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The Place of Geography in Education

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of pasture, and next by having had to purchase food for themselves at scarcity prices. On the other hand, by storing a fractional portion of the surplus water which now runs to waste in the ocean, the greater portion of the Peninsula at least may be rendered independent of the caprice of seasons, and food grown on the spot can then be sold at the ordinary prices, while the cattle will be supplied with fodder and water, and so be preserved alive and in condition. Storage sites, such for instance as that existing on the Tungabaddra, can be found on some of the feeders of all the great rivers, whose supply never fails, and at an elevation which will allow of their waters being carried to all the existing reservoirs on the plateau and plains of South India. About 22 millions sterling have been spent by the Government on irrigation works throughout India, of which perhaps one-fourth has been laid out in the Peninsula. An equal sum expended in storage works in suitable localities and in completing and perfecting river and canal navigation would effectually secure every portion of the Peninsula from any future visitation of famine, and place the lives as well as the material well-being of its inhabitants beyond jeopardy thereafter.

The Place of Geography in Education.

By DOUGLAS W. FRESHFIELD, SEC. R.G.S.*

THE President of our Section, Sir F. Goldsmid, in his opening address, has already called your attention to the place of geography in English education. The subject, however, is so important that it will bear to be returned to. In Parliament, when any bill is proposed in earnest, it is made the subject of a second reading. In the Parliament, or a Committee of the Parliament, of Science, it seems proper that we should fully discuss the measures lately proposed by the Council of the Royal Geographical Society, for obtaining for their science that recognition from the heads of English education which it already receives abroad. It seems expedient that you should be urged to give them (in so far as they may commend themselves to your judgment) your support, both as individuals and collectively as a branch of the British Association.

I have therefore undertaken, as one of the Secretaries of the Royal Geographical Society, to bring them again, and more in detail, before you to-day.

Before we discuss the place of geography in English education, it is perhaps well that we should, if possible, come to an agreement as to two things, What is the aim we propose to ourselves in our national education? and, What do we mean by geography?

* Read in the Geographical Section of the British Association, Birmingham, September 3rd, 1886.

The only sensible and practical—to use two adjectives dear to the commonplace mind—the only sensible and practical view of *Education* is assuredly that which defines it as such a calling out of the capacities as will enable the pupil to play his part in the world to the advantage of himself and his fellows, that is, his family, his countrymen, and humanity.

Geography, I should submit with equal confidence, is the comprehensive name for the study of man's physical environment on the surface of this planet and of the interaction between it and the human race.

Geography co-ordinates the sciences which deal with different classes of natural objects, such as anthropology, zoology, botany, geology, meteorology. It supplies a frame in which to exhibit and review the local relations and interaction of these natural sciences. It is in one sense an introduction to all these sciences. Again, it enables us to appreciate the reciprocity between the physical constitution of countries on the one hand, and the development of their people and States on the other. It thus forms the transitional and connecting link between the natural sciences and history, while, as giving an account of the physical conditions which controlled the lives of their producers, it forms a key and an invaluable commentary to letters, is closely connected with medicine, explains the origins of architecture, and has even connections with law.*

The value of geography at the present day as a link between the natural sciences and the historical seems to me exceptional. We are divided into two camps. I am not a partisan of the exclusively "modern side." I think an education based solely on physical science, which leaves outside the history of moral ideas, and the works of the great masters of thought and language, is a narrow and deleterious education. To cite one of its lesser evils, how much of the literature of physical science is rendered unreadable by the absence of the art of letters in its producers? "Scientific English" has become almost a proverb. The Classics are the authors and models of the art of clear and condensed expression for European literature; they were so used by the early physicists, and it is surely well for all who can to study them.

But if I am not one of its partisans, I am a believer in the modern side to this extent, that I hold that the old-fashioned classical education which ignores physical science—ignores even its relations to its own subjects—such as I had myself, is deplorable, and a drawback of no slight weight in after-life. Now between these rival camps of educationists, it seems to me that geography steps in as the mediator and uniter. It

* With international law, of course, geography is largely mixed up. The shifting of streams has given rise to many questions, and the recent retreat of alpine glaciers has led to curious and abstruse legal discussions in the various States concerned, the point appearing to be whether the glacier's invasion has extinguished the right of the heirs of the former proprietor.

forms (I repeat the phrase of the *Kriegsakademie* of Berlin) "the connecting link between natural science and history." It should be taught mainly and primarily, in schools, from the physical side, but the teachers of other subjects (if they are competent to the task, which at present they frequently are not) may exhibit their geographical relations.

Geography works in different ways: the first and simplest, in the observation and arrangement of facts relating to a selected area: the description of a country: in this sense all books of travel ought to be geographical. Or it may select and isolate its facts with regard not to locality, but to their individual character; it may collect all that is known of mountains, of volcanoes, of glaciers, of ocean-currents, or lake-basins. Provided with these conveniently arranged bundles of facts or pictures, it goes on to investigate their relations. What influences produce variations in the snow-level? What effect on the development of civilisation have inland seas, where land is constantly in view; a coast full of fiords? Or it takes the single fact in its relation to humanity. How the physical configuration of Italy and Greece—the position of the Alps and Apennines in one case, the breaking up of the country into more or less isolated basins between hill and sea in the other—affect their history?

If you doubt my judgment on this matter of the sphere and importance of geography, I may quote in support an historian, and a politician who is also an historian.

"The study of geography, small as is the part allotted to it in actual teaching, is one which must occupy a foremost place in any rational system of primary education. When the prejudices and traditions of our schools and schoolmasters have passed away—as they must pass away before a truer conception of the growth of a child's mind and of the laws which govern that growth—the test of right teaching will be found in the correspondence of our instruction with the development of intellectual activity in those whom we instruct. The starting-point of education will be the child's first question; and the child's first question is about the material world in which it finds itself. . . .

"Studied properly, geography would furnish a groundwork for all after-instruction. It is, in fact, the natural starting-point for all the subjects of later training. History strikes its roots in geography; for without a clear and vivid realisation of the physical structure of a country, the incidents of the life which men have lived in it can have no interest or meaning.

"Through history, again, politics strike their roots in geography, and many a rash generalisation would have been avoided had political thinkers been trained in a knowledge of the earth they live in, and of the influence which its varying structure must needs exert on the varying political tendencies and institutions of the peoples who part its empire between them. Nor are history and politics the only studies which start naturally from such a groundwork. Physical science will claim every day a larger share in our teaching, and science finds its natural starting-point in that acquaintance with primary physics which enables a child to know how earth and the forms of earth came to be what they are. Even language, hindrance as its premature and unintelligent study has been till now to the progress of education, will form the natural consummation of instruction when it falls into

its proper place as the pursuit of riper years, and is studied in its historical and geographical relations.

“Such a dream of education will doubtless long remain a dream; but even as a dream it may help to realise the work of geography, and to look on the study of it in a grander as well as more rational light than has commonly been done.”*

“Shall we who are in nature not know nature?” says an old geographical writer. Shall we English who inherit so large a part of the world not acquaint ourselves with our inheritance and the conditions under which we can retain and make the most of it? What has been the fate of our race? to be the greatest rulers and merchants and colonisers the world has ever seen, the restorers in Asia of broken-down civilisations; the creators in the new worlds of North America and Australasia of Greater Britains peopled by our own descendants; the sharers in Central Africa, to an extent as yet undetermined, in the bringing into relations with civilisation and commerce of the dark millions of the Congo. Probably in the future, unless our statecraft miscarry again as it did in the last century, we may find ourselves the centre of a vast confederation strong enough to ensure the peace of the world, to maintain a *pax Britannica* which neither Slav nor Latin will venture to dispute. Do you think we are educating our children for this high destiny—this possibility—by leaving them in comparative ignorance of the earth’s structure, of the natural laws by obedience to which they may go forth and win peaceful victories and fill up the void places of our planet? The problem of our age and country is the better distribution of Britons through British lands. This, unless our population becomes stationary, is the only cure for that suffering for which Lord Mayor’s Funds, Charity Organisations, and the like are mere temporary anodynes. Is it well then that we should leave the knowledge of our British lands out of our education, primary or other? Is it wise that we should have to turn to the Collège de France for a programme of thirty lectures on the British colonies of Australia?

But there is very little use in declaiming, or even arguing, on any subject whatsoever, unless one has to some considerable extent entered into the mood and meaning of one’s antagonist. The judicious missionary—there are many such now—who desires to civilise or convert the heathen, does well to catch his heathen first, look into his superstitions and prejudices, before preaching at him. I have no difficulty in catching my heathen, for I count some old friends among them, and I can therefore speak of them with more freedom than I would take with perfect strangers.

I propose to divide the objectors to geography in education under three heads. First there are those who know too little, and then there are those who know a great deal too much.

* S. R. Green, Preface to ‘A Short Geography of the British Isles.’ See also Mr. J. Bryce’s letter, ‘Educational Reports R.G.S.’ p. 154.

In the first class I include all those who believe (and they generally have the excuse of their own education for the belief) that geography is only an equivalent for topography—that geography consists of nothing but tables. This no doubt was the old system. But if it is old, it has been anciently discredited, as long ago as the time of the Antonines. Apuleius, in the preface to his treatise *De Mundo*, declaims against the tourist who will describe nothing but the “*Amœnitates et magnitudines montium*,” as if there had been an Alpine Club in his day; and against the teachers who “*sola et singula exstruunt*,” and do not treat phenomena in classes—against topography, that is, as against physical geography. Mr. Green has described it beautifully:—

“No drearier task can be set for the worst of criminals than that of studying a set of geographical text-books such as the children in our schools are doomed to use. Pages of “tables”—“tables” of heights and “tables” of areas, “tables” of mountains and “tables” of tablelands, “tables” of numerals, which look like arithmetical problems, but are really statements of population; these, arranged in an alphabetical order or disorder, form the only breaks in a chaotic mass of what are amusingly styled “geographical” facts, but which turn out simply to be names, names of rivers and names of hills, names of countries and names of towns, a mass rarely brought into grammatical shape by the needful verbs and substantives, and dotted over with isolated phrases about mining here and cotton-spinning there, which pass for Industrial Geography. Books such as these, if books they must be called, are simply appeals to memory; they are Handbooks of Mnemonics, but they are in no sense Handbooks of Geography.”

In my day there were many boys at public schools who acted consistently, and not altogether unsuccessfully, on the principle that whatever was not a city in Asia Minor was an island in the Ægean Sea! Of course geography may be made barren. To the dull all things are dull. But so may the Bible! The worthlessness of divinity is not proved by the fact that examiners have existed capable of demanding a complete list of the kings of Judah and Israel. I have always surmised that the cautious undergraduate who replied that unfortunately he could not at the moment remember any king of Judah or Israel, had a deeper purpose than to confess his own ignorance.

The educational value of geography is not to be decided off-hand by a head master who thinks “The subject is merely a question of memory. We cannot make a discipline of it or set problems in it” (Report of the Royal Geographical Society’s Inspector, p. 92); or by people who still expect children to gabble over the names of the smaller rivers of China, or the Pashalics of Asia Minor, before they understand the elements of physical geography, or have a single idea about the United States or Australia.

With this first class of objectors it seems to me we have no difference, only a misunderstanding. We and they unite in denouncing—in accepting Mr. Green’s denunciation of “geographical text-books such as

the children in our schools were condemned to use" ("nearly useless—mere gazetteers," a head master calls them, p. 91). We have simply in talking about geography been using the word in two completely different senses.

Now I come to a more formidable tribe of objectors, those who know too much. Their objection is plausible and insidious. They do not say that there is no such thing as a geography capable of being taught. Far from it. But they urge that all natural science is geography, and that as they themselves—the scientists—already collectively represent all natural science to their mutual satisfaction, the geographer has no place—is a superfluous luxury.

If the geographer has any speciality—so they argue—it is that he describes or depicts appearances without seeking out causes and connections, that he is no philosopher, but a poor sort of artist-thing—and here they break into a humorous and patronising smile—"Yours is not a *logy*, only a *graphy*."

Now this assertion that geography has nothing to do with reasoning—is simply observation—though sometimes quite gravely made, is a pure fiction, based on a wretched little verbal quibble, and with no other foundation whatsoever. If we are called *graphers* and not *logists*, it is because our science is not of yesterday, but springs from those early days of humanity, before geology was born or even thought of, when to picture the fact as accurately as might be was held a preliminary to reasoning about its causes. There has been, it occurs to me, and I think here I shall have the support of Professor Bonney, a good deal of reasoning about mountain structure and ice action and lake-basins of late years in which the picture of the appearances in the writer's mind has seemed to be rather a fancy one—subjective, Turneresque, anything but realistic in short.

A Forbes and a Darwin teach us the mutual places of observation and reasoning; but it is not every scientist nowadays who has their severe self-control and clearness of vision.

Brought to the test scientifically or practically, this pretension of other sciences to exclude geography from the great game of "What and Why" breaks down pitifully. The influence of locality is a study in itself. If I want a compendious description of any region or country, to whom shall I go but to the geographer? If I want to know what botanical and physical phenomena are concurrent, I must go to the same quarter. He will give me such a picture of a country as an intelligent traveller—say rather resident—might supply; he will show how the physical conditions have acted on its inhabitants, its plants, its animals. The practical value of such information in commercial pursuits needs no demonstration. Moreover, a sound course in physical geography will lay the basis, in pupils whose minds run in this direction, for the pursuit of the several branches of the physical sciences.

As to geology, which is perhaps the most forward of the would-be "chuckers-out" of geography from the Hall of Education, its claims are perhaps the least tenable of all. Archæology might as well claim to be equivalent to history, history to political economy, or surgery to medicine, as geology to geography. A geologist is as incapable of giving any complete picture of a country, as an archæologist is of a period. A geological diagram is quite a different thing from a geographical picture, as different as an anatomical diagram from a portrait. His science leaves off where ours begins. His results are often portions of our premisses. Of course I do not dispute that geography and geology may meet, that their boundaries overlap. Take that question of lake basins. But even here may not geology gain by having its puzzle handled from a geographical point of view? If we put the question thus: Account for the fact that there are lakes and tarns in numbers in the Alps, tarns only in the Pyrenees, and neither lakes nor tarns in the Caucasus; does not this throw a little light on the matter, narrow at least the field of tenable hypothesis?

Finally, we have a third set of objectors to deal with. For I shall pass over those who still say that geography does not "pay." If this allegation were wholly true it would be the essence of our case. But I would warn them in passing that it is no longer wholly true. For what is justly held in private schools as an end and object of education, getting a boy on the foundation of Eton, geography may prove more useful than they think. I say this having in my pocket one of the last examination papers, in which there are several excellent geographical questions. Geography, they admit, is vastly important; but its many-sidedness, they allege, renders it impossible to teach. You cannot, they say, produce any definition of it which can be accepted as a practical subject for a course of lectures or a school-class. The difficulty of these gentlemen *solvetur ambulando*—will be relieved by a short tour. If they do not accept Mr. Keltie's Report, if they are at all serious persons and mean to use their influence seriously against our proposals, let me pray of them, before they take any further steps, to go to school in Canten Zürich, and to college at Breslau under Professor Partsch, or at Göttingen under Professor Wagner.

The practical test of experience will be conclusive with most practical Englishmen. In educational matters all our critics, from Mr. Matthew Arnold downwards, admit that Germany holds her own, understands her business. Do the Germans find professors of geography superfluous ornaments? Do they experience the slightest practical difficulty in finding them, or defining them, a field to work in? Why, they have twelve university professors of geography, and are yearly adding fresh ones. The Minister of Public Instruction is recommending it strenuously to the schools. The same thing may be said of France and Switzerland. And what do we find are the results brought about

by this system? The German book of travel or magazine shows a more cultivated and better directed power of observation. The younger generation of German merchants and clerks are beginning to steal marches on us by their superior intelligence and training. The German soldier has learnt to read maps so that not only officers but every third man in the ranks on a campaign is supplied with one. It is hardly conceivable in England how many people cannot point out to you on a map a cross-country route or explain the meaning of a contour line.

The Germans find, moreover, geography not only an essential part of a scientific education, but a most useful and illuminating adjunct to the *Literæ Humaniores*. Professor Partsch of Breslau cites as a typical example of the spirit of German work, the newly published 'Physical Geography of Greece,' by himself and C. Neumann. "In this work," he writes, "comes into more than usual prominence the appreciation of the influence exercised on the state and conditions of culture in a country by its physical character." Darwin's 'Voyage of the Beagle' and the second book of Herodotus are mentioned together as future text-books.

"I once," he says again, "selected the Western Alps as the subject of my course. The very erroneous map of the Piedmontese Staff offered occasion for a critical review of maps and for an appreciation of the work more particularly of English travellers in settling the topography of the Graian Alps. The arduous controversies respecting the history of the passes in Roman times, more particularly as to Hannibal's Pass, were taken into account with reference to historical sources. An estimate of the present relative importance of the passes followed naturally."

We may be quite sure that at Breslau they did not, like a recent text-book, forget the Col de l'Argentière and the Petit St. Bernard among the passes, or like the reader of history at Oxford, boldly assert that the latter pass was even lower and easier and more direct than the Mont Genève as a route from Valence to Turin.

The connection between geography and the classics might be—perhaps is in Germany—carried further into the regions of pure criticism. The poets, ancient and modern, Homer and Aristophanes, Virgil and Catullus, Wordsworth and Tennyson, are many of them sensitive to their physical as well as human environment, and the best of describers. Mythology, even admitting Mr. Lang's brilliant criticism of much modern exposition, is full of physical geography. The poet's epithets are sufficient proof that the Greeks were not colour-blind. To read Plato we must realise the scenery and climate of Attica. And in mere verbal criticism take such instances as these. The epithet *horrida* applied to a valley puzzles Virgilian critics. Defiles in the Italian Alps are generally known as *orridi*; is there no connection?

Ovid talks of

“*rapidas limosi Phasidos undas*”—

“swift and muddy”—an unhappy collocation, says Mr. Dryasdust—but a fact, as those who went to Caucasia while steamers ran on the Rion, well know.

Letters may in turn give something back to geography. How can the climate of the Alps have been in Roman times so much worse than it is now, as some would have us think, when the Great St. Bernard, still only just below the snow-level, had a temple on its summit, and was frequently used by Roman armies? when Augustus preferred Rhætian wines, doubtless the modern Veltliner.

And classical names often sum up the *raison d'être* or characteristic of places, thus:—Batoum = *Βαθὺς λιμὴν*, the deep harbour; Poti, *Παλαιὸν στόμα*, the old mouth (a fine bit of phonetic decay); Monaco, the lone house; Antibes, Antipolis, therefore later than Nice, the town of victory.

I have, I hope, sufficiently shown that it is both practicable and profitable to teach Britons geography, and consequently justified in your eyes the position the Royal Geographical Society have taken up in this matter. We have, while expressing our opinions fully, left as long as it seemed expedient the cause of geographical education in the hands of the educational bodies. The result has been unsatisfactory. We find they will not act on advice alone; we cannot act without them; we therefore offer them co-operation. I shall now try to develop briefly, as far as it is formed, our scheme, or proposal, adding a few remarks suggested by the Society's Exhibition of Geographical Appliances now open in this town (Birmingham).

We are assured on all sides, and are confident ourselves, that the key of the problem is contained in these two words, *Teach teachers*. The evidence on this point, collected by Mr. Keltie, is conclusive.

A public schoolmaster says:—

“One of the difficulties in dealing with this subject is the great scarcity of specially qualified masters. This subject not being required for the usual degrees at the universities, few of the young masters at public schools know very much about it. Another is the somewhat absurd prejudice against teaching geography, as if it were less worthy of a first-class man than Latin prose or essay writing or criticism. This prejudice is dying away, but it is still felt as a sort of back current, and I have known able men fresh from Oxford or Cambridge who fretted at having this subject entrusted to them. It is connected, no doubt, with the old-fashioned mechanical conception of geography, now, I trust, vanishing into the limbo of exploded fallacies.”

Again, Prof. Boyd Dawkins writes:—

“The deplorable ignorance of geography among all classes in this country is largely due to the bad teaching in the elementary and

secondary schools. We are feeling our way (in Owens College) towards a more systematic teaching."

In 1883 Prof. Judd and Mr. Norman Lockyer write of the "Science and Art" Examinations in Physiography at South Kensington, "probably a number of inexperienced teachers have taken up the subject for the first time, and the low standard of their results has had a marked effect in bringing down the average of the whole examination."

It is obviously idle to expect pupils to take interest in a subject their teachers dislike and disparage. We do not, of course, assert a universal negative, that there are no good teachers of physical geography at present. Happily there are a "good few." There are more, doubtless, who would be glad to qualify themselves,—

"Those not blind who wait for day,
Tho' sitting yet with doubtful light."

But the supply is not equal to the demand. And then it must be remembered that at many schools—take my own, Eton, where physical geography is beginning to be looked after—historical geography is left to the classical masters, who do not teach it because it has formed no part of their own training.

Our first inquiry therefore must be, How can the teachers best be got at? As to the upper and lower classes, experience answers promptly, Through the universities and training colleges. These produce assistant masters and pupil teachers.

But as to the middle classes. If Mr. Arnold were here he might tell us that the difficulty was the result of the absence in England of any organised scheme of secondary education. It is a difficulty, and one in which further suggestions might be welcome.

In making the universities the first object of our attack we are supported by an enormous mass of independent and weighty opinion. It will be found in Mr. Keltie's Report and its appendices, and I must not multiply quotations.

In the same volume will be found the letter and proposals that have been addressed by the Council to the Universities of Oxford and Cambridge. We believe them to be practical, and we trust that, considering the fact that we are prepared to back our opinions handsomely in cash, the universities may be able, despite the bad times, which affect their rents as well as other people's, to see their way to meet us. We are sure that if they do, it will tend as much to their advantage as to ours.

It is an obvious anomaly that there should be chairs of such comparatively obscure branches of research as some of those instituted in the universities, and none of a science already recognised and examined in. This is a strong point in our case. The Honour Candidates in the Oxford History School have a whole paper of geographical questions.

Practically, the university at present examines in what it does not teach, except by an occasional lecture bestowed in charity by a sympathetic historian.

The chairs of geography at Oxford and Cambridge, which we may hope to see established, will, if proper occupants are found, be more than a source of lectures, more or less well attended, to the passing generation of undergraduates. They will give a centre and status to educational geography. They will, we may hope, lead to the formation of typical educational collections, to the issue of a higher class of educational works. They will do for geography what has been done for art and archæology by able hands at Cambridge, make it a subject of living interest to the best educated Englishmen, and thus avoid the recurrence among teachers of the sentiments adverted to in my last quotation. They will exercise an influence which the Geographical Society, with the best will, cannot exercise, for it is not an educational body, and cannot control the minds of the rising generation or their teachers.

It is a fair objection to the proposal of a geographical lecturer or professor that no man can be found capable of representing the whole subject. I think here again Germany answers the difficulty for us. Prof. von Richthofen writes, "We need not shrink before the fulness and scope of the task. The field is vast. No man is able at this day to pursue his inquiries into all departments of geography. He, however, who devotes himself earnestly to it can appropriate enough to follow its progress in all branches, and while deepening and furthering the section specially under his care, need never lose sight of the connection of the whole. As a matter of fact, every professor lectures according to his own idiosyncrasy, and that during one term the lecturer should incline to the human, and at another to the physical side of geography, will be no disadvantage."

We have also proposed to give an exhibition at the Universities to be spent in travel. I have often been struck by the immense amount of geographical work still to be done in regions within from three days to a week's journey from London. Sir Lambert Playfair's paper on his rambles in Western Algeria, read in this Section, may indicate to you one such region.

For my part, I think one of the most valuable effects of the recognition of geography at the universities will be its reaction on geographical literature. The text-books and readers (I do not speak of the new ones which have appeared—are daily appearing—since our Exhibition was opened last winter in London) have been very far from what they should be.

"We require text-books," says a head master. "Nearly all our present ones are quite useless; they are miniature gazetteers." The main point is that there should be nothing which the boys should not be expected to remember for life. They require to be cleared of lumber,

to be written with more grasp of general principles and sense of proportion. Our books seem often to want not only the critical power best gained for such work by travel, but also the higher culture. Their English is slovenly, and their history is erroneous. We want writers who will tell their pupils nothing which is not worth remembering, and who will also take care to tell them what they do tell in a form that can be remembered, in crisp complete sentences, not by allusions which presuppose the knowledge sought to be conveyed. And now that writers are taking up with new ideas there is perhaps another danger. They must not let themselves be run away with by them. They must make sure their instances are really to the point. Take as an example the relation of land-routes to the position of great towns. "All roads led to Rome," we know. But I cannot see that Rome was made by nature a meeting-place of roads. Rather it was a defensible position on a navigable river, forming a natural rallying-point to the rivals of Etruria. Tifis does not command the Pass of the Dariel, but the navigation of the Kur. Water carriage became all-important in the centuries between the destruction of the Roman roads and the making of paved highways. The whole string of physical causes which went to make Venice possible and what she was, are a lesson in themselves in physical geography.

The ideal text-book might perhaps be written in conjunction by Mr. Bryce and Mr. Bates. Even then it would gain by being revised as to each country by a resident. I need hardly point out how much our colonists could aid to such a work by working up their own home teaching, and keeping up accurate text-books of their own homes for their own schools.

Another want of our literature is an English Reclus. How many absurdities, sometimes dangerous absurdities politically, would not such a work of reference on our leading newspaper editors' shelves save us! We should not be bewildered over our breakfast-tables by the news that a railway was about to be made through the Engadine to shorten the communication between South Germany and Venice; that Lord Dufferin as Governor-general had gone to look after a volcanic eruption in the Dutch Indies; or that Batoum was the key to the Persian Gulf; or that Abkhasia was the Land of Schamyl.

As to the teachers in primary schools, it may be possible to do something by organising in conjunction with the Education Department a series of prizes for proficiency in geography. Lectures adapted for their requirements will be given in London and elsewhere by the readers we hope to see appointed. These will give them that sound elementary knowledge which need by no means be superficial. But more, perhaps, will be done indirectly by encouraging by criticism and advice the production of thorough works on geography. For if the teacher is well read, the child will be well taught. The school text-book, however important, is still of secondary importance. They would further be

helped by promoting the construction or introduction (whichever our publishers please) of the best wall-maps. In conjunction with these, very cheap little hand duplicates might, as at Zürich, be used by the class. Then by the aid of photography we may hope to get quantities of cheap and graphic illustrations of physical phenomena, to the use of which I attach very great importance. Already I learn that one of the series used in Germany is to be reproduced in England in a cheap reduced form. In my days we had only the simoom and the maelstrom. We must pray also that the cuts in text-books may no longer be like that terrible libel on mountains and a glacier in Prof. Huxley's 'Physiography,' in which the hill-side is built up of flat cheeses, and the glacier drops its moraine like a road surveyor his stones in equidistant heaps, or the still more preposterous representation of "roches moutonnées," which is served up again and again to unfortunate pupils. A photograph of the stone near the first bridge in Borrowdale would be worth hundreds of such libels on nature. It is quite preposterous now that we have such admirable photographs of all sorts of regions remote laterally or vertically, that we should use inaccurate designs for teaching. One photograph of Mr. Donkin's will illustrate half the phenomena of glaciers; one good view of an African village will throw light on a continent. In this matter America sets us an example. See the admirable views of the Colorado gorges, and lately of the peaks and glaciers of the United States, issued by the Survey Department, or the photographs of Niagara now in the Birmingham Exhibition. One American idea, however, I hope we shall not adopt. Their system of setting one subject inside another is sometimes pretty. But for teaching purposes separate subjects should be kept separate. In this matter of illustrations our colonists again can help us by organising selections of typical representations of their own regions.

There are other things suggested by the Exhibition to which attention may well be paid. I should like to see an attempt made to reproduce, on the flat, physical wall-maps imitating from a distance as far as possible the effect of relief maps. Relief maps are excellent things, but they must always be expensive, and somewhat cumbersome.

I think something may be done in the way of organising a system for the colouring of contour lines of elevation. In maps on a similar scale the same system might be generally used. They would, among other things, be found of use as material by professional map-makers who have to prepare maps for special purposes.

The Ordnance maps (I could wish we had any on a moderate scale to compare in clearness and graphic delineation with the Siegfriedkarte of Switzerland and the Carte Vicinale of France. The indiscriminating way in which by-roads, cart-tracks, and bridle-paths are laid down, and the very poor keeping up to date as to novelties, particularly new railways, are two serious defects, due probably more to Treasury stinginess

than to any lack of zeal in the Staff in our maps)—the Ordnance maps, I was saying, are of course available in that *Heimatskunde*, or local topography, on the claims of which it is at present the fashion to lay, perhaps, exaggerated stress. Useful it is, no doubt, but it is, I venture to suggest, most useful as a means of illustration of wider teaching, with which it should be constantly kept connected. I do not think it has ever been proposed, even in a Church school, to teach the infants the whole duty of the vicar and churchwardens before they are informed as to the estates of the realm. The imagination of youth is the teacher's best hold on it. "It is the general truths," said Mr. John Morley, lecturing here ten years ago, "that stir a life-like curiosity as to the particulars which they are the means of lighting up." And what is true of history is equally true of geography. If the German-Swiss go into their home-study so thoroughly, we must not forget that they also take their children on extended tours. These scholastic tours or "caravanes scolaires"—a great feature in France also—are as yet hardly known among ourselves. When Mr. Cook has done with the pilgrims to Jerusalem, Mecca, and Fusi-yama he will, perhaps, think of the children. At present, judging from what I have seen during the last month or two on one of our southern lines, the holidays of London children must lead them to believe that the world is a flat plain, broken only by the Swing Range, and the Giddy-go-Round Heights, and bounded on all hands by railway embankments! In England it is only in a prince's education that touring as yet takes any prominent part. I do not mean to suggest that the rate-payers should provide gratuitous tours for the poorer classes as they already do in France. But there are, or there ought to be, middle-class schools where such field-teaching would be possible. Parents are as well-off in England as in France, and not less liberal. And for pupil teachers and advanced students it is obvious that something in this direction might be organised with advantage.

By some such means as these we may hope to persuade the teaching public that the world we live in is as proper an object of study as the parts of speech, and even more stimulating to the youthful imagination and intellect.

Minor suggestions made by the Council are that we should endeavour to give life to the study by encouraging travellers or geographers of reputation to give illustrated lectures in out-of-school courses such as exist at Eton and Rugby. The Council has subventionised to the extent asked the geographical lectures in the University Extension courses. It already gives prizes through the examiners in the Local examinations at Cambridge, and to the lads on the training ships at Deptford.

If you want more details and the very words of the Council proposals you will find them in the published volume containing Mr. Keltie's admirable Report and Mr. Bryce, Mr. Ravenstein, Professor Moseley, and Mr. Keltie's lectures.

The results we look to, and the importance of which justifies in our eyes these measures, I have already touched on. In the first place school will be made a brighter place to children; school-learning and out-of-door things will be brought into more direct connection in their small minds. When they grow up these children will be better prepared if called on by circumstances to go forth as colonists, better able to profit by their opportunities in a new country; they will not be haunted by that dread of the unknown, of as it were going to another world before their time, which so powerfully affects—I speak from East End experience—many working men. They will be better clerks and merchants, for they will understand better the local conditions which must largely influence their success; they will—the recent French war has demonstrated this—be more effective soldiers. In literature, without losing, let us hope, the healthy English spontaneousness, without becoming pedantic, we shall produce better books of travel, more works like Stanley's 'Palestine.' We shall create a supply as well as a demand. It will no longer be the case that no publisher will in England find subscribers to support for a length of time a scientific geographical magazine like Petermann's or a popular illustrated magazine like the 'Tour du Monde.'

In politics we shall have perhaps fewer of those difficulties which come of first making a treaty in ignorance of physical facts, and then trying to revise it in the face of an astute opponent whom we have ourselves put technically in the right. We shall surely be better able to see things in their true proportions; we shall understand that all the serpentine and subterranean dealings of Russian politicians, their tergiversations and kidnappings, are at root the outcome of the natural and inevitable tendency of a great Power to get to the open sea somewhere, and that we must consider seriously whether we shall be best advised to endeavour to stop her altogether, or to consider where she may find exit with the least injury to growing nationalities and ourselves.

We shall be less likely, in a flurry over troubles at home, to neglect our interests overseas. We shall not, while we are discussing whether or not Ireland shall be allowed to throw up its share of imperial power for the sake of "helping herself" at home, allow the empire of which it forms a small, and will in a hundred years form only an infinitesimal part, to fall to pieces.

I have not pleaded with you in favour of geography in education as one who doubts of ultimate success. We have in our favour, I will not say the flowing tide, for tides ebb sometimes sooner than it is expected, and the simile is a trifle discredited just now. We are rather, I would say, riding on the stream both of expert opinion and public sentiment. Or to change the metaphor, the germs of our scheme are in the air, and what is in the air you must swallow sooner or later. The nation having the greatest opportunities in and from geography will not consent perma-

nently to remain under the reproach of being the least prepared to use them; the proprietor, with the finest estate in the world, is not such a fool as to continue to know less than his neighbours about its capabilities. We shall succeed in our object—a little sooner or a little later, as you and others may please.

With regard to the representation of physical features, and particularly mountains and tablelands, I confess I am somewhat of a conservative. I do not mean that I would go back to the old system of representing big mountains by sugar-loaves and small ones by plum-puddings, a delightful example of which I possess in a work on the Abruzzi of the last century. I am not any more satisfied with the caterpillar arrangement, which reaches its height of absurdity in the misrepresentation of such a country as Palestine. But I cannot bring myself entirely to accept the exclusive use of colour and contour lines, very well exemplified in the capital and most practically useful maps taken from the new Ordnance Survey in Baddeley's Guides. And I utterly abhor the last novelty, which appears to be to exchange the caterpillar for a black eel, with eyes for peaks, and to make lakes look like mountains by a fringe of hatches round their margins.

The most perfect representations of inequalities are doubtless obtained by a combination of contour lines and hill-shading, a very fine sample of which will be found in the map of the basin of the Aletsch Glacier annexed to Prof. Heim's important work on 'Gletscherkunde.' But this system is expensive, and only suited for maps on a large scale, and where first-rate material exists. It is not desirable to hold out any inducement to precision in guesswork; it is so hard to banish an error that has once been accepted. For maps of moderate scale and comparatively little-known districts, hill-shading, such as is used in the best German maps, given by washes rather than lines, seems the most satisfactory.

One word of practical advice I have long wished to give map-makers. When you get a MS. map with glaciers on it to copy, don't imagine that ice must needs lie on a mountain-top, and consequently turn the ice-streams into ridges and cut off connection between them and the rivers. This is unsound physical geography with a vengeance. There seems, also, all over the world, for this criticism applies abroad also, a most serious need of some system, perhaps some yearly publication, which should warn cartographers against recopying exploded blunders, and inform them of new discoveries.

It is the old blunders that most need looking after. Here in Randegger's great wall-map of the Alps, for instance, is Mont Iseran figuring as tall as ever, though his head was cut off by the late Mr. Cowell a quarter of a century ago. The highest peak of the Maritime Alps is still put down as the non-existent Cima della Mercantoura; and how few authorities have discovered that Monte Rotondo is not the

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highest peak in Corsica! that the Apennines do not reach 10,000 feet in the Gran Sasso. And here we have the new volume of the *Encyclopædia Britannica* raising doubt as to so well settled a question as the highest peak of the Pyrenees. I take orographical instances that happen to be familiar to me, from countries near at hand. I do not wish, however, to be particular in my criticism, or to say anything to damage the improving but still improvable works which are now coming frequently on the market, and some of which are of considerable merit.

Indeed I am rather disposed, looking back, to imitate Mr. Keltie in deprecating the use of the comparison which has necessarily been instituted between the merits and price of English and foreign publications as a means of personal attack on English publishers. Of any blame that exists we, the public, must bear a large share. If the British schoolmaster demands a Joseph's coat—"fully coloured in red, yellow, blue, and green"—I quote a recent Reader—the tradesman must supply it. If the teacher is thoroughly careless of physical geography and does not understand maps that show physical features, how can they be made profitable? You cannot sell Bibles and compasses in New Guinea; they prefer missionaries and spits. Again, cheap prices depend on large sales.

What the British publisher wants is evidence of demand. If we can give it him in the shape of a few more facts of the character of this one, that a Viennese firm are sold out of one of their wall-maps in consequence of our Exhibition, we may expect to see him advance. We shall then have a right to criticise him if he does not come halfway and make supply meet and enlarge demand.

The following discussion ensued on the reading of the above paper:—

The Rev. A. R. VARDY (Head Master of King Edward's School, Birmingham) said that if the admirable paper to which they had listened did not lead to a reform in the teaching of geography in our schools, it would not be because teachers did not recognise the importance and interest of the subject. The fact was that in the higher schools of the country—and it was for those chiefly that he could venture to speak—the teachers were not quite their own masters. They had to prepare their pupils for the Universities; those pupils must go up to the Universities ready to pass examinations in certain subjects; and unfortunately in those examinations geography held a very humble place. To classics and mathematics a high value was attached at Oxford and Cambridge; history, modern languages, and some branches of natural science had less value there, but yet an appreciable value; geography was of little account, except so far as it was needed to illustrate Latin and Greek authors. School life was short; the conflict of studies was severe; and this particular study was thrust out by others. The Geographical Society had, by their generous prizes, done their best to encourage it, but the result had been disappointing; the competition had not attracted the best talent of the schools; and he doubted whether the gold medal had often fallen to pupils who were afterwards distinguished at the Universities. On this point the late head master of Dulwich, a school which had carried off an unusual proportion of medals, would be able to speak with authority. The conclusion to which he was himself led was that it must be by pressure brought

to bear on the Universities that they might hope to see a stimulus given to the subject. He had seldom been able to interest his elder boys in anything like a careful study of geography for its own sake; it had only been when it indirectly bore on classical work that he had found them ready to take an interest in it. He was, however, fully in accord with the suggestion made in Mr. Freshfield's paper that in high schools a more systematic attempt should be made to treat geography as a connecting link between natural science and history, and between natural science and literature. It was the experience of every teacher that even a few maps and photographs gave a new zest, a greater reality, to the study both of literature and of history, and the interesting exhibition of appliances for geographical teaching arranged in the rooms below would show how much more might be done in this direction. He might venture to add a single practical suggestion. It was impossible to cover the whole field, or any great part of the field, of geographical knowledge, and that teacher would not be the least successful who limited his teaching to such corners of the subject as he really knew well. A few lessons about a country or a part of a country which the teacher had visited, where he had climbed the hills, explored the valleys, and sojourned in the towns, would be worth many lessons based on a mere book-knowledge.

The Rev. GEORGE BROWN (late missionary in New Ireland) urged the importance of geography in relation to our Australasian colonies and the political questions of the day in which the islands of the Western Pacific are concerned.

The Rev. HERFORD B. GEORGE (New College, Oxford) said that his experience as to geographical education was of two kinds:—as having attempted to teach geography for the Modern History School at Oxford, and as having had large experience in school examining, especially in connection with the Oxford Local Examinations. As to Oxford, he was afraid that though geography was formally included among the subjects of the Modern History School, and was not unrecognised in other schools, yet practically, knowledge of geography counted for but very little in the examinations; and inasmuch as undergraduates had to prepare their work in a limited time, they naturally laid most stress on what would "pay" the best. As to the schools, though there were some in which it was evident that geography was well and intelligently taught, in the majority the knowledge gained was vague and unreal, crammed out of manuals, often antiquated, and with little basis in study of maps. For instance, in the recent Local Examinations (of boys and girls, chiefly from second grade schools all over England, averaging about seventeen), several candidates had described two adjacent countries as being each east of the other. He was afraid, however, that it was not the school children only who were ignorant or careless of geography; there was no mistake half so common in print as putting east for west, or west for east. Probably that error might be found, for instance, once or twice at least in the daily newspapers of every day in the year. The only remedy, in his opinion was to teach the teachers, and to this end, so far as higher education went, the place to begin was at the Universities. He had little or no knowledge of elementary schools, but so far as he could judge the proposals of the Royal Geographical Society were excellent as regards these also, and he hoped that the British Association would give to the Society's scheme all possible support.

Canon TRISTRAM could not claim much experience in the teaching of geography for the last few years, but he had had the honour of examining for the Royal Geographical Society's Medals, and also was, and had for some years been, Examiner for Lady Strangford's Geographical Prizes at Harrow. He was afraid that the influence of such special prizes did not extend sufficiently throughout the whole school, but was rather confined to a few boys, who might be looked on as geographical specialists. The examination was divided into general and special papers, and for the latter, books on the country selected as the special subject were recom-

mended a year in advance. The special subject was generally well got up by all the competitors. But with the exception of those whom he had termed geographical specialists, few boys showed any grasp of geography, even when it might most reasonably be looked for, as in classical countries, or in those which were the theatre of present military or political events. Of course the cultivation of a special genius in the line of its development was most important, but it was by no means necessary to neglect the training of the ruck of boys while doing this. He had noticed that Dulwich College always stood pre-eminent in geography, both as regarded the special few and the average many. Whether genius was always turned to the best account was another matter. He remembered assigning the Geographical Society's Gold Medal to a Dulwich boy, whose answers showed a natural grasp of geography, both physical and political, which would have qualified him as an Afghan Frontier Commissioner, and he must confess he was a little disappointed to find that the youth was now at his desk in a London solicitor's office. They might be sure that the same method of teaching which brought out the special talent of the few would also at the same time raise the geographical knowledge of the many. He thought that it would be a mistake in school teaching to make geography a special subject, it was rather a subtle essence which should permeate the teaching of all subjects, whether classical, historical, or physical. It was admitted that the historian must be a geographer; it was almost more necessary for the naturalist, and the taste for natural history and geography was always combined in boys. Let them take, e. g. the question of geographical distribution of species—how suggestive was this of physical geographical questions in all their ramifications. Why is such a fish found in such seas? Why is such a plant or bird found on such an island? And so with the teaching of history. He remembered once walking with a Winchester boy over the field of Waterloo. The boy had never been there before. After standing on the mound and looking round, he said, "Let us go there," pointing to a little rising ground. On reaching it the boy said, "Here it was that my grandfather's regiment stood in square." He asked him how he knew. "Oh," he replied, "we did the history of the war with France last term." Thus the descriptive power of an able teacher of history had so imprinted the topography on the boy's mind that he at once knew where he was. In short, rather than have geography lessons so-called in our schools, he would have all teaching, whether classical or historical, or of physical science, saturated with geography.

The Rev. E. F. M. McCARTHY (Head Master of King Edward's Grammar School, Five Ways, Birmingham, and Vice-chairman of the Birmingham School Board) said that he would like to endorse the expressions of appreciation of Mr. Freshfield's paper from the point of view of his own experience in connection with elementary education. He was sure that teachers were largely conscious of the need of a wider and sounder grasp of the subject of geography. It must be conceded that though the teaching of geography might not be rendered impossible through its many-sidedness, it was made very difficult thereby, and the misfortune was that the teacher was not his own master in the matter, but rather was very much a slave—the slave of a government code. If the curriculum of the code was one-sided (and it certainly was very badly so) he must be one-sided too, however many other sides there might be of which he had knowledge and to which he attached importance. As a further apology for his one-sidedness, it must be borne in mind that the code regulated his training, as well as his teaching. What was needed—on behalf of geography, as well as of almost every other subject of instruction in elementary schools—was a complete remodelling of the code curriculum and regulations so as to adapt them to the better conception of the aims of education for the working classes which had taken shape in the last few years. He would urge the formation of a conference of

experts to decide on the range of geographical teaching for such schools, and to press its adoption upon the Education Department. An attempt to reach the department through such a conference was made in 1881 under the encouragement which Mr. Mundella gave to outside criticisms on the code curriculum. This conference on code reform was composed of such representatives of science as Professor Carey Foster, F.R.S., Dr. Gladstone, F.R.S., Professor Henrici, F.R.S., and Professor Max Müller; of the teaching profession, authorities such as the Head-masters of Bristol Grammar School, University College School, and the "Middle" Schools of Birmingham and the City of London; and of managers of schools, Members of the School Management Committees of the School Boards for London, Birmingham, Leeds, Sheffield, Bristol, Nottingham, and Leicester. The measure of success in influencing the Education Department was not great—was to a large extent disappointing. But there was nothing to dishearten the workers in such a cause, and he felt convinced that a fuller measure of success would attend a further effort; and with regard to geography, he would ask whether this Committee of the British Association could not combine with the Geographical Society and place in the hands of a Select Committee the task of inquiring into the present teaching of the subject and the hindrances to it, with a view to publishing their criticisms and suggestions, and pressing them upon the attention of the department.

He would like to say one word on the subject of text-books alluded to by Mr. Freshfield. Mr. Freshfield thought that the ideal text-book might be written by Mr. Bryce and Mr. Bates in conjunction. He had nothing to say against such a partnership; on the contrary, he was ready to acknowledge that no two men could be found better fitted to work upon the ideal text-book, but he hoped to be pardoned if he said that the text-book produced would not be the ideal one unless a third partner were added, and he were a schoolmaster.

The Rev. Dr. CARVER (who presided over Dulwich College for twenty-five years) said that he had shared the interest with which all present had listened to the thoughtful and suggestive paper of Mr. Freshfield. Though it had not been his intention to take part in this discussion, yet after the allusion made by Canon Tristram to the competition for the Medals of the Royal Geographical Society and the direct appeal addressed to him by Mr. Vardy, he felt that he could not in courtesy refrain from stating to the meeting the conclusions to which his own experience at Dulwich had led him. As a subject of instruction in our public schools, geography, like every other branch of learning, must be considered from two distinct points of view—with regard, on the one hand, to the intrinsic importance of its results, and on the other to its value as a means of intellectual training. On the former point they had had the advantage of hearing the admirable remarks of the President of the Section in his opening address. The few observations which he should make would have reference rather to the latter. Geography supplied perhaps better than any other subject a point of contact in which all the main lines of school teaching—the classical (in the widest sense of the term), the mathematical and the scientific—met, or from which (to put it in another way) they might all advantageously diverge when the age at which it was thought necessary to specialise school studies was reached. There was no doubt much force in what had been said about the difficulty of finding well-qualified teachers. Perhaps he had himself been exceptionally fortunate; but he ventured to think that if once there were a recognised demand, it would not be long before there would be an adequate supply to meet it. In the competition for the Public School Medals of the Royal Geographical Society in the ten years from 1875 to 1884, Dulwich boys had won 15 medals, of which 11 were first or gold medals, either for physical or political geography. This result was no doubt mainly due to the fact that he had secured the services at Dulwich of

a most able teacher (Mr. Robinson), who combined with high mathematical attainments an enthusiasm for the study of geography, which he succeeded, like all enthusiasts in a good cause, in imparting to a great extent to his pupils. But a doubt had been expressed whether the introduction of geography into the curriculum of our public schools would not interfere with the preparation for the Universities. He had no such fear. The subject had been taken up at Dulwich by boys of widely different tastes and talents, as well by boys studying for the various professions as by those preparing for business pursuits, and taken up, as he thought, with advantage by all. More than one of the gold medallists had proceeded to the University, and had won open scholarships at Oxford or Cambridge. He was not at all disposed to complain that the question was asked, Will this subject "pay"? The question put thus crudely might indeed seem to imply a low and unworthy view of the objects of education; but after all it was a practical inquiry, which they could not ignore or evade. Parents would ask it if the boys did not. The study of geography, he was convinced, need not shrink even from this test. It would be inferred from what he had said that he was not by any means prepared to take the pessimist view of the future of geographical teaching in our public schools which had been expressed by some of the speakers. The Royal Geographical Society had, he believed, already accomplished much. There was, however, one serious defect in their scheme, to which their disappointment in the apparent results was, in his opinion, in a great measure due. They had liberally offered prizes—a gold and a silver medal to those who attained the highest proficiency in each of the two branches of the subject; but unfortunately they had not seen their way to issue a class or honour list in geography. Had they done so, they would have attracted a far larger number of candidates—perhaps an embarrassing number—to their examinations; and the winner of a "first class" or a "second class" in one year would have looked forward to being the medallist of the next year. Boys were quick and shrewd enough in measuring themselves against their competitors, and while they would be stimulated by the hope of a "class," they would decline to enter a competition for a prize which they knew that they had no chance of winning, and thus to stamp efforts which might be really meritorious and fruitful with the stigma of failure. The Society had, however, given an impulse to the study of geography, the force of which would not soon be expended. But while much had been done, much no doubt still remained to be done. All to whom he was speaking would, he felt sure, deeply regret if the Society, to which they owed so much in the past, should abandon their efforts in this most useful department of its work, the promotion of the sound and efficient teaching of this important subject.

Professor MACOUN (Canada), Mr. F. YOUNG, Mr. TRELAWNY SAUNDERS, and Mr. RAVENSTEIN also took part in the discussion.

GEOGRAPHICAL NOTES.

Proposed Renewal of Antarctic Exploration.—The movement set on foot by Admiral Sir Erasmus Ommanney at the Aberdeen Meeting of the British Association in 1885 found prompt participation in various quarters. In July last the Royal Society of Edinburgh appointed an influential committee to consider the question, and a report of the committee, which pithily sets forth the scientific objects to be gained by an Antarctic expedition, was adopted by the Council, and ordered to be printed and circulated. The Scottish Geographical Society also gave in their