GEOGRAPHICAL RECORD

THE AMERICAN GEOGRAPHICAL SOCIETY

Presentation of the Charles P. Daly Medal to Professor Paul Vidal de la Blache. The presentation of the Charles P. Daly Medal for Geographical Research, which was awarded to Professor Vidal de la Blache by the Council on Jan. 21, took place on June 24 at the residence in Paris of the Hon. W. G. Sharp, Ambassador of the United States to France. A number of the distinguished colleagues in geographical work of Professor Vidal de la Blache were present. Ambassador Sharp made the following remarks in presenting the medal:

"It gives me very great pleasure, Sir, to present to you to-day this medal of gold which has been sent across the waters for this purpose by the American Geographical Society.

"In making this presentation, I feel sure that the precious metal of which it is composed is no more pure or less alloyed than the sentiments of high regard and appreciation which go with it. It is indeed a great thing to be thus honored by a Society whose personnel in my country is so distinguished and whose services in its particular scientific field have given it such a high reputation; but it is nevertheless true that, as distinguished as the Society may be, yet, in bestowing to-day this medal upon you, Sir, it has been greatly honored by your acceptance. It is indeed not at all surprising that this distinction should come to an eminent citizen of a country whose learned men have contributed so much to the broad field of scientific research, and thereby to the advancement and elevation of their fellow men.

"In presenting this medal, therefore, I wish you to believe me when I say that it is an added pleasure to know that it goes to such an illustrious representative of the French people. May your notable work, Sir, and that of your fellow collaborators, continue to grow in usefulness and to add lustre to the science to which you have so many years devoted your life's labor. The development of that science has not only been of great practical value to man but it has increased his admiration for the work of the Divine Architect of the universe."

Professor Vidal de la Blache said in response:

"I am much touched, Mr. Ambassador, by the words which you have addressed to me, and still more than I can say by the character of simple cordiality which you have given to this occasion. I shall be very much obliged if you will kindly convey the expression of my profound gratitude to the American Geographical Society. All of us here know what authority that Society enjoys in the world on account of its publications, its initiative and its scientific activity. I need hardly dwell, therefore, upon the high value to be attached after a life of work to such a mark of distinction bestowed by that institution.

"I hope I may be permitted to remark that in the reward thus accorded to me I discern a mark of sympathy addressing itself beyond my person to the work of intellectual drawing-together which is being carried on by the scientific societies, the academies and the universities of America and France. Between two peoples enamored of a common ideal, no exchange can be more natural and more fruitful, none responds better to our sentiments under existing circumstances.

"Three years ago, one of the most eminent representatives of the science of geography, Mr. William Morris Davis, professor at the University of Harvard, was for six months our colleague at the Sorbonne. Then, scarcely had his course of lectures terminated, scarcely had we closed our note books, than he acted as guide to some of his principal auditors in an excursion through the

American continent organized by the American Geographical Society. Thus could the teaching of the Sorbonne be continued without transition on the plains of Colorado and through the Rocky Mountains. I had not the advantage of being associated with that excursion; but the accounts given by those who participated in it have revived in me recollections of those too short peregrinations which I had the privilege of accomplishing in America; I saw again that grand scenery, I lived over again those hours of reflection and of learned conversation before the scenes which successively presented themselves to my eyes; I found again, more vital than ever, the vision of that American world in which one does not know which most to admire: the immensity of its natural resources, or the human genius which puts them into action.

"Such, Mr. Ambassador, are the impressions evoked and symbolized in my eyes by the medal which you have just delivered to me. It will perpetuate with me and mine our sentiments of gratitude towards the American Geographical Society and the revered name of Charles P. Daly."

Attendance at the Society's Exhibitions. The attendance at the exhibitions given at the Society's house for 11 months ending June 30 was 39,804.

NORTH AMERICA

A New Center of Continental Glaciation. In addition to the two main centers of glaciation east and west of Hudson Bay, Tyrrell now proposes a third (J. B. Tyrrell: The Patrician Glacier South of Hudson Bay, *Congrès Géologique International, Compte-Rendu de la XIIe Session, Canada, 1913,* pp. 523-534). It is southwest of Hudson Bay between the Severn and Albany Rivers and its center is in or near 53° N. and 89° W. The evidence of it is found in the striæ, which seem to radiate outward from this neighborhood. It is suggested that the till deposits from the Patrician center antedate those from the Labrador center. LAWRENCE MARTIN.

Seismological Work in the U. S. Weather Bureau. Seismological work is now being conducted by the Weather Bureau. Congress made no specific appropriation for the work and it was provided that funds appropriated for general meteorological purposes should be devoted to it. The Weather Bureau has been selected to carry on the work not because of any inherent relation between meteorology and seismology but because among the various Federal scientific institutions it was regarded as best fitted for this duty. With about 200 regular and permanent stations manned by trained observers accustomed to the care of delicate instruments, the service has the coöperation of more than 4,000 volunteer observers. A wide distribution of competent observers is necessary for progress both in meteorology and seismology. Professor William J. Humphreys of the Weather Bureau has supervision of the work. Earthquake reports received by the Weather Bureau will be published monthly in the *Monthly Weather Review.* (Condensed from the *Bull. of the Seismolog. Soc. of Amer.,* Vol. 5, 1915, No. 2, pp. 63-65.)

The Navajo Indian in Relation to the State. The relation between the Navajo Indian and the State is one of unusual interest, for this tribe exhibits the phenomenon, rare in the contact of an inferior with a superior race, of numerical increase. Captured by the U. S. Government and removed to Fort Sumner in 1863, the 12,000 Navajos, reduced to little over 7,000, were returned four years later to their old home. Since then they have so increased that the present strength of the tribe is estimated at 28,000 to 30,000 and 31,635 is the actual number given for June 30, 1913. Here the Indian has done what the white man could not have done; he has given to a great area of desert land a population greater and more settled than the white man could have given. With patient industry he has raised his small patches of corn and alfalfa and his flocks, not only in sufficient quantity to support himself, but by the sale of the produce to local traders to establish a steady commercial movement. In 1911 the sale of blankets produced $675,000, of Germantown wool $25,000, of raw wool $465,000, which with the addition of the proceeds

from mutton, hides and pelts would total about $1,250,000. This expansion introduces certain problems in his relationship to the land and the State. To understand the situation it is necessary to distinguish between the Indian of the reservation and the Indian on the public domain.

The law of 1868 made a reservation grant of 3,225,600 acres in the state of Arizona, which was subsequently increased until it now comprises an area of 12,000,000 acres in the states of Arizona and New Mexico. The reservation possesses certain potential resources in the form of timber, valued at $7,500,000, and coal, low-grade in quality but abundant in quantity, valued at $150,000,000; but the grazing and agricultural resources now open to the reservation Navajo are strictly limited and under present conditions the reservation has reached the saturation density of population. Therefore the proposal of certain white residents of the states to confine the whole tribe to the reservation is impracticable; it would simply mean pauperization. Rather is it desirable that the Government should revert to the policy of 1875 and encourage movement to the public domain.

At present the number of Indians resident on the public domain is estimated at 12,000 to 14,000, of whom some 6,000 are Papagos and 8,000 to 9,000, some say less, are Navajos. These are the people directly concerned with the white population. They have suffered much from its hands; the coming of the railroad in the late seventies and the early eighties brought many misfortunes. The railroad company itself acquired large tracts over which the Indian had been free to move. To-day the Santa Fé road owns 1,000,000 acres, 25 per cent. of its original holding, in a zone 40 miles wide on each side of the line. The railroad brought the white stock-raiser, operating on a large scale, and who in various ways, by purchase, by possessing himself of the scantily distributed springs, by violent physical means, has dispossessed the Indian and given rise to the present problem of his support.

As an alternative to the proposed settlement of the whole tribe on the reservation is the allotment of lands on the public domain. Under the last Indian Appropriation Bill, the Indian can only obtain a land title by himself furnishing the funds for the survey and other formalities. And further the area that he can acquire—160 acres—is in many cases wholly inadequate. A satisfactory result can be obtained only by the award of suitable allotments based on a complete survey of the territory and classification of the land. The classification of the land should include divisions as follows: (1) agricultural with irrigation; (2) agricultural with dry farming; (3) pastoral. The Indian who asks for "land, not charity," has signified himself ready to conform to the laws of taxation. Thus is removed the objection, raised by his wealthy opponents, the stock-raisers, of unduly increasing the untaxable land of the state. By such grants the reservation with its restrictive influences would pass away; community habits would be abandoned and the Indian would gradually be adapted to, instead of being swamped by, the processes of modern civilization. (Abstracted from the *Rept. of the Thirty-first Ann. Lake Mohonk Conference*, 1913, pp. 64-84.)

CENTRAL AMERICA AND WEST INDIES

Present Condition of the Active Volcanoes of Martinique, St. Vincent and Guadeloupe. Dr. E. O. Hovey, of the American Museum of Natural History, who has recently revisited these volcanoes, says that the new cone of Mt. Pelé which stands as the monument of the great eruption of 1902-03 nearly fills the old crater and rises some 500 feet above it. Considerable steam is still issuing from the fissures that seam the sides of the new cone, but there are no temperatures exceeding 100° C. (212° F.). The activity of the volcano has greatly and continually diminished since the outbursts of 1902-03, and apparently there is no present danger of recrudescence. Vegetation has reëstablished itself to the summit of the mountain on the east or windward side of the volcano and even the forest is beginning to reassert itself. Sugar plantations on the west side of Mt. Pelé have been reinstated as far as the Roxelane River within the original zone of annihilation. The ruined city of St. Pierre now has a population of about 200 people.

The area around the Soufrière of St. Vincent also shows evidences of recov-

ery from the previous activity. As on Martinique, its vegetation has more fully reëstablished itself on the windward than on the leeward side of the mountain. The interior walls of the crater are coated with moss and tufts of grass.

The volcano on Guadeloupe, unlike those of Martinique and St. Vincent, shows no decrease of temperature over the past. The fumaroles have been active, with varying degrees of strength, during all the historic period of the volcano. The vents maintain to-day the force of their discharge, but the temperature does not exceed 212° F. (Condensed from *Amer. Mus. Journ.*, Vol. 15, 1915, No. 5, pp. 254-255.)

SOUTH AMERICA

Completion of Colonel Rondon's Explorations in Matto Grosso. In a letter dated Cambuquira, Minas Geraes, May 18, 1915, which Col. Roosevelt has kindly placed at the disposal of the Society, Col. Rondon, his recent associate in the descent of the Rio Theodoro, reports the completion of the overland telegraph line linking the Brazilian Atlantic seaboard with the rubber settlements on the Madeira River and, thus, with the whole Amazon region. It was in connection with the construction of this telegraph line, it will be remembered, that Col. Rondon's important expeditions of 1907 and 1909 were undertaken, on the latter of which the headwaters of the river were discovered which was later traced in its whole length by the Roosevelt-Rondon expedition of 1914. The whole line from Cuyabá to Santo Antonio on the Madeira is about 1565 km. (972 miles) long. Of these about 590 km. (366 miles) to Juruena had been constructed at the time of the 1909 expedition; at the time of the Roosevelt-Rondon expedition the line had been carried about 550 km. (341 miles) farther. The completion of the remaining 429 km. (266 miles), down the Gy-Parana to the Madeira, Col. Rondon now reports in his letter to Col. Roosevelt. This work was done in the eight months between May 7, 1914, and the end of the year. Hand in hand with the construction of the telegraph line has gone the building of a road which opens up the territory traversed and, most important of all, the pacification of the Indian tribes. In this phase of his work Col. Rondon reports complete success. In addition, he reports that Lieut. Marques de Souza had been despatched in February of this year to descend the Ananáz River from where its headwaters are crossed by the telegraph road. The Ananáz is thought to be the source of the upper Aripuana, or major right affluent of the Rio Theodoro. If this turns out to be the case, the main arteries of the Theodoro basin will have been explored.

On returning to Rio de Janeiro on April 22 of this year, Col. Rondon reported to the proper authorities and then left for Cambuquira, a watering-place near Campanha, Minas Geraes, where he is preparing the official report and maps of the 1914 expedition. Later he plans to give a lecture on the expedition before the Geographical Society of Rio de Janeiro.

The Celebrated Copper Mines of Chuquicamata, Chile. The fame of Chuquicamata continues to grow apace. With over 300,000,000 tons of ore "in sight," it claims to possess the largest copper deposit in the world (*Commerce Repts.*, July 17, 1915, Washington, D. C.). Although Chuquicamata has enjoyed a favorable situation, close to the oasis of Calama and with railroad communications to Antofagasta and the still nearer port of Tocopilla, its long-known deposits have never been worked on an extensive scale. The reason for this lack of development lies in the low-grade nature of the ore—2.10%—which can only be worked at a profit by modern methods and the outlay of a large capital. In 1903 the production of the whole of the Chuquicamata camp amounted to 18,000 tons of ore; the mill, recently installed by the present exploiters, the Chile Copper Co., will, when completed, have a daily capacity of 20,000 tons. The mill is operated by an oil-consuming power plant located in Tocopilla, the port for the mines. Round the mill has already sprung up a town of some 4,000 inhabitants. It is, of course, of the modern type, well equipped with all essentials for the welfare of the employees and a strange contrast to the miserable collection of canvas tents that, half a century ago, marked the site of a Chilean mining center.

Creation of a Geological Survey in Chile. A state geological survey has just been founded in Chile. Dr. Ernst Maier, professor of geology at the University of Santiago, has been appointed director, and Drs. J. Felsch and H. Brüggen field geologists. A provincial survey had already been organized in 1911, under which important preliminary work was done. General geological maps of the coal districts of Arauco and Concepción and of the island of Chiloë and the Territorio Magellanes have been prepared. Several reports have been published dealing with the coal districts, the coast range and the iron ore districts in the northern part of Chile. (*Der Geologe,* No. 15, Max Weg, Leipzig, May, 1915.)

Origin of the Galapagos Islands. These five larger and ten smaller islands forming an archipelago in the Pacific 580 miles west of Ecuador were believed by Darwin, Wallace, Agassiz and others to be of oceanic origin. Some other writers have held that the presence of the giant land tortoises discovered on the islands is the chief factor on which a former land connection with the mainland can be maintained. Mr. Alban Stewart of the University of Wisconsin, who has been studying the flora of the islands, has published a paper[1] in which he says that his study of the flora of the islands has led him to believe that they are truly oceanic in their origin, but they have been connected at some time in such a way as to form one or more larger islands. He found no evidence, from his study of the flora, that would lead him to believe that a land connection with America had ever existed. In fact, most of the evidence would lead to the opposite conclusion.

With regard to the theory that the presence of the land tortoises seems to indicate that the islands were once connected with the mainland he says that these land tortoises are able to remain alive in sea water for a long period. While collecting on the southwest side of Albemarle Island, a small boat in which two tortoises had been placed was capsized and completely demolished on the rocks. Twenty hours later the lost tortoises were rescued from the sea and had no appearance of having suffered damage. In the early part of the nineteenth century Admiral David Porter wrote that the crews of some of the vessels captured by him had thrown overboard the supply of tortoises which they had obtained on the islands. "A few days afterwards we were so fortunate as to find ourselves surrounded by about fifty of them which were picked up and brought on board." "It can be seen," says Mr. Stewart, "from this, that there is no reason for believing that these tortoises would not be able to remain afloat for weeks or even months without suffering greatly. They always float right side up in the water and if they are inverted immediately right themselves as soon as they are released." They are very tenacious of life and Mr. Stewart quotes Admiral Porter as saying that they may be placed in the hold of a ship for eighteen months without suffering any diminution in fatness or excellence.

Mr. Stewart says that the northern islands of the group lie within the Panama current and pieces of bamboo and cocoanut husks are common constituents of the drift cast up on the shores of these islands. Such a method of transport is thus possible, though he is unable to say whether mollusks, insects, etc., would be able to withstand so long a sea voyage.

EUROPE

Some Phases of Agricultural Conditions in France since the War Began. Data on horses, cattle and wheat are supplied by *La Nature* for July 3, 1915. The requisitioning of horses for French military purposes occurred at the height of the harvesting season and especially embarrassed the beet industry. The disturbance occasioned by the war was slight, however, in districts like Limousin, Massif Central, or Nivernais, where oxen and cows are used in agricultural operations. The present scarcity of horses has led

[1] Further Observations on the Origin of the Galapagos Islands. *Plant World*, Vol. 18, 1915, No. 7, pp. 192–200.

the French to foresee a probable increase in the use of cattle and agricultural machinery after the war.

The importation of refrigerated meat was encouraged to husband the country's resources. It is estimated that about 15,000 tons of cold storage meat, consisting largely of beef, have been imported monthly since the beginning of the year.

About 28,500,000 bushels of wheat were imported into France to make up for the shortage of some 22,000,000 bushels produced in the territory held by the German armies. Ordinarily the 6,000,000 or 7,000,000 bushels imported yearly came from Russia, the United States, Canada and Argentina. Russia is at present unable to export wheat. The supply from Canada and Argentina has been reduced considerably. Practically the United States alone has furnished France with wheat since July, 1914. American wheat is now currently sold at 37 to 39 francs per 100 kilograms in French ports, an increase of about 7 francs over the price of French wheat. In time of peace the difference never exceeds 2.50 francs.

PHYSICAL GEOGRAPHY

A New Determination of Oceanic Evaporation. In an important paper in the *Annalen der Hydrographie und Maritimen Meteorologie* (Vol. 43, 1915, No. 3, pp. 111-124 and No. 4, pp. 169-178) Dr. W. Schmidt of the Vienna Meteorological Office establishes a new value for the amount of oceanic evaporation. An investigation of the dynamic processes of evaporation led to the result that the amount of evaporation on the open ocean as determined by Lütgen is much too large, as it does not take into account the amount of heat accumulated in the atmosphere through the rise of temperature. Schmidt determines the mean height of the daily evaporation of oceanic waters to be 2.07 millimeters, or 76 centimeters (30 inches) a year. The total annual amount of water evaporation from all the oceans would therefore not be 384,000 cubic kilometers, as Brückner and, after him, Fritzsche, assume, but only 273,000 cubic kilometers (65,500 cubic miles). Assuming, as heretofore, the water vapor which goes over upon the land surface to be 30,640 cubic kilometers (7,350 cubic miles), the rainfall over the oceans then amounts not to 353,360 cubic kilometers but to 242,360 cubic kilometers (58,200 cubic miles), or an amount corresponding to a precipitation of 69 centimeters (27 inches). The total amount of rainfal over both land and sea, according to Dr. Schmidt's determination, is equal not to 465,300 cubic kilometers but only to 354,300 cubic kilometers (85,000 cubic miles). Thus values are established for the economy of the hydrosphere which differ considerably from those previously accepted. A control of these figures from the geographic standpoint is much to be desired. (W. Halbfass in *Geogr. Zeitsch.*, Vol. 21, 1915, No. 6, p. 355.)

Scientific Work on Ice Patrol Steamers. The cutters *Seneca* and *Miami*, which are patrolling the Grand Banks along the steamship lanes to detect icebergs and ice flows and warn vessels of these dangers, carry four scientific men to make special scientific investigations. The Bureau of Fisheries is represented by Harold W. Nightingale, who is observing temperatures and salinity of the water at various depths and studying the direction and velocity of currents. Biological collections, particularly of those animals which are carried by currents, are being made and will be studied by specialists after the material has accumulated. (*Daily Consular and Trade Reports*, June 28, 1915.)

PERSONAL

Mr. E. C. Andrews of the Geological Survey of New South Wales is preparing a work of some 700 pages on the origin of the Australian flora. The work will be in part geographical and in part botanical.

William H. Dall of the U. S. Geological Survey and the Smithsonian Institution and Otto H. Tittmann, recently Superintendent of the U. S. Coast and Geodetic Survey and now President of the National Geographic Society, received the honorary degree of Doctor of Laws at the recent Commencement of George Washington University.

Dr. William E. Lingelbach, Professor of Modern European History in the University of Pennsylvania, has been elected President of the Geographical Society of Philadelphia.

Mr. Frank A. Perret, the vulcanologist, has returned to Italy after a holiday trip home. He will resume his studies on Mt. Vesuvius and at other centers of volcanic activity.

Mr. J. B. Tyrrell of Toronto was elected President of the Geological Section of the Royal Society of Canada at the annual meeting in Ottawa in May.

OBITUARY

The Society regrets to announce the death, on May 30th last, of His Excellency Señor D. Marcelo de Azcárraga y Palmero, President of the Royal Geographical Society of Madrid.

As this number goes to press, the Society learns, to its deep regret, of the death on July 31, at the age of fifty, of Dr. A. J. Herbertson, Professor of Geography at the University of Oxford. An estimate of what this loss means to geography, and particularly to the advance of the subject in the English-speaking world, must be deferred to a later issue.