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On North Polar Problems

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Since then he has served on various commissions (notably in Egypt during the war), and accepted an appointment as Administrateur Délégué du Compte de l'Association Internationale, "to carry out special measures for the organization of the new Congo State." This journey up the Congo resulted in a severe illness, and he returned to London on December 31, 1883.

Sir F. Goldsmid was the author of 'Telegraph and Travel,' the biography of Sir James Outram, and many pamphlets, addresses, and reviews, published from time to time, separately, or in the Press and serials. He has besides edited and prefaced a work on 'Eastern Persia,' under the authority of the India Office. His knowledge of the Eastern languages placed him among the foremost of Oriental critics. He was a Vice-President of the Royal Geographical and Asiatic Societies, and in 1886 he was President of the Geographical section of the British Association at the Birmingham meeting.

Sir F. Goldsmid, in 1849, married the daughter of Lieutenant-General George Mackenzie Stuart, and had two sons and four daughters.

T. H. HOLDICH.

CORRESPONDENCE.

On the Influence of Ice-melting on Oceanic Circulation.

WITH reference to the remark of Dr. Otto Pettersson on the temperatures obtained by Sir John Ross in Baffin's bay in 1818 (see *Geog. Journal* for December, 1907, p. 174), I should like to draw Dr. Pettersson's attention to the fact that Sir J. Ross had in his vessel a pair of clamms, constructed under his own supervision, which brought up from the bottom, each time they were used, about 5 or 6 lbs. of mud, and that the temperature of the mud was taken on each occasion and found to agree with the temperature obtained by the self-registering thermometers. I think Ross's results, therefore, can hardly be attributed to imperfect instruments.

The instrument makers one hundred years ago were perfectly capable of constructing ordinary thermometers to give accurate results, and they appear to have supplied Ross with thermometers specially constructed to resist pressure, otherwise the results obtained would not have shown a steady decrease of temperature as the depth increased. Moreover, Sir Edward Sabine, who accompanied Ross in his expedition, informed Sir Wyville Thomson in 1870 that the thermometers were guarded in somewhat the same way as they are at present. The resulting temperatures, having been checked by observation of the temperature of the mud brought up from the bottom, cannot therefore be lightly thrown on one side as due to imperfect instruments.

T. H. TIZARD.

On North Polar Problems.

Washington, D.C., December 30, 1907.

Dr. Nansen's lecture, entitled "On North Polar Problems," published in the November and December numbers of the *Geographical Journal*, while criticizing certain portions of my paper published in the Report of the Eighth International Geographic Congress, has failed to cover what I consider the two most significant items in that paper, viz.—

1. The fact that the flood at Point Barrow comes from the west, and not from the north or east, as Dr. Nansen's hypothesis necessitates.
2. The fact that the range of the tropic diurnal wave (especially on the Bering

strait side) is decidedly smaller than the range which would necessarily result from the action of the diurnal forces upon a deep basin of the dimensions he proposes.

In connection with these items, it should be borne in mind that the semi-daily tidal forces vanish at the pole, while the diurnal forces there have maximum values. Hence the semi-daily tide in the Arctic waters must be chiefly derived from the tide of the Atlantic, while a considerable diurnal tide would necessarily originate in a deep lake-like Arctic basin as extended as that pictured by Nansen. For illustration, the computed equilibrium tides at Duluth, Lake Superior, agree well with the observed values.

The fact that the (tropic) range of the diurnal wave is 0.5 foot at Point Barrow instead of 0.7 foot, as the forces require, proves conclusively that the dimensions of the deep Arctic basin are more contracted than Dr. Nansen has supposed.

It may be added that at every place where the diurnal tide has been ascertained from observation around the margin of this supposed basin, the ratio between the two principal constituents of the diurnal tide differs sensibly from that between the corresponding forces. This indicates that the lake-like deep basin is not sufficiently large for enabling the equilibrium diurnal tide to completely mask the small and irregular diurnal wave from the Atlantic. At Duluth, where equilibrium tides prevail, this tidal ratio agrees well with the force ratio.

In reply to Dr. Nansen's criticisms of my statements concerning certain currents, it may be said that in the first sentence of my paper I called attention to the fact that these currents are surface drift currents. I may have been misinformed in reference to the character of these currents as well as to that of the ice, for most of my conclusions were based upon statements to which references are given in my paper. In fact, Captain Mikkelsen's recent experience indicates that the west-going drift occurs north-eastward from Point Barrow, and it seems quite likely that it extends still further eastward. As counter-currents generally accompany drift-currents either as feeble currents below the surface or as lateral return currents, I fail to see where the distribution of land and water as outlined in my paper presents any necessary physical difficulties.

The east-going current north of Greenland, and the accelerated motion of the *Jeannette* during the last few weeks of her voyage, are mentioned in my paper, and certain inferences are there drawn from these facts.

Dr. Nansen says, "Mr. Harris does not, however, take up for discussion the difficult problem of the tidal phenomenon in the north polar sea," etc. In reply to this statement, I have only to say that results from all observations known to me to exist at the time of writing my paper were used in trying to ascertain the behaviour of the tide. There can be no reasonable doubt concerning the reliability of the observations at Point Barrow, Franz Josef Land, and Bennet island.

I fear that my critic has not consulted the charts of cotidal lines which were constructed at the time when the paper to which he refers was written (see Fig. 23-26, Appendix No. 5, Coast and Geodetic Survey Report for 1904).

The semi-daily range of tide at Teplitz bay, Franz Josef Land, is 1.1 foot, and that at Bennet island 2.0 feet. Of course, the shoaling around this island would tend to somewhat increase the range; but if the tide-wave were spread out over the supposed basin, it seems impossible that a range of 2 feet should occur at Bennet island. Furthermore, the directions of the drift-arrows shown on Fig. 4 of Dr. Nansen's paper, at least, suggest comparative narrowness for the deep Arctic basin.

It is highly desirable to have information concerning the tides along the coast of Siberia, for it seems probable that the range would be much greater to the west of the New Siberian islands than it would be to the east of them.

Up to the present time, no results from the tidal observations taken on the

recent Peary Expedition, or from those taken on the Mikkelsen-Leffingwell Expedition, have come to my knowledge. They will doubtless turn out to be of considerable importance in connection with north polar problems.

R. A. HARRIS.

The "Snake Kyaung" Monastery, Burma.

9, Windsor Road, Rangoon (Burma), 21-11-07.

I beg to inform you that I brought to the notice of the Chief Secretary to the Government of Burma the matter of the forgotten 'Snake Kyaung' referred to by Colonel Hobday in his review of the new book on 'Burma' by Sir George Scott, and published at pp. 432 and 433 of the *Geographical Journal* for October, 1907.

I have just received a reply from that officer to say, "Mr. Taw Sein Ko writes to say that the 'Snake Monastery' of Colonel Hobday has been identified as the 'Mogaung Kyaung,' and that a proposal for its conservation will be submitted in due course."

Mr. Taw Sein Ko, a Burmo-Chinese gentleman, who succeeded the late learned Dr. Forchhammer in the post, is the Government archæologist in Burma.

J. C. CLANCEY.

MEETINGS OF THE ROYAL GEOGRAPHICAL SOCIETY, SESSION 1907-1908.

Christmas Lecture, Friday, January 3, 1908.—"The Land of the Black Mountain, Montenegro, as I saw it." By the Rev. T. T. Norgate.

Christmas Lecture, Monday, January 6, 1908.—"Journeys through Lonely Labrador." By Mrs. Leonidas Hubbard.

Fifth Meeting, January 13, 1908.—Colonel G. Earl Church in the Chair.

ELECTIONS.—*Captain Willoughby Furnwall, R.F.A.; Walter Meakin; Henry Frederick Merrill; Major Albert Pearse, R.A.M.C.; George Blount Tunstall-Moore; Harold Whitaker.*

The paper read was:—

"Among the Volcanoes of Guatemala and St. Vincent." By Dr. Tempest Anderson.

GEOGRAPHICAL LITERATURE OF THE MONTH.

Additions to the Library.

By EDWARD HEAWOOD, M.A., *Librarian, R.G.S.*

The following abbreviations of nouns and the adjectives derived from them are employed to indicate the source of articles from other publications. Geographical names are in each case written in full:—

A. = Academy, Academie, Akademie.
Abh. = Abhandlungen.
Ann. = Annals, Annales, Annalen.
B. = Bulletin, Bollettino, Boletim.
Col. = Colonies.
Com. = Commerce.
C.R. = Comptes Rendus.
E. = Erdkunde.
G. = Geography, Géographie, Geografia.
Ges. = Gesellschaft.
I. = Institute, Institution.
Iz. = Izvestiya.
J. = Journal.
Jb. = Jahrbuch.
k.k. = kaiserlich und königlich.
M. = Mitteilungen.

Mag. = Magazine.
Mem. (Mém.) = Memoirs, Mémoires.
Met. (mét.) = Meteorological.
P. = Proceedings.
R. = Royal.
Rev. (Riv.) = Review, Revue, Rivista.
S. = Society, Société, Selskab.
Sc. = Science(s).
Sitzb. = Sitzungsbericht.
T. = Transactions.
Ts. = Tijdschrift, Tidskrift.
V. = Verein.
Verh. = Verhandlungen.
W. = Wissenschaft, and compounds.
Z. = Zeitschrift.
Zap. = Zapiski.