



SATURDAY, OCTOBER 20, 1928.

CONTENTS.

	PAGE
State Control of Exploration	597
Epistemology for Physicists	598
Home-grown Sugar. By Prof. Clement Heigham	600
Theoretical Physics. By G. H. L.	602
A Record of Physiology in Great Britain. By H. R.	603
Our Bookshelf	604
Letters to the Editor :	
Evidence of Survival of a Human Personality.— Dr. R. J. Tillyard, F.R.S.	606
Capillary Properties of Moist Granular Media.— William B. Haines	607
Theory of Electrical Migration of Ions.—Prof. J. N. Mukherjee	608
Porbeagle Shark in the River Towy.—Colin Matheson	608
The Origin of the Dermis.—Dr. P. D. F. Murray Galton's "Life History Album."—A. S. E. Ackermann	609
A Simple Method of Distinguishing Plotted Points for Reference.—W. Bevan Whitney	610
Hybrids of <i>Aegilops</i> .—Prof. John Percival Can the Hand be thrust in Molten Lead without Injury?—J. R. Clarke	610
Change of Resistance of Lead by the Action of Radium.—K. Prasad and S. Basu	610
The Nature of Skill. By Prof. T. H. Pear	611
The World Fuel Conference	615
Foot-and-Mouth Disease	616
News and Views :	618
Our Astronomical Column	623
Research Items	624
Sheffield Laboratories for Safety in Mines Research. By H. F. Coward	627
The University of Leeds	629
The Sixth Congress of Russian Physicists. By Prof. C. G. Darwin, F.R.S.	630
Research in Aeronautics	630
The British Industries Fair	631
University and Educational Intelligence	632
Calendar of Customs and Festivals	633
Societies and Academies	634
Official Publications Received	635
Diary of Societies	636

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State Control of Exploration.

THE spread of sovereignty to polar regions has resulted in various measures of authority in uninhabited or sparsely habited lands. These vary from the effective jurisdiction of Denmark in western Greenland and the police control of Arctic Canada to the merely nominal jurisdiction without resident authority in the British claims in the Ross and Falkland dependencies in the Antarctic. As the rule, the authority is exercised solely in the interests of the native fauna, and is aimed at restricting the destruction of game and at the same time levying some tribute on hunter and whaler.

The latest Arctic power is Norway, with her new-found possession of Spitsbergen, or to be more precise, the archipelago of Svalbord, an ancient name revived to embrace all the islands between lat. 74° and 81° N. from long. 10° to 35° E. Norwegian control of these islands was granted by the Supreme Council in 1920 and became operative in 1925. Norway's first act was the promulgation of game laws to restrict the ravages of the winter fur trappers; and now measures have been announced for the regulation of exploring expeditions that employ Norwegian vessels or engage Norwegian subjects in Norwegian ports. This will apply to most expeditions to Spitsbergen, since Norwegian subjects are nearly always included in their personnel, even if Norwegian vessels are not employed. Such expeditions in future must notify Norges Svalbard og Ishavs-undersökelse, the government department set up for the purpose. Their plans and equipment will be considered by a committee, which includes a government ship surveyor and a member with personal experience of Arctic wintering. This applies particularly to such expeditions as intend to winter or are proposing to go to regions where conditions may necessitate wintering.

The regulation is a wise one. It may rob the Arctic of many adventurous tales that the future might produce, since well-found and efficiently led expeditions do not produce the same measure of adventure or yield the same thrills as those in inexperienced hands; but we cannot regret that loss. Experience has shown that several expeditions in the recent past have been so poorly equipped or badly led, through lack of experience, that they have got into difficulties which necessitated relief measures either by the coal-mining companies in Spitsbergen or by the Norwegian State. The possibility of this burden and expense must be avoided in future so far as possible. On financial

grounds alone the new regulation of the Norwegian Government is justified. The sum expended on relief expeditions in Spitsbergen in recent years would have handsomely financed several useful polar expeditions. There is no reason to anticipate any interference with properly conducted expeditions or any desire to discourage legitimate enterprise.

Norwegian interest in her new possession does not stop there. The Spitsbergen department to which we have referred is organising, as indeed it has done for several years, the survey and scientific exploration of the country in so far as this work remains to be accomplished. It is now proposed, for the suggestion cannot be made obligatory, that all scientific expeditions to Spitsbergen should consult the Spitsbergen department before maturing their plans. By so doing, an expedition will save spending time on work that is already partly or wholly done or avoid overlapping the field of work of contemporary expeditions. Help of a more practical nature will also be available in reference to literature and maps and advice on routes and equipment. This information will be provided free of charge, and all that is asked in return is a report of the work of the expedition and copies of any publications concerned with its results. The institution of an inquiry office and bureau of advice has much to be said in its favour. There have been too many instances of overlap of work, and this applies not merely to Spitsbergen—especially when the results of expeditions have been long delayed in publication, and the difficulty of tracing the numerous papers, often in obscure journals of small circulation, is only too well known to all workers in polar regions. The Norwegian Spitsbergen department also promises the publication of research papers, at the cost of printing only, in its *Skrifter om Svalbard og Ishavet*. Anyone who has had occasion to work in Greenland and made use of the *Meddelelser om Grønland* must realise the value of the regional grouping of papers in this way.

Another aspect of Norwegian work in Spitsbergen deserves notice. The nomenclature of the islands is in a state of chaos. Many features have had several names, and many names have been corrupted and changed in usage. Some years ago Sir Martin Conway tried to unravel the muddle by going back to the earliest names for each feature. But historical precedence, though logical, is not always practical, especially in a land that is inhabited or much frequented. The Norwegian Government is now engaged in a survey of all Spitsbergen names with the view of reaching a state of finality.

No. 3077, Vol. 122]

We understand that priority will be a general guide, but we trust that usage will not be overlooked. Familiarity may give a name justification; and it is to be hoped that the tendency which Norwegian maps of Spitsbergen have already shown of translating proper names of a descriptive nature will not be generally followed. Proper names, even if they are difficult of pronunciation by Norwegians, have at least historical value. It must be remembered that most place names in Arctic regions are labels that will be used only in scientific works and will not pass into popular use. There can, however, be no objection to the recommendation that new names proposed by any expedition should be submitted for approval to the Spitsbergen department. This measure is justified, and comparable steps are advisable in all polar lands. The Geographic Board of Canada is now engaged in a survey of all place names within the Dominion and has done much to dispel confusion. It is hoped that the Norwegian Spitsbergen department will be as successful.

Epistemology for Physicists.

An Account of the Principles of Measurement and Calculation. By Dr. Norman R. Campbell. Pp. x + 293. (London: Longmans, Green and Co., Ltd., 1928.) 12s. 6d. net.

THIS is a somewhat difficult book to review, and we are not quite certain that its title adequately describes its contents. In the first place, we may note that 'Calculation' seems here to denote a process quite different from the arithmetical investigations with which many of us are accustomed to associate the term. In his Chapter xii. Dr. Campbell gives the equations:

$$x = vt, \quad y = \frac{1}{2}ft^2,$$

which he says can be established if a particle be projected horizontally in a gravitational field—although we fancy he might find it difficult to establish them except as conceptual limits, even if he could catch a 'particle' and project it horizontally. From these equations he deduces algebraically:

$$y = fx^2/(2v^2),$$

and terms the process 'calculation.' His chapter shows that he understands by calculation the deduction of mathematical results (by some form of algebraical analysis) from the equations, which are more or less approximately satisfied by the numerical values provided by physical experiment. The computer will meet only with disappointment if he hopes to find included under the "Principles