SCIENCE NEWS

THE EXTRACTION OF GOLD FROM SEA WATER

Science Service

PROFESSOR FRITZ HABER, of the University of Berlin, and inventor of the Haber process for the fixation of nitrogen, who created somewhat of a sensation some time ago with the announcement that he had devised a method of extracting gold from sea water, is now in the United States following this same line of research.

Professor Haber has requested officials of the United States Bureau of Fisheries to furnish him samples of the coastal waters of the North American continent for analysis. He explained to them that he does not consider his experiments commercially valuable and is pursuing them only with the hope of increasing scientific knowledge. The actual procuring of gold from sea water is an accomplished fact, but the quantities are so minute and the expense so great that he believes the process never can be made profitable.

Professor Haber expects to discover the interrelation of waters, the courses of ocean currents, and the history of various sections of the sea through the mineral deposits. The amounts of mineral, whether gold, silver or less valuable minerals, differ according to geographic location of the water and in many cases this difference is very marked. Professor Haber believes that the analysis of water as to its mineral quantities may prove a valuable asset to oceanography, just as analysis of rocks is valuable to the geologist in tracing the history of different sections of the country.

It was indicated that the Bureau of Fisheries may comply with Professor Haber's request and that the cooperation of other government departments dealing with the ocean may be asked.

The best available data at present on the presence of gold in sea water gives the following figures for different locations, bearing out Professor Haber's claims of wide variation according to locality. Deep sea water from the Atlantic Ocean has from 0.015 to 0.267 part of gold per million parts of liquid; water from Christiania, Fjord, Norway, from 0.005 to 0.006; from the coast of New South Wales, 0.032 to 0.065; and from the coast of New Zealand 0.005 part of metal per million parts of sea water. On land the lowest gold deposits which it has been found profitable to operate contain about 0.14 part of gold to per million parts of gravel which does not have to be crushed to extract the precious metal. The granites of California and Nevada have about 0.37 parts of gold per million; the sandstone, 0.03, and the limestone 0.007. It will be noted that some sea water contains nearly twice as much gold as the lowest grade gold deposit on land found profitable to operate.

WHITE INDIANS

AN expedition to penetrate unknown territory of Panama occupied by the White Indians discovered this spring by R. O. Marsh, American civil engineer and explorer, is now being organized here with the cooperation of leading scientific institutions.

The Marsh expedition, which returned to the United States in July, bringing with it three White Indian children and five brown Indians of the region, explored a large area of territory never before entered by white men. But the country occupied by large settlements of the White Indians was not entered, though flown over by airplane. It will be the objective of the party to leave this country in January.

The party of Darien Indians, including the two White Indian boys, Marguerite, a fourteen-year-old White Indian girl, her father and mother, both brown Indians, and three grown brown Indian men, one of them a leading chief, has spent the summer at Mr. Marsh's summer home near Prescott, Ontario, on the St. Lawrence River. The party is now *en route* to Washington to be presented to President Coolidge and studied by the scientists at the Smithsonian Institution, the U. S. National Museum, National Research Council and the Carnegie Institution of Washington.

In the summer of 1923 Mr. Marsh, while exploring in the Darien region of Panama, saw and photographed at long distance seven White Indians who had come to a settlement in the lower waters of the Chucunaque River. Legends of large White Indian settlements led him to equip and head a scientific expedition to explore the unmapped country into which the Indians have previously allowed no white men to penetrate. Before the explorations by land, Mr. Marsh, with the cooperation of the U. S. Army, conducted an airplane reconnaissance of Darien that revealed major mistakes in existing maps.

The San Blas Indians, which occupy the Atlantic coast of the Darien region, have never heretofore allowed white men to stay overnight within their territory. Mr. Marsh entered the country from the Pacific side and after a hard journey up the Chucunaque River and over the San Blas Mountains, arrived at the "back door" of the San Blas tribes. By tactful treatment of the Indians and by furnishing them medical assistance, he finally won the confidence of the chiefs. Until he got the cooperation of the Indians he was unable to see even one White Indian at close range; once the San Blas Indians were won as friends, four hundred White Indians were summoned for Mr. Marsh's inspection and he was allowed to bring three of the children to the United States.

Among the brown San Blas Indians of the Darien coast the White Indians are outcasts. They are forced to live in segregated settlements on the south or Pacific side of the mountains along the coast. White Indian children are sometimes born to brown Indian parents who are of a distinct and stockier build than the typical San Blas Indian and who have White Indian ancestors. These white children are allowed to remain in the coast settlements only until they are old enough to look out for themselves. Then they are banished and sent into the White Indian settlements up in the mountains.

The anthropologists,, ethnologists and biologists who have examined the White Indians have been unable to agree upon any cause for their white skin, hazel-brown eyes, yellow hair and red gums combined with Indian features of a superior type. Among the theories of causes and origins that have been suggested are:

(1) The White Indians are called albinos or partial albinos. This is a name that does not explain their origin nor does it take into account the difference that exists between the White Indians and the typical albino occasionally seen among other races whose hair and eyes are totally devoid of pigment. Some anthropologists have called the White Indians albinos, while other anthropologists and biologists declare that they do not exhibit albinism as they understand it.

(2) Some disease or pathologic condition has prevented pigmentation and this lack of coloring matter in the skin has become so fixed in the race that it is inherited from generation to generation as an acquired characteristic. The White Indians are not sick in the ordinary sense of the word, and the three White Indian children brought to this country by Mr. Marsh are in better health and more mentally alert than the average white child.

(3) The White Indians are the beginning of a new white race, perhaps duplicating what happened many thousands of years ago when the present white race was evolved from dark skinned stock. If this is so, the White Indians are what is known as biologic "sports," a condition of extreme scientific interest because of its bearing on the biological problems of man.

(4) The White Indians are the result of a mixture of white or Nordic blood with the brown Indian blood. If this be so it must have occurred many years before Columbus discovered America, because his records and those of Balboa and later explorers tell of White Indians in Central America and Panama at the time of their explorations. One suggestion is that the Vikings and Norsemen who discovered and settled New England in the twelfth century found the climate too cold for them, took to their ships, went south and mixed with the Maya and Aztecs of Mexico, who later emigrated to Panama, becoming the ancestors of the present White Indians. There are records also of a Welsh nobleman sailing with a large company in the direction of America in 1207 and some believe that an admixture of these early voyagers resulted in the White Indians seen by Balboa and now discovered by Mr. Marsh.

Frankly, scientists are unable to determine the cause and origin of the White Indians, although they consider that Mr. Marsh's explorations have resulted in a major ethnological and anthropological discovery. Dr. Aleš Hrdlička, of the U. S. National Museum, remarked that the phenomenon deserves a thorough scientific investigation, and that Mr. Marsh deserves the thanks of American and British anthropologists for having brought to their attention a subject of considerable scientific interest and importance.

The 1925 Marsh expedition to Darien including, it is hoped, geneticists, ethnologists and anthropologists, will have the task of solving this unique racial mystery. Mr. Marsh intends to take the five brown Indians back to Darien with him, but he hopes to be able to keep the three White Indian children in this country and educate them in American schools.

THE DEPLETION OF WOOD PULP RESERVES

Science Service

AMERICANS no longer can look upon the cheap daily newspaper as something inevitable every morning and evening. An extensive research just completed by the United States Forest Service has brought out alarming statistics on the depletion of wood-pulp reserves in the United States.

American paper requirements now exceed eight million tons a year, or 56 per cent. of the world consumption. Wood constitutes 90 per cent. of the raw material from which this is manufactured. In 1922, 9,148,000 cords were required. American forests to-day supply only 49 per cent. of this wood. As recently as 1899 they supplied 83 per cent. Of the amount used in newsprint production, the domestic supply furnishes only one third. Canada supplies the pulp wood for 37 per cent. of our entire paper requirements. The forests of the older lumber sections of the United States are being cut much more rapidly than they are replaced by new growth. In most regions the original timber supplies have been greatly reduced.

The problem, as stated by the Forest Service, is to secure annually from our own forests more than a million cords additional to offset pulpwood imports, approximately five million cords to offset pulp and finished paper imports, and to insure a sufficient growth to supply the needs of the future. It is estimated that a total of about 15 million cords will be required for this purpose by 1950.

Three possible solutions are suggested by the government: *First*, new or modified pulping processes may increase the number of species available for paper. Pine or larch, it is suggested, may be made to take the place of spruce, fir and hemlock in sulphate-pulp production. *Second*, paper manufacturing must be conducted more economically. Reduced pulping waste in the chemical process, re-use of waste paper to a greater extent, and more coordination between the lumber and sawmill industries, must be aimed at. Only about 45 per cent. of the original wood weight now appears as pulp. Re-use of waste paper has grown to 29 per cent. of our total production, but it can be increased to furnish a much greater contribution than its present 1,850,000 tons a year.

Finally, the Forest Service states that the main reliance in ultimately meeting our pulp wood requirements must be placed on the growing of timber. The possible margin of growth on our present area of forest land, under intensive forest management, over the present drain, would ultimately amount to about 12 million cords of the pulp species. To this could be added about 11 million cords now lost annually by fire and disease. To this could be added about 2,000,000 cords annually from Alaska. Out of this total could be met the 10½ million cord difference between the present cut from

our forests and the ultimate requirement of 15 million cords, and leave a substantial margin.

REFORM OF THE CALENDAR

Science Service

A NEW arrangement of the calendar, embodying the ideas of Dr. Charles F. Marvin, chief of the U. S. Weather Bureau, was presented before the meeting of the International Geodetic and Geophysical Union, which closed at Madrid on October 10. Dr. Marvin's representative at the meeting was Professor H. H. Kimball, also of the U. S. Weather Bureau.

Dr. Marvin has long believed the present division of the year into twelve months of unequal length is awkward and should be changed. He likens the present calendar, in which the length of the months varies from twenty-eight to thirty-one days, to a confusing yardstick which would sometimes measure thirty-six inches and sometimes thirty-eight or thirty-nine. He believes that much convenience would be gained by both business and science if months were always of equal length and always began on the same day, and he has devised a calendar on that basis, which was presented before the meeting here.

Professor Marvin's calendar is very simple. The year is divided into thirteen months instead of twelve, and each month has exactly twenty-eight days. Each page of his calendar would look like this:

Sun.	Mon.	Tue.	Wed.	Thur.	Fri.	Sat.
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

There would never be any change. All months would have the same days on the same dates, forever. This thirteen-month year would have one day, the 365th, left over. Dr. Marvin proposes to stick this odd day in somewhere between Christmas and New Year's, as an additional holiday. In leap years another day would be inserted between two midsummer months, as a midsummer holiday.

A number of advantages to business in the proposed arrangement are pointed out. The beginning of each month, and the beginning of the year, would always be the same, also the beginning of a week—a considerable matter in the ordering of office routine. People who are paid by the month or semi-month would always have Saturday for pay day. Legal holidays that now shift, like Christmas, New Year's and July 4, would always come on the same day of the week. Religious festivals that move about, like Easter, could be given a definite date. Authorities of the Roman Catholic, Eastern Orthodox and Anglican churches have agreed that a fixed date for Easter could be arranged.

The last calendar reform occurred in 1582, when Pope Gregory XIII revised the old Julian calendar, which had been in use since the time of Caesar. The Julian calendar had allowed too many leap years, and in the course of centuries an error amounting to eleven days had crept in. It took some time for Gregory's calendar to be adopted, but long before the beginning of the nineteenth century all western nations except Russia were using it. Russia clung to the Julian calendar until 1923, when the Soviet government brought its dates into agreement with those of the rest of the world. The calendar adopted in Russia last year contains one very slight modification, designed to offset a minor inaccuracy left in the reckoning by Gregory; but this is of interest only to astronomers, since the change is not to take effect until the year 2000, and the error is so small that it will not amount to a full day until the year 4600.

The proposed new calendar is even more closely calculated than the latest Russian model. But one unescapable source of error still intrudes. It is known now that each year is shorter than the one preceding by a very small particle of time. The difference amounts to fifty-three one hundredths of a second in a century. Professor Marvin states that by the time this unavoidable error introduces a difference of one day in his method of reckoning, it will be the year 13000 A. D.

ITEMS

Science Service

EXPERIMENTS on the milk ration for undernourished children in the public schools have shown that both bodily and mental vigor are increased thereby. A pint of milk daily, in addition to their usual meals, was provided for 30 children, 15 boys and 15 girls. Measurements of height and weight were taken every two weeks and the hemoglobin percentage in the blood estimated. This percentage quickly rose about 20 points, after which the children started to put on weight much more rapidly than 30 other well-fed children who were not receiving the milk ration. After two months both groups were given the ration. The increase in hemoglobin was not so great during the second two months but was much greater for the poorly-nourished than for the well-nourished children. The gain in weight of the poorly-nourished children was less than during the first period and considerably less than for the other group. When the milk rations were stopped there was a noticeable diminution in the brightness of spirits of both groups.

THE invasion of the potato fields of Germany is threatened by the Colorado potato beetle. This destructive insect pest has found a foothold at various times and places in eastern Europe, but has hitherto been held in check or driven out by energetic measures. Since the war, however, it has successfully invaded and established itself in a large area in southeastern France and threatens to extend its invasion into central Europe. Once well established in the potato fields of Germany it would cause great losses to one of Germany's most important food crops. Ernest Janisch, of Berlin, claims that the beetle was brought to Bordeaux, France, in ships bringing troops from America. This recalls the fact that American entomologists believe that the Hessian fly, one of the worst pests in America, first came to this country from Germany in the straw brought by Hessian troops with their horses to America during the revolutionary war.