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GEOGRAPHICAL RECORD.

NORTH AMERICA.

EXPEDITION OF DR. LUMHOLTZ TO MEXICO.—Dr. Carl Lumholtz started late in May for Sonora, Mexico, in the arid region of which he is going to make researches of an ethnological and physico-geographical character. He will return some time next winter. His principal field is the desert region between Rio de Altar and the mouth of the Colorado River as well as the upper part of Lower California. There is, in a general way, no surface water here; but water is supposed to exist at a depth of 30-50 feet below the surface. The vegetation is that peculiar to the arid region of the South West, cacti, etc.

Dr. Lumholtz will, in the beginning, be accompanied by half a dozen or more Mexicans, and will equip his expedition in Mexico, where the mules are hardier than in the United States. Water will often have to be carried along on mule back. The Indians among whom he will live for many months are the Pima, Papago and Cocopa.

THE FOREST SERVICE.—In the *Report* of the Forester for 1908, (U. S. Dep't. of Agriculture, 1908,) Mr. Gifford Pinchot says that the estimates of the present stand of merchantable timber in the National Forests (Forest Reserves) obtained during the year, put the total at about 390,000,000,000 board feet. This estimate is rough, but rests upon better data than have hitherto been obtained. As the total lumber cut of the country for 1907 was slightly over 40,000,000,000 board feet, the area of our forests, controlled by the national government, would supply lumber for the entire United States for only about ten years, or wood material of all kinds for perhaps five or six years. The National forests embrace about one-fourth the wooded area of the country, but are now supplying less than 1 per cent. of the wood consumed. The most important work in 1909 will be the establishment of a number of National Forest experiment stations where the most important silvicultural problems will be investigated through a long series of years.

BRANCH OFFICE OF THE U. S. GEOLOGICAL SURVEY AT DENVER.—The Survey has opened a branch office at Denver to facilitate its western work. The office will be a base of supplies for the engineers who are kept in the field many months each year making geologic studies of mineral deposits, conducting topographic surveys for the base maps of the geologic atlas, mapping the national forests, investigating surface and underground waters, and collecting statistics of mineral production. A supply of copies of the publications of the Survey, available for free distribution, will be kept on hand, as well as a complete file of the topographic maps, geologic folios, and other publications, subject to sale. The office was opened on April 1st, in the Commonwealth Building, and Mr. R. C. Miles is at present in charge.

DIFFERENCE IN EROSION OF AMERICAN DRIFT SHEETS.—In a recent paper (*Amer. Journ. Sci.*, 1909, p. 350) Mr. Frank Leverett discusses the measure of weathering and erosion in the Pleistocene deposits of the Central United States.

He shows clearly that the drift sheets of the different ice advances have been subjected to very different amounts of weathering and erosion, and that this difference can even be detected on the topographic maps issued by the United States Geological Survey. In illustration of this point reproductions, in black and white, of several of the topographic sheets are printed, and these vividly support his main thesis. The two sheets selected for the Wisconsin drift area, for example, show a minimum of erosion, with extensive flat-topped areas with almost no dissection; while the sheets from the area of the much older Kansan drift are greatly dissected, with only narrow flat-topped divides as yet unconsumed. The difference in erosion on the two sheets of drift is most striking and furnishes convincing topographic evidence of the long period of time that separates the two periods of ice invasion. The topographic sheets reproduced in the article, and others from the same regions, will serve as excellent material for class room work in physical geography. Mr. Leverett also discusses other phases of the problem of the different ice sheets and presents a correlation of American drift sheets with those of Europe.

R. S. T.

SOUTH AMERICA.

MAN AND CLIMATIC CHANGE IN SOUTH AMERICA.—In the *Geographical Journal* (March, 1909,) Mr. Isaiah Bowman, Assistant Professor of Geography at Yale University, discusses the evidence for climatic change in South America within the human period. Three sets of evidence are analysed, the observations of Darwin in central Chile, of Moreno in Argentina, and of the Yale South American expedition of 1907 between Chile and Bolivia. It is found that in each group there are evidences of a convincing sort, and these are found to be precisely those physical facts and objects that each investigator observed directly. Darwin and Moreno observed ruins where now no water can be found or could possibly be carried by irrigation ditches, and it is pointed out how slight a change is required on the margin of habitability to enable man barely to live or to drive him out. It is established by Moreno that agriculture was once carried on in northwestern Argentina on a scale demonstrably larger than would be possible to-day. The results of the Yale South American expedition of 1907 relate to the abandoned trails and corrals of the Lake Huasco basin in the Sillilica range (lat. 21° S.), on the boundary between Bolivia and Chile. It is shown that old roads and corrals now occur over 100 feet above the floor of the basin. They are in absurd situations for existing conditions, without water or shelter, and must have been used at a time when the localities occupied by the existing roads and corrals, with their adequate water and pasturage, were covered by the ancestor of Lake Huasco, a lake of vastly greater extent than the existing one. The well-developed shore lines, terraces, etc., of the old lake are direct evidences of climatic change and the correspondence of position of these and the old roads, and the better position of the new roads, are offered as inevitable evidences of climatic change during the period in which man occupied the region and conducted trade by caravan. The article is illustrated by two photographs and two new maps of the Huasco basin and the old and new roads, springs, and corrals.

ASIA.

EXPLORING THE NORTH EASTERN COAST OF SIBERIA.—The Imperial Russian Academy of Sciences has fitted out a large expedition for the scientific exploration

of the northern coast of Siberia from the Lena River to Bering Strait. The party started from St. Petersburg in the middle of March. It is divided into two sections. The first, under the leadership of the geologist, U. A. Volosovitch, will cross the coastal regions from the Lena delta to Nishne Kolymsk. The second, in charge of J. P. Tolmatchev, will carry on the work from the mouth of the Kolyma to Bering Strait. The latter hopes, by the end of September, to reach East Cape and to go on a whaler to Kamtchatka and Vladivostok.

The Russian Hydrographic Office, on March 28th, started a survey party for Irkutsk for the purpose of descending the Kolyma River to its mouth. It is in charge of Captain Ssedov, and the purpose of the investigation is to determine how far inland the Kolyma is available for navigation by large trading vessels. It thus appears that, some thirty years after Nordenskjöld made the North-East Passage, in 1878-79, the Russian Government has set about the work of investigating the possibilities of opening up Northeastern Siberia. (*Pet. Mitt.*, No. 4, 1909.)

LITTLE-KNOWN PARTS OF ARABIA.—In his first article on "Problems in Exploration" (*Geog. Journ.*, Dec., 1908), Mr. D. G. Hogarth said that away from the coasts of the huge peninsula of Arabia no part of it is well enough known to geographers to be described as fully as we may describe Tibet. Almost the entire southern half of Arabia is occupied, according to native report, by a vast wilderness called generally *Ruba el-Khali*, i. e., "Dwelling of the Void"; but while on its western edge are the dunes of *el-Ahkaf* and on its eastern edge is a rolling gravelly steppe which the Arabs call *el-Dahna*, no European has ever entered this immense tract, which embraces some 600,000 square miles.

It is a part of this region which Mr. G. W. Bury is now attempting to traverse. He has had much experience of travel in southwest Arabia, and he hopes now to undertake a far more extensive expedition than any he has yet carried out. His party, to whose expenses the Royal Geographical Society has contributed, will enter Arabia east of Aden and proceed *via* the Yeshbum valley and Nisab to Behan el Jezab and thence to Harib and Mareb, examining on the way some of the ruined or buried cities (such as Shabwa, north of Nisab) and possibly waiting in one or another of the places mentioned for a favourable season for further advance. From Mareb, where he will try to obtain copies of the inscriptions to be found there, Mr. Bury hopes to move northward along, or in touch with the caravan route to Riyadh, if such a route still exists and water is procurable, making occasional journeys eastward into the desert. If it should be possible to reach Aflaj *via* Wadi Dawasir, he will try to traverse the Yabrin district, keeping on northwards towards Hautha—a route which should enable him to strike the supposed Oman-Mecca pilgrim route, if it has any real existence. If successful in this and the route seems practicable, he will make for Muskat. Otherwise he will choose one of various courses which will lead him either north to the Persian Gulf, west (from Riyadh) to the Red Sea or south to the Hadramaut.

Meanwhile, Professor Alois Musil is engaged in explorations in northern Arabia. After preparing himself for his new expedition by studies in astronomy, meteorology, and physical science, he set out last year for the little-known portions of the north Arabian desert lying inland from Koweit between Babylonia, the Persian Gulf and the Hejaz railway. His intention is to carry out a topographical survey and make a map of this tract, which is very rich in early

historical association; at the same time, he will make a thorough study of its archaeological and ethnographical features, including its inscriptions. The cost of this exploration, which is expected to occupy about eighteen months, is borne by the Austrian Government, the Vienna Geographical Society, and other bodies and private individuals.

POLAR.

DR. CHARCOT'S JOURNEY SOUTH.—A copy of a letter written by Dr. J. B. Charcot, leader of the French South Polar Expedition, to the Academy of Sciences, Paris, has been sent to the American Geographical Society at the request of that explorer. He wrote from Deception Island on Dec. 24th, 1908. His steamer, the *Pourquoi-pas*, on Dec. 22d, reached this island, which is in the group of the South Shetland Islands, off the west coast of West Antarctica. Approaching the island, the expedition met the Norwegian whaler *Ravn* and found three whaling companies established on the shore, one Chilean and two Norwegian. Dr. Charcot was here able to replenish the coal he had consumed (about 30 tons), since leaving South America.

The scientific work of the party was here vigorously prosecuted. The naturalists, Messrs. Gain and Liouville, and the geologist, Mr. Gourdon, collected specimens, Mr. Bongrain observed the second contact of the eclipse of the sun on Dec. 23d and continued a series of pendulum observations begun at La Plata and Punta Arenas, Mr. Rouch made soundings and dredgings and conducted meteorological observations, Mr. Godfroy drew a plan of the bay in which their vessel was anchored, and Mr. Senouque made here, as well as at Punta Arenas, magnetic and actinometric observations during the eclipse. A survey of the bay was also carried out.

Deception Island, Dr. Charcot says, is a volcanic island, circular in form, whose crater, partly submerged, provides a large and fine harbour, very deep, the entrance to which is through a narrow opening between two cliffs, hardly visible from the offing. The American sealing captain, Pendleton, was probably the first to enter this harbour, which became frequented by whaling and sealing vessels and was then wholly abandoned for more than a century. The Englishman Foster, on the *Chanteclerc*, sojourned at Pendleton Cove from Jan. 9th to March 4th, 1829, while making numerous pendulum observations. At the same spot, Mr. Bongrain now made his series of pendulum observations and regulated his chronometers.

Deception Island has again become an important centre for whaling operations. The fleet, now at work, has its headquarters in this bay, which is very favourably situated, with plenty of fresh water; warm water, with a temperature of 70°, is also found. The fleet consists of two steamers of from 3,000 to 4,000 tons, three sailing vessels for carrying coal and other service, and eight small steam whalers supplied with harpoon-guns. These vessels frequently return to the harbour, towing in the killed whales. Two hundred Norwegians are engaged in this productive industry.

Dr. Charcot wrote that his expedition would leave Deception Island on the evening of Dec. 25th, for Port Lockroy and, after a brief visit to Port Charcot, he intended to proceed south, establishing as many stations as possible along the west coast of West Antarctica. The whalers say that in the three years they have been in the waters between South America and West Antarctica, they have

never seen so little ice as in the past season, a fact that the explorer is inclined to interpret as of good omen for his work. If the lack of ice in Antarctic waters is due to the non-detachment of ice from the shores, it may make the advance of the *Pourquoi-pas* more difficult; but the fact that the land ice was found this year adrift much further north than usual encourages the hope that his endeavour to reach a comparatively high latitude on his ship may meet with fair success. His party was well, full of hope for the future of the expedition and much encouraged by the practical results already attained. Dr. Charcot thinks it is time that French whalers should enter the field, which whaling affords opportunities for profitable enterprise. Earlier references to the expedition will be found in the *Bulletin* for 1908, pp. 103, 554 and 752, and in the March number, 1909, p. 161.

PROFESSOR NORDENSKJÖLD GOING TO GREENLAND.—Professor Otto Nordenskjöld of Gothenburg, Sweden, will visit, this summer, the west coast of Greenland for geographical and geological purposes. He intends to study the ice-free coastal region of the Holstenborg district and will try to determine the southern limit of the inland ice cap. Zoological studies will be carried on by Mr. H. Skoog.

THE SEARCH FOR THE COLLECTIONS OF THE LATE MYLIUS ERICHSEN.—The March *Bulletin* (p. 160) had a notice of the small expedition that was to leave Denmark, this summer, to search for the diaries and collections which, it was thought, the lost explorers must have left in some c^hte when they were no longer able to carry them. It now appears that this party is to be headed by Captain E. Mikkelsen, whose account of his sledge journey over the ice of Beaufort Sea was published in the *Bulletin* (Vol. 39, pp. 607-20, 1907). The party will leave Copenhagen in July, endeavour to reach more northerly winter quarters than those occupied by the Erichsen expedition near Cape Bismarck, and, next spring, will make a sledge journey north to the Mallemukfjeld, where the body of the Eskimo Brönlund was found, and thence to Denmark Fiord, whose coasts will be searched for any objects that the lost explorers may have left there.

CLIMATOLOGY.

EARTHQUAKE WEATHER.—In *Nature* (Jan. 28, 1909), Mr. R. D. Oldham notes the peculiar weather which accompanied the recent Italian earthquakes. A sudden fog settled down on the Strait of Messina. The Mexican earthquake of Jan. 24, 1898, was also followed by a heavy mist at a time of year when such phenomena are usually unknown. Rainfall is so often reported as the immediate successor of an earthquake that, Mr. Oldham says, "we can no longer reject the hypothesis of a real connection between the two." Mr Maxwell Hall has tried to explain the phenomena of earthquake weather by changes of the barometer gradient due to rapid upheaval of the ground. Professor Milne has suggested that the disturbance of the ground, when transmitted to the overlying air, may determine precipitation and may explain the apparent association of severe earthquakes with rain and mist. If the influence is mechanical, it must result from the vibratory motion of the ground, or else from the permanent changes of level, accompanied by the sudden upheaval or depression of the column of air above. Of this change of level there is still no satisfactory evidence. R. DEC. W.

THE COLD PERIOD OF MAY IN ARCTIC AND ANTARCTIC REGIONS.—To *Symons's Meteorological Magazine* (Feb., 1909), R. C. Mossman, formerly of the Ben Nevis Observatory, later meteorologist of the Scotia expedition, and now attached to the Argentine Meteorological Service, contributes an interesting discussion along the line of what has lately been well termed "world meteorology." Referring to the "cold period" which recurs, with some regularity, on the 11th, 12th and 13th of May, and is known on the continent as the Ice Saint's Festival, Mr. Mossman finds that this period was well marked at the winter quarters of the *Discovery* in 1902-03, as well as at Cape Adare in 1899. It also comes out clearly at a large number of places in the Argentine Republic north of latitude 40° S., as well as at the South Orkneys, in latitude 61° S., but does not appear in the vicinity of Cape Horn nor on the Atlantic or Pacific coasts of South America up to about latitude 40°. This latter fact is due to the development of a cyclonic area over that region, whereas over the northern part of Argentina and Chile well-marked anticyclonic conditions prevail. The cold period of May is found to be a bi-polar phenomenon, experienced from latitude 78° S. to at least latitude 84° N. (*Fram*), over the region under discussion. It is especially marked in Chile and Argentina in the south, and over the greater part of Europe in the north. It is absent, or but feebly developed, in South America south of latitude 40° S. Where it occurs, it is associated with high pressure, and the anticyclonic conditions relative to the normal are most pronounced in Antarctica. At places where it does not occur, cyclonic conditions prevail.

Mr. Mossman affirms that warm and cold periods are synchronous in both hemispheres. This he says, is especially the case over the Atlantic area and the adjacent continents from about long. 70° west to 30° east. If the mean daily temperatures at the winter quarters of the *Discovery* in lat. 78° S., and of the *Scotia*, in lat. 61° S. are plotted for 1903, and compared with similar curves for Europe, the interrelation can be seen at a glance. That there are such intimate interrelations between that part of the globe covered by the North and South Atlantic seems to be due to the regular sequence of the atmospheric "centres of action," which are the north polar anticyclone, the Iceland low, the North Atlantic high, the South Atlantic high, the Weddell Sea low and the Antarctic high, the centres of all of which are, meteorologically, approximately in the same meridian.

R. DEC. W.

AN INTERESTING BAROMETER.—Otto von Guericke (1602-1686), well known for his connection with the famous "Magdeburg hemispheres," constructed a water barometer about the year 1660. By means of this, he was able to foretell the coming of a severe storm, which occurred in September, 1660. The column of water, as is commonly known, held up by the ordinary atmospheric pressure at sea-level, is about 34 feet in height. Von Guericke's water barometer was doubtless the longest one ever constructed until very recently. We learn, however, that Father Alfani, at Faenza, the birthplace of Torricelli, has now made the largest barometer on record. The tube is filled with purified oil, freed from air, and the column is 36.7 feet in length.

R. DEC. W.

EDUCATION.

GEOGRAPHY IN THE UNIVERSITIES.—The May number of the *Educational Review* has an article by Mr. Avarad Longley Bishop, of Yale, on "Geography in the Universities Abroad," in which he gives facts to show that geography in our

Universities, to-day, has, on the whole, made less advancement than had been made in many of the European countries nearly a quarter of a century ago. His comparisons would have been still further emphasized if he had given some idea of the great progress in the study of geography in the European Universities themselves since Dr. Keltie, in 1885, reported the facts that Mr. Bishop largely quotes. He shows, however, that, in recent years, the subject has been gaining ground rapidly among the higher institutions of learning in the United Kingdom, as is evident from the reports occasionally published in the *Geographical Journal* and the *Scottish Geographical Magazine*; and we have only to turn to the semi-annual lists of the geographical work planned for each half year in the Universities and higher schools of Germany, Austria and German-Switzerland (in *Petermanns Mitteilungen*) to be convinced of the variety of general and sub-topics and the thoroughness of treatment of the whole subject in the higher institutions of learning in Central Europe.

The chief significance of Mr. Bishop's article is that it calls attention to a most encouraging tendency now observed in a number of our own higher schools. He says:

"That geography, as such, as well as in its applied forms, is coming to be recognized in this country as a valuable discipline for the college student is no longer seriously questioned. The extent to which numerous courses of this order are working their way into the curriculums of a considerable number of colleges and universities is convincing on this point. Their highly cultural and practical value is becoming apparent to the educational leaders of the country, and plans are in progress, it is said, for establishing departments of geography in some of the leading universities. * * * It is not the desire of the present writer to underestimate the excellent work that is being done in geography at certain colleges and universities in the United States to-day. But, those who are acquainted with the situation are forced to admit that we are behind most of the European countries in handling this subject. There is scarcely a single professorship of geography alone in any of the larger universities in the United States at the present time, although, as has been shown, they were common in Europe nearly a quarter of a century ago. Yet signs of progress are evident. A considerable number of professors, assistant-professors and instructors are giving the whole or part of their time to developing the subject, and in some of the colleges or training schools professors of geography are to be found. Furthermore, it is becoming increasingly clear, that those who are devoting their efforts towards extending geographical instruction in the higher institutions of learning do not merit the criticism which has been made so often in the past, that they are attempting to elevate to university grade a subject whose proper sphere is the high school. The experience of England and the countries of continental Europe is sufficient answer to such criticism."

Those who make this criticism are certainly not familiar with the content of geography as the subject is understood abroad. A recent university report in this country, alluding to efforts to expand geographical instruction in the institution, referred to nothing but regional geography. It will doubtless be of much value to those who are planning the bases of geographical courses in our higher schools if they will study the scope of the subject as it is presented in schools of the same grade in Europe; and also observe in the *Reports* of the International Geographical Congresses and of the Geographical Congresses of Germany, France and Italy, the wide range of the subject and of its economic, cartographic

and other practical applications as these phases are scientifically treated by the leading geographers of Europe.

VARIOUS.

FIFTY YEARS A CARTOGRAPHER.—Mr. Hermann Habenicht has completed fifty years of cartographic service in the establishment of Justus Perthes, Gotha. Many of his map products, long ago, distinguished him as a cartographer and geographer of the first class. Some of his prominent works have had helpful influence upon the maps of other countries. His drawing of the Rocky Mountains on the six-sheet map of the United States in Stieler's Hand-Atlas was so good a generalization that his work has been used to a considerable extent in the delineation of the Rockies on school and wall maps. More than fifty sheets of Stieler's Hand-Atlas were drawn by his practiced hand and, in the last edition in 100 sheets, over a third of the maps are his work or were prepared or corrected under his supervision. Habenicht also had most to do with the production of the "Taschenatlas" and the "Seeatlas" of the Gotha house of which hundreds of thousands are in use in various parts of the world. His ten-sheet map of Africa, issued in 1885, was a remarkable compendium of our knowledge of the continent at that time, though in some respects open to criticism. In the appreciation of the cartographer which appears in *Petermanns Mitteilungen* (No. 4, 1909), it is said that he is still in full activity. Geographers, teachers and students will be glad if we may have many more of his works. His most important contribution to educational geography is his series of 16 physical school wall maps based on the plan of E. Sydow's maps, which had long been in use.

Professor Wm. M. Davis has written an account of the physical geography of the United States for the new edition of the *Encyclopædia Britannica*; also a similar paper, but with greater attention to human conditions, on North America, exclusive of Mexico, for a work entitled "Die Kultur der Gegenwart." His hand-book for laboratory work in schools entitled "Practical Exercises in Physical Geography" (noticed in the *Bulletin* 1908, p. 573), was in preparation for a part of his time during four years.

Dr. W. E. Geil of Doylestown, Pa., has returned from China, where he followed the Great Wall throughout its entire length from the eastern coast of China to the borders of Tibet. He says that he has discovered western extensions of the wall, about 200 miles long. It will be recalled that Dr. Stein on returning from his recent explorations in Central Asia, said he had found two extensions of the wall, one running along the northern border of the Su-chou and Kanchou districts while the other meets this ancient wall at right angles and was built to close the route between China and Central Asia.

The Department of Geology of the University of Wisconsin has prepared a relief map of the Malaspina glacier and the adjacent region near Mount St. Elias and Yakutat Bay. It includes about 7,350 square miles in Alaska and Canada. Its vertical and horizontal scales are the same (1:80,000), and the model is about 7 by 4 $\frac{2}{3}$ feet. It shows a part of the St. Elias Range, with its numerous glaciers, one great group of which united at the foot of the mountains in a piedmont glacier, the Malaspina, whose area exceeds 1,500 square miles. The east half of the model shows fiords with cirques, hanging valleys, etc., the glacial coastal plain, known as the Yukutat Foreland, marginal lakes, medial, terminal, and recessional moraines, and outwash plains. The Department of Geology is prepared to sell plaster-papier maché reproductions of the original clay model.