to the people and getting the people quickly to this triumvirate of medical skill." The triumvirate, he explained, consists of accurate diagnosis, experienced and skilled operators and properly trained radio-therapeutists.

In speaking of cancer cures, he said: "There is no evidence of any five-year or permanent cure of cancer by any treatment other than surgery or irradiation, which can not be explained either by the fact that the condition was not cancer, or the individual lived longer than the usual age duration of the cancer in his or her body.

"There has always been great competition in the treatment of cancer and the world has never been free of individuals within and without the medical profession who have claimed cures. If one of them had been a real cure, there would be no cancer in the world to-day, because some of these cures have been tried for centuries."

Cancer, however, is not the only disease in which X-rays have proved their usefulness. Dr. Bloodgood pointed out other conditions for which they are valuable. "The moment there is any change in a bone, either of bone formation or bone destruction, it will show in an X-ray plate. Every individual, even a child in the primary school, knows what is meant by pain or discomfort in any part of the body—and in every part of the body there is a bone. If there is a tender spot it is appreciated at once, even a slight swelling is rarely overlooked. Now the public should know that these insignificant first warnings may be the earliest signs of some trouble in a bone, and the only means of immediate protection are the X-rays.

"Too many individuals and parents have resorted to domestic remedies—poultices, mustard plasters. The day of domestic remedies is over. The day of prescribing by the druggist should be over.

"Everyone should know that a root abscess may be present in a tooth without pain or swelling. There may be no gum boil or looseness of the tooth. The blood poisoning from that root abscess may cause rheumatism, indigestion, heart disease and many other troubles. It is good protection to have X-rays taken of your teeth at as frequent intervals as your dentist suggests."

Dr. Bloodgood also explained the value of X-rays in making early diagnosis of tuberculosis, gall bladder and kidney disease, cancer of stomach or intestines as well as cancer in more accessible parts of the body.

X-RAYS AND TUBERCULOSIS

POWERFUL, searching X-rays can find early signs of tuberculosis of the lungs, even before the victim appears to be ill, members of the Radiological Society of North America meeting at Los Angeles were told by Dr. Karl E. Koenig, of Seattle.

This is particularly important in detecting tuberculosis in children. Medical authorities know that tuberculosis of the lungs may be present for months and even years before there are definite symptoms and that an adolescent child may be apparently healthy, physically active and even overweight and yet may have tuberculosis in a serious form. X-ray examination is very valuable in such cases, as evidences of tuberculosis are found in X-ray plates in its early stages.

X-ray plates indicate the progress of tuberculosis. They are valuable as permanent records and also for making comparisons of X-ray plates recently taken with plates taken three or six months before. When tuberculosis of the lungs grows worse the shadows on the X-ray plates grow larger or evidences of cavities may appear.

If there is improvement the shadows gradually grow smaller, but never disappear entirely even if the patient completely regains his health, as scars due to tuberculosis of the lungs remain throughout life. The shadows caused by pneumonia disappear in a few days or weeks and they leave no scars.

To-day the physician uses his eyes and not his ears in diagnosing disease in the lungs. For a long time the stethoscope was used to listen for unusual sounds in the lungs. To-day disease is shown on X-ray plates by dense shadows.

ENGINEERING REVISION FOR SAFETY

EDUCATIONAL campaigns in safety, startling posters and the like have their place in preventing accidents, but there is another form of accident prevention which has already greatly reduced accidents and still has limitless possibilities. It is engineering revision.

By engineering revision is meant buildings designed for health and comfort, well arranged transportation facilities, ready and safe access to every place workers are required to go, adequate and well-arranged lighting and safeguarding of machinery, Lucian W. Chaney, expert in accident prevention of the U. S. Bureau of Labor Statistics, told members of the American Society of Mechanical Engineers at their annual meeting in New York.

With bare statistics Mr. Chaney showed where engineering revision has greatly eliminated accidents and where unnecessary lives have been lost because of the lack of safe facilities.

"In blast furnaces hot metal breakouts contributed to the severity rate more largely than any other cause in the early years," he said. "By 1910 this cause had practically disappeared. The change was due to structural changes which increased the resistance of the furnace to such an extent as to eliminate the breakouts."

Mr. Chaney found that in a special study of accidents causing 372 deaths, 212, or 57 per cent., could have been prevented by some form of engineering revision. "This can be said without qualification," he declared. "It can not be said, however, that all the other 43 per cent. would have been amenable to educational methods in response to which caution would insure safety. In only about 10 per cent. of these deaths would it be safe to say positively that the man's own carelessness clearly appears as the major factor."

"It is certainly possible," he concluded, "to imagine structures and apparatus so strong, so well designed, so intelligently operated, that failure and consequent death will be the rare exception. The possibilities of improvement from the engineering standpoint are almost limitless."

GAME ON FARMS

MAKE landowners really interested in the conservation and increase of game birds and animals by paying them for the labor and materials used in their care. That is the core of a new game policy advocated by a committee of the Seventeenth Annual American Game Conference, which opened its meeting in New York on December 1.

The policy of protecting and colonizing game on lands unsuitable for farming or other commercial uses is admirable so far as it goes, but this policy is good only for this class of cheap lands. High-priced farm and commercial forest lands are necessarily too much subjected to human management to permit game development under natural conditions. It is not fair to expect the owners to divert part of the land use, and therefore potential revenue, to game raising unless a corresponding compensation is made to them. This policy is now being tried out on an experimental large-scale basis in one county in Michigan, and is said to have given good satisfaction there.

The committee also advocated the extension of public ownership and management of game lands as fast as funds and land prices permit, the training of men for the special task of game administration, the study and utilization of the natural factors that produce game abundance and the extension of game protection interests to include the scientist and the non-hunting protectionist. It called for the redistribution of the cost of game administration, now taken care of almost wholly from license fees. It was the sentiment of the committee that since much wild life not properly classifiable as game is taken care of at the expense of the game administrations of the various states, there should be some contribution from the general tax funds in addition to the revenue derived from shooting licenses.

ITEMS

BLACK satiny surfaces and festooned skins of lava on a boiling lake of liquid stone are the latest phases in the eruption of Kilauea's inner pit, according to a statement made by Professor T. A. Jaggar. The first manifestation of activity in the present eruption was the outbreak of a number of lava fountains through last year's lava floor in the pit. These rapidly filled the bottom area with new lava activity, which finally centered at a single fountain with a lake northwest of it. The material was brown pumice and sulfur gases, with spurts 200 feet high. Occasionally the flows across the floor developed both smooth and clinker lava phases. The lake built up its border until it stood on top of a slag heap more than 100 feet high, with larger flows continually moving down two long slopes on the side farthest away from the source fountain. The fountain built up a half-ring of rampart wall of spattered lava, to the south of itself. This rampart kept breaking down on the side toward the fountain. The fountain continues its flow unceasingly and with undiminished strength. The present surface of the lake is about 950 feet below the rim of the pit. A new lava field, 2,000 feet across and shaped like a leaf, has been formed. The eruptions continue with an unceasing inflow of lava.

THOUGH the Japanese earthquake on November 26 was destructive of life and property, it was not nearly as severe as the Tokyo quake of 1923. This is indicated by the rather meager instrumental records of the quake obtained on American seismograph instruments. The reports from the North American continent were not sufficiently complete to enable the earthquake experts of the U. S. Coast and Geodetic Survey to locate the center with precision. Even if there had been no reports directly from the damaged area, they could at least have located it in Japan, but because of its great distance the center could not be located as accurately as is sometimes possible. The amount of damage by a quake is no criterion of its severity, as many of the world-shaking quakes, felt on seismographs all over the earth, occur at sea and do no damage whatever. On the other hand, a mild quake, if centered in a thickly settled region as in Japan, where there is an abundance of lightly constructed buildings, may result in great damage and loss of life.

THE nodule bacteria of alfalfa roots, capturers of air nitrogen and builders of soil fertility, are active wanderers during their younger days, before they settle down to their life work. Bacteriologists at the Rothamsted Experimental Station have taken advantage of this fact to secure better infection of alfalfa seed before planting. The bacteria go through a series of life stages much like those of some aquatic animals, being free swimmers while they are young and sessile when they mature. When they grow old their cell contents assume a banded appearance, then break up into tiny globular bodies. These latter elongate into rodlets which at first have the power of motion. By encouraging these swarming youthful wanderers with a diet of milk and phosphates, it is possible to secure a much better inoculation of alfalfa seed.

POOR vision makes you more likely to get sick when riding on cars or in automobiles, although car sickness is based on irritation of that part of your ears known as the labyrinth, Dr. J. E. Lebenhohn reports in the *Archives of Ophthalmology*. This distressing condition is becoming less common, however, as a result of smoother roads, easier riding cars and automobiles. People who have faulty vision or eye muscle balance are more easily nauseated if they have a digestive tract especially susceptible to further depressing influences. An empty stomach is particularly sensitive, so it is best not to fast when traveling.