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MINES AND EXPLORATION IN CANADA'S "NORTH COUNTRY"

WATSON DAVIS, managing editor of Science Service, writes from the special car "Princeton," of the Princeton geologic expedition, that two eras of the conquest of America's natural resources lie side by side in Canada's "north country."

From Cochrane, the railroad junction point that lies a hundred miles from the lower end of Hudson Bay, prospectors still go out into the "bush" to pit their knowledge and luck against nature's secretiveness. During the short summer season the great northern part of the Canadian province of Ontario is spotted with geologists, engineers and plain self-taught mining men searching for rocks rich in gold, silver, copper or other valuable mineral. Hundreds of square miles of territory are still inadequately explored.

Yet great modern industrial plants and pleasing towns exist within a mere thirty-five miles of the place where these prospectors outfit. At Timmins there is the largest gold mine in the western hemisphere and the world's second largest. At Iroquois Falls there is a great paper mill that converts forests into newsprint paper at the rate of 525 tons a day. Over the Quebec border, but not much farther away, is Rouyn, a new copper-gold mining camp that is now in approximately the same state of development as that of some of the western mining boom towns forty years ago.

To this great mineral storehouse the Princeton University Summer School of Geology, traveling on the special car "Princeton," has paid a visit. Aided by the experts engaged in mining operations and with the cooperation of the Canadian Geological Survey, a selected group of students and professional geologists have inspected some of the mines, mills and the rocks which are now pouring forth wealth at the rate of about a hundred million dollars a year.

This mineral treasury is some 500 millions of years old at least, for it consists of rocks known to the geologists as "pre-Cambrian." Over the largest portions of the provinces of Quebec, Ontario and Manitoba there is a great shield of these pre-Cambrian rocks in which there have been found important areas rich in metals. Pre-Cambrian rocks are the oldest found on earth. In part of them there is no trace of life and in others the remains of a few extremely primitive plants and animals have been preserved. But the violent changes in these rocks, the rush of hot masses into them and the great pressures that such changes produced were favorable to the concentration of gold, silver, copper and other minerals. This rich pre-Cambrian shield is interesting not only to the mining engineer and the prospector who hopes for riches, but also to the geologist who is engaged in puzzling out the way in which the crust of the earth was formed.

One may logically expect to see gold in a gold mine. But in the Porcupine gold district it is possible to walk throughout miles of stopes and witness the whole milling process without seeing even a speck of the shining yellow metal. The inspection of a choice piece of ore through a magnifying glass may reveal a few bits of gold but the ordinary visitor would have little chance of finding out what sort of a mine he was visiting if he were not told. When it is realized that the average ore of the Hollinger mine at Timmins, for instance, runs only $7 to $8 a ton in gold value, with gold worth about $20 an ounce, the reason for the invisibility of the metal in the ore is apparent. Since 6,000 tons go through the crushers and intricate milling process of that mine each day, it will be realized that a considerable quantity of gold is being added daily to the precious metal vaults of the world.

To the rocks of the Cobalt district, Ontario's silver center, nature was more bountiful. In the mines around Cobalt, chunks of native silver can be seen and easily identified in choice veins. Here also silver is found in combination with other elements. Since silver sells now for about a fortieth of the price of gold, silver ore must have a much higher metallic content in order to make the mining profitable. Cobalt has been one of the most successful mining areas of the world, and while its heyday is over it is still a big producer.

A blacksmith working by the side of a railroad cut discovered the first silver ore at Cobalt. That was only 25 years ago. The railroad was being pushed into the virgin country to open it for farming. Undoubtedly the silver-producing ground had been tramped over by prospectors many times before the railroad construction revealed it.

Seeing miles upon miles of unsettled country raises the question as to how many other mines of precious metal lie hidden still in Canada's great "north country."

THE GROWTH OF POPULATIONS

PEOPLES rise, flourish a while in their prime, then dwindle away until no increase in their population growth is perceptible at all, all in accordance with a universal law. Such is the gist of the address made at Geneva by Dr. Raymond Pearl, director of the Institute for Biological Research at the Johns Hopkins University, before delegates to the World Population Conference.

This characteristic manner of growth, which he maintains holds good not only for human populations but for living organisms of all sorts, Dr. Pearl described as follows:

"The population at first grows slowly, but gains impetus as it grows, passing gradually into a stage of rapid growth, which finally reaches a maximum of rapidity. After this stage of most rapid growth the population increases ever more and more slowly, until finally there is no more perceptible growth at all, in short, the populations of various forms of life first wax in their speed of growing and then wane."

Data from experimental populations of yeast, bacteria

and that most used laboratory animal, the fruit fly, carefully watched and counted in his laboratory, were cited by Dr. Pearl in proof of his contention that the rise and fall of all populations can be depicted by the same general curve.

"Furthermore," he declared, "it has been demonstrated statistically that populations of human beings have grown according to the same type of curve, so far as may be judged from the available census records in at least the following countries: Sweden, United States of America, France, Austria, Belgium, Denmark, England and Wales, Hungary, Italy, Norway, Scotland, Servia, Japan, Java, Philippine Islands, Baltimore City, New York City, and in the world as a whole. In the case of the countries named the census records do not extend over a sufficiently long time to make the case conclusive that population growth, if undisturbed, would follow in human groups the complete course exhibited by the yeast population just discussed. The available data only make such a conclusion probable. And one can not conduct experiments with human beings on this point, as can be done with lower organisms. But fortunately it has been possible to find one group of human beings, the indigenous native population of Algeria, in which a cycle of population growth has been practically completed during the period for which census records are available, these having been carefully made by the French. In this case the human population followed in its whole cycle of growth a curve of the same characteristic form that has been discussed for the yeast."

GLAND EXTRACT FOR NEAR-SIGHTEDNESS

EPINEPHRIN, the drug that is extracted from the suprarenal glands, may be a remedy for near-sightedness. Dr. Meyer Wiener, of St. Louis, has tried out minute quantities of the powerful drug on patients with progressive myopia, and in a preliminary report of his results to the American Medical Association states his belief in its value in correcting this derangement of vision.

Medical opinion as to the cause of myopia is divided. It is thought to be hereditary within certain limits. Application to close work has also long been blamed as a causes of the failure of the eyes in its progressive phase. Most physicians agree that the stretching of the outer layer of the eyeball is an important factor, but just how this comes about is still a mystery.

Exercise and diet, it is generally agreed, help as much as anything. The ranch life of Theodore Roosevelt is a classic example of what fresh air and out-of-door work will do to help bad eyes as well as the physique generally. It has been proved that exercise increases the epinephrin output of the suprarenal glands, and it is to this factor that Dr. Wiener attributes the improvement that short-sighted people gain from physical exertion.

"It is shown," he stated, "that both exercise and diet influence the secretion of the suprarenals, and that the local application of suprarenal secretion increases tissue metabolism. It is quite possible that the cramped position often assumed in reading and close application of the eyes might have a deterrent effect on the secretion of the suprarenals."

Acting on this theory, Dr. Wiener began the practice of instilling small amounts of epinephrin into the eyes of patients with progressive myopia. He recommended at the same time exercise and fresh air, but restricted reading only to the extent that it must not interfere with the daily exercise. His cases following this procedure have shown such encouraging results that further reports are awaited by medical circles with considerable interest.

DIVERSIFIED CROPS AS A REMEDY FOR PELLAGRA

PERMANENT relief for the pellagra outbreaks that have threatened the South whenever times are hard may be one of the outcomes of the Mississippi flood. A farming program of diversified crops is the chief preventive for the deficiency disease that has broken loose in epidemic proportions in the inundated territory, according to the U. S. Public Health Service experts who recently completed a health survey of the flood area.

Modern preventive medicine that successfully warded off epidemics of typhoid, malaria, dysentery and smallpox in the flooded states has been powerless to check the spread of this poverty disease of unbalanced diet. Dr. Joseph Goldberger, nutrition expert, and Dr. Edgar Sydenstricker, statistician, declare that 2,300 to 2,500 deaths may be expected in 1927, an increase of from one fourth to one third over last year. The number of cases, they estimate, will run up close to 50,000.

Fresh lean meat, milk, cheese, green vegetables and eggs are the ammunition needed to prevent and cure this disease that has been an unwelcome accompaniment of financial depression in the South for many years. The increase of cases in 1926, a year of low cotton prices, was 80 per cent. over the year before. Over half the cases this year come within the confines of the flood states of Arkansas, Mississippi, Tennessee and Louisiana, a section where it has been prevalent ever since the disease was first recognized in 1908.

Diversified farming in these states will go far toward stabilizing the economic status of the tenant farmer and helping him to raise for himself a supply of proper food, the Public Health Service officials point out. The establishment of swine, cattle and poultry industries should be encouraged as well as community or plantation dairies and truck patches, they believe, if the poor white and Negro population are to fend off inroads of pellagra in the future.

Immediate measures recommended are the supply of relief agencies in the flood areas with foods rich in pellagra-preventing vitamins.

HATCHING BLUE GEESE IN THE NATIONAL ZOOLOGICAL PARK

BECAUSE of the hitherto unrecorded feat of hatching and rearing the mysterious blue goose, one of the highest honors given for contributions to natural science has been conferred upon the National Zoological Park. The silver medal of the Société d'Acclimation of France has been accepted for the society by Ambassador Herrick in Paris and has just been transmitted by the State Department to Dr. Alexander Wetmore, assistant secretary of the Smithsonian Institution.

For hundreds of years naturalists have sought in vain to discover what the young of the blue goose looks like. Even to-day they do not know for certain where it nests. Certain scientists have been skeptical even of the very existence of the bird. Was it not merely an ordinary snow goose in a peculiar stage of plumage?

Each spring the blue geese rise from their winter home in the lower Mississippi valley and fly northward, out of sight and into the blue. Even the Eskimos have never reported finding the nests, eggs or young. For some years it was believed the geese made their way into the unknown vastnesses of Labrador, but the more modern opinion assigns Baffin land as their nesting place.

The remarkable hatching process took place in 1924. Three eggs were obtained from a captive pair in the National Zoological Park. Eggs had been secured on other occasions, but never before had they been hatched successfully. This time, however, officials tried a new scheme. They confided the eggs to the motherly care of a barnyard hen. But she would not have reared them successfully had not man with his scientific knowledge stepped into the picture. The shells seemed too hard for the young to break on their natal day, so a simple procedure was devised by an expert wild duck keeper. Each time the foster-mother left her adopted children for a brief respite, he dampened the egg shells. Thus was reproduced the condition resulting from the mother goose's habit of sprinkling the eggs with her wet feathers.

Man and hen were successful in their novel rearing scheme. Soon three goslings flapped their tiny wings and ornithologists had their first view of baby blue geese.

The Société Nationale d'Acclimation was founded in 1854 by Isadore Geoffrey Saint Hilaire to stimulate the acclimatization of plants and animals to regions in which they are not native.

The medal bears a bas-relief of the society's founder, done by the French artist, Albert Barre. When it is suitably framed it is planned to place the gift in the bird house of the park.

DRAWINGS OF MEXICAN CHILDREN

OUT of the mixture of extreme backwardness and forwardness which is said to typify Mexico to-day is struck many an ultramodern note.

The modernist bug has bitten Mexican schools. Principles of teaching, so new that few schools in the United States are experimenting with them, are being used in the public schools of the Federal District and other sections of Mexico as well.

Drawing, for example, is no longer taught as a separate subject following certain rules of art, for the pupils only draw when the necessity arises in the illustration of other subjects of study. And then they are allowed to draw just as they please and without instruction.

This sets free the childish imagination and instinct, according to Juan F. Olaguibel, artist in charge of the section of drawing and manual work under the Ministry of Public Education of Mexico, and as a result the work of the Mexican school children is now remarkable for its great beauty. In this way also any still-existing remnants of native Mexican art are preserved instead of being destroyed by the art of European civilization.

Drawing has become extremely practical in Mexican schools. The children design and decorate their own toys and useful articles for their homes, and this is especially needed in the rural schools, to which this system is being extended. A children's magazine called "Pulgarcito," meaning "Little Thumb," is written and illustrated by the children of the primary schools of the Federal District of Mexico and other states. Business houses allow the children to illustrate their advertisements and so the entire magazine is their own product.

This practicality of drawing in the schools does not mean that the purely artistic nature of the subject is being neglected, Señor Olaguibel said. Although the aim is to remove the pupil from the influence of outsiders, he is nevertheless carefully watched and any real talent that is noted is encouraged.

Not only is drawing now making great progress in the schools and developing the individualities of the pupils, but the subjects that are illustrated are also helped by this system. Facts of geography, history or natural sciences stick much better when they are illustrated in class, and they are better understood and more clearly fixed in the minds of the pupils, Señor Olaguibel has found.

ITEMS

A "YELLOW PERIL" among insect pests is taking the place of a "native American" nuisance, according to O. E. Gookins, of Ottawa, Kansas, in an address before the meeting of the American Association of Cereal Chemists. The once troublesome grain weevil, he stated, is becoming extinct, but its decline is accompanied by the increase of the rice weevil. The two insects look very much alike, but the rice weevil can easily be distinguished because it can fly. Mr. Gookins recommended granary fumigation as a cheap and sure method of finishing off the granary weevil for good, and for combating the hordes of the rice weevil.

A large and rare specimen of the Mola mola sun-fish, weighing 1,200 pounds, has just been mounted in the hall of fishes of the North Carolina State Museum. So far as is known only one other specimen of this large primitive fish exists in America. Although the individual preserved here is nine feet long and seven feet broad, jelly-fish was its favorite food consumed through a very small mouth.

THE ground squirrel population of Yellowstone National Park, according to a recent estimate, is placed at a million, but the park naturalist, E. J. Sawyer, states that he tried two years ago to get a rough calculation, and that his result was nearer six millions than one. "One can only marvel at the fecundity of the ground squirrel. Red-tailed hawks, Swainson hawks, badgers, minks, weasels and other animals depend largely, and some of them almost wholly, on this rodent for their food. The total number of these depredators certainly runs high in four figures, if not into five."