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Nature study and geographical education

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invariably found suitable employment as surveyors subsequently. Indeed the demand for trained R.G.S. surveyors already exceeds the supply, although it cannot as yet be maintained that our means of training are as perfect as we could wish.

In military schools the report of the late committee appointed to consider the education of army officers shows clearly enough that amongst all the necessary subjects for a cadet's education which have to be crammed into the exceedingly short course of his military schooling, that branch of geography which is embraced by the term "military topography" finds a very conspicuous place. The short course of a military school will never turn out an accomplished geographical surveyor; nor does it in any way outflank the necessity for a military school for professional topographers. But it teaches the young officer how maps are made, and instructs him in the use of topographical symbols. It would be well if it could be pushed a little further—if it could teach him how to make use of the maps when they are made—for personal experience convinces me that the apathy shown by many of our foremost generals and leaders on the subject of maps arises chiefly from a well-founded doubt of their own ability to make use of them. As for the broader basis of general geographical instruction which would deal with the distribution of important military posts and strategic positions throughout the Empire, and teach officers the functions of such positions, either individually or in combination, during military or naval operations, it is perhaps better that such a strategic aspect of geography should be relegated to a later age, when the average intelligence of the cadet has become more fully developed.

Taking it for all in all, there are distinct signs of a more general interest and more scholarly standard of thought in the subject of geography. This is probably due to the efforts of a comparatively small group of workers at a time of general educational reform, possibly partly stimulated by the disclosures in connection with the late war.

The methods of further improvement are simple—better teachers and better examining—and for both it is probable that we must look more directly to civil sources than to the tentative efforts of the military schools.

NATURE STUDY AND GEOGRAPHICAL EDUCATION.

By Professor PATRICK GEDDES.

THE "Plea for a National Institute of Geography," set forth by Mr. Bartholomew in the March Number of this Magazine, and accompanied by a "Plan and Note" by the present writer, has briefly outlined the needs and possibilities of a comprehensive geographic institution upon the museum scale. Such a museum was shown to be twofold; on the one hand comprehensively scientific, on the other directly practical. On one side it offers a synthetic presentment of the stellar and planetary

universe, and of our globe in relief, with due developments of detail, cartographic, descriptive, etc. On the other hand the practical usefulness of such an institution, industrial, commercial, colonial, etc., was briefly indicated, and this latter aspect of the proposed institution may be more fully realised by help of Mr. Branford's description of the Philadelphia Commercial Museum in the May Number.

Leaving for a time the comprehensive treatment of the science—that impartial survey of all countries which is the keynote of most geographical treatises, large and small, from Reclus's *Géographie Universelle* through Mill's *International Geography* to the school text-book—we may take up the standpoint of our own immediate region, and use this as the centre around which to group our ideas. This has been briefly attempted in the writer's paper on "Edinburgh and its Region, Geographic and Historical," in the June Number, and also—quite independently, but by a happy coincidence—in the more purely physical Survey of Edinburgh in Mr. Richardson's paper on "The Physiography of Edinburgh," in this Magazine for July.

The preceding group of papers are thus complementary, one pair emphasising the cosmic, and another the regional standpoint, one more purely scientific, the other more directly practical. Outlines though they necessarily are, they broadly map out the two hemispheres of thought, speculative and practical, the two poles of thought, the cosmic and the regional.

Yet, apart from the obvious possibilities of following the points of view above outlined into further and further detail, there remains a large and a practical inquiry—that of correlating such a comprehensive survey of geographical thought, and of the corresponding possibilities of action with the work of education.

How are we to put the vast ambitions of geographical education, not only of presenting a geographical synthesis, but the corresponding geotechnic synergy, into relation with the actual work of school and university, with the requirements of the technical colleges, with the urgent problems of industrial and commercial life? How are we to organise geographical education? At least, how may we begin it aright?

Thus stated, the theme is obviously a well-worn one. The claims of each special science to its place in education, the claims of technical and commercial instruction, the value of geography, each has had its case ably and fully stated once and again.

Yet despite much progress, too many of the best general ideas, from Mr. Spencer's *Education* onwards, too many of the best teaching methods in geography, from Dr. Keltie's *Report on Geographical Education* onwards, still remain mere "counsels of perfection," which the teaching world has not yet seen its way adequately to utilise. Why is this?

May it not be partly at least because the advocates of science have not succeeded in fully adapting their studies to the growing mind, in helping the teacher to grade their sciences according to age and powers into the regular work of school and college? And further, may it not also be because their advocacy has been too much the advocacy of

"Natural Science," and too little an opening of the classroom into Nature itself, a leading out of the pupil into direct and first-hand acquaintance with her varied and living reality?

Hence the importance of the present movement in British as in foreign education towards Nature Study. Improved school buildings and hygiene, games and gymnastics, have each fought and won their struggle for recognition. The chemical laboratory, and more recently the physical one, is now a recognised necessity of every secondary school. The workshop and the cooking-room are now similarly incorporated in every school-plan. More recently still, the school museum and the swimming-bath in their turn are passing through the same stages of development; first "fad," then luxury, then convenience, and finally necessity. What remains to be asked for?

Facilities for nature study, school excursions and school journeys, school gardens, and the rest—these are now in the first rank of immediate educational desiderata.¹ Following upon the example and stimulus of American¹ and French education, upon the experience of Summer Schools and scattered individual teaching-initiatives nearer home, the Scotch Code has not only recognised but insisted on instruction in nature study since 1899, and has been promptly followed by the English Code in 1900. Courses of instruction for teachers have sprung up in many parts of the country; and all these many activities have recently found an important expression in the recent Nature Study Exhibition (Royal Botanic Garden, Regent's Park, July 23 to August 5, 1902). Of this some of the best exhibits have more lately been on view at the Cambridge Summer Meeting, and also at Edinburgh. Here then is at once a theoretic and a practical strategic point for the geographical educationist. How best is he to relate his freshened and growing interest in Nature with his demands for a more comprehensive yet also more precise knowledge of the world? And if the present movement seems to him as yet too purely dominated by natural history or sometimes by botany almost alone, may he now show at once how to co-ordinate these with geographical instruction—putting, for instance, the school excursions and journeys upon their cartographic basis, and systematising and interpreting them by help of the master-conceptions of his science, as of latitude and relief, of climate and season. Is it not from some loss of geographical perspective that the nature teachers are at present so insistent upon this and that "method," so intolerant sometimes of each other's? Yet, is it not largely for want of this direct and concrete touch with living nature happily now coming into education that the claims of geography have been as yet so long delayed, and are even now so scantily met?

If this be so, it may be of advantage to make a brief examination of the ways and means of developing the elemental observation of outdoor nature, with which the child naturalist begins, into that larger survey of the cosmos which is the ideal of the geographer.

¹ See the writer's paper, "Facilities for Nature Study," in *Report of Nature Study Exhibition*, London, 1902.

Let us put then these questions to both geographical teacher and nature teacher—the more sharply perhaps the better:—

(1) Has not geographical education as yet failed to win its due place, and must it not go on failing till we base it on nature study?

And conversely, (2) must not nature study in its turn fail, or degenerate into mere specialist collecting, as it has done once and again, unless we develop it into geography?

To begin with, has not the geographer something to learn from the nature teacher? Despite the permanent excellence of the arguments for geographical education, his subject has historically become once and again a pedagogical failure; and despite his recent amendment, and consequent endeavours and opportunities towards obtaining a new footing in school and college, he has not as yet won adequate recognition as a pedagogical success. And so long as a child has more interest in a picture than a map, and in a natural history ramble rather than a surveying excursion, must he not recognise that each is appropriate to its age and stage, and that the former may be the better preparation for the latter, rather than *vice versa*?

When this is felt by the geographical teacher, he begins anew; and this time neither with the use of the globes nor with the plan of the schoolroom, the map of the playground, and so on, but with a genuine ramble. Without at first obtruding map or even compass, he leads or rather follows his pupils as they wander through wood and brake, and linger by ferny bank and rushy pool. The beauty of the country, the natural interest in strange things and common ones, the questions they raise to the child's own mind, not to the teacher's—here is the true stuff of nature study and of geography alike. Such nature-loving children are already naturalists, and need only a little help to become no less truly geographers.

Naturalists first—not geographers. Their natural concentration upon the beauty and interest of the immediate foreground, which calls them now to right and now to left, now forward, and now back again, at first obscures the sense of direction, of time also. Yet they are all the more fully living in the *here* and in the *now*, and so in this apparently unorganised and irresponsible freedom the educative process is going on. For what more can naturalist or geographer claim to possess than the habit of observing and thinking for himself and at his best, without books or helps, in presence of the facts, and in the open air? Our ideal of training is thus like the appreciative musician's—in full mid-stream of impressions to concentrate and isolate any one sequence or co-existence, yet without losing touch with the whole. Nature is thus the ultimate teacher and examiner no less than examinee.

Is it not primarily for lack of this touch with reality, this habit of open-air thinking, that our natural science teaching, our geographical instruction, still too commonly smells of the lamp, and has as yet such insufficient influence upon education or life, not to speak of character or usefulness?

Our young naturalist at length turns homeward, and now has the

time to think of his collection—that primitive museum, the boy's pocket, which successive excursions differentiates and expands into box and bottle and vasculum, each obviously the beginning of a museum-gallery proper. But the specimens are as yet unarranged and unlabelled? True, yet in the developing history of the individual or the race are not these unsystematised collections an indispensable stage? Do they not represent the treasure-house, which has historically preceded the museum? And if we respect this phase, must we not give time to it? Shall we not defeat our ends by seeking to omit it? Are we not risking that perhaps most fatal of all mistakes in education—that which stunts development by seeking unduly to accelerate it? As a wise educationist has lately said, there is no way of so thoroughly and permanently teaching selfishness as prematurely to inculcate continual altruism. Yet is not the same mistake made every day in the teaching of literature, and perhaps as much with science?

We bring home then not labelled and codified lesson-objects, but spoils, treasures, wonders, beauty-feasts. Here are crystals and ores, leaves and flowers, fruits and seeds, shells and butterflies; one has a beautiful feather to add to his hoard, another is gloating over a silvery stickleback, a crested eft, or half shuddering over a fearsome, great-jawed, murderous larva from the stagnant pond.

While this phase of wonder lasts, the wise teacher will not thrust in information unasked. This is why the true naturalist, the initiative geographer, so commonly looks back with even more gratitude to the simple encouragement, the elemental sympathy, the natural fellowship in admiration of kindly nurse or wise parent, than to the instruction of his later and more learned guides. Manure is excellent—in due time and measure—but for this first reason of excellence alone does not the educationist nowadays too often bury his child-garden under cartloads of the best, gravel his seed-bed with overdressings of the richest coprolite, or macadamise it altogether?

This elemental emotion of wonder will differentiate soon enough: first normally appears admiration, and only second comes curiosity. Must we not therefore fully encourage and develop both?—their common element first of all? Is it not at this critical phase of childhood that we have to prepare alike for the later outlooks of specialism, and for the wide yet deep interests of Humboldt's *Cosmos*, for all the surveys of the artist and of the naturalist, of the physical sciences and of the many-coloured world of men?

Leaving then our pupil's collections to arrange themselves by degrees as they grow—their various “natural sciences” as yet undifferentiated—let us with set purpose remain a little while in the earlier, the more fundamental mood of admiration. The child's freedom in his child-world is his literal paradise; he will have to leave it soon enough; so let the teacher for a time be guardian angel: he will soon enough be offering the fruit of knowledge. Yet in thus postponing analytic instruction in the natural sciences we are giving the lead to the artist, and with him to the geographer; and we may see exactly how.

Returning in the evening satiated with minute foreground observa-

tion, pleasantly weary, the eyes naturally relax with rest: they now as naturally take long focus, as earlier in the day the short. We see the landscape rather than the detail; and the landscape too at its time of utmost beauty, with longer shadows, and in more golden light; it may be in the glory of sunset. Now is the time to rise from nature details to impressions of nature. The flaming sky, the golden river, the dark silhouette of mountain or forest, the evening star, the rising moon, each is deeply printing the young retina, is thrilling and shaping the young brain. Is it not to such evenings, such hours, such impressions of beauty, that the naturalist and explorer look back as much as poet or artist? While this process is going on, the wise teacher will have little to say, will be again a child in nature, learning, rejuvenescing himself.

Thinking all this over afterwards as pedagogue, will he not agree that here is also the beginning of art-appreciation, however long before art-production? Have we not here a vital moment in the formation of taste—and therefore, as Ruskin has so clearly pointed out, not only in the beginning of culture, but in the forming of character itself?

This correlation of nature and art may be carried far. The apprehension of the respective beauties best seized by photograph and by painting, the appreciation of their respective qualities of tone and colour, will soon give him an interest in handling the camera and the pencil for himself, a greater desire to add colour to his sketch. Here then is a main strategic point in the warfare against modern ugliness; one also which reflection will show throws much light on the general failure of that commonplace art-teaching which has been a staple of our schools for fifty years. With this fundamental craving for beauty all the senses are at work; hence the child's desire of seeing and hearing, touching and handling, of smelling, and tasting are all true and healthy hungers, calling for the generous ministry of nature to the growing brain through each and all these sensory gates.

Even at the risk of over-labouring this point, it can be hardly too strongly insisted that nature teaching begins neither with knowledge nor discipline, but through delight; the former is but premature until the latter be assured. As for art and music, so for nature; better no teaching than without "the feeling of the subject." Even the living teacher's mind contains much cold and pickled information, and some decayed, besides much nomenclature not needed by the learner; and to refrain the tongue from these is a first duty; to stimulate the direct personal observation of the pupil the second. The results of this sensory education are as yet too rare, though normal, too common, yet pathological, those of starving or dwarfing it. Too many adults are thus not developed children, but defective, stunted, or degenerate ones; and it is not too much to say that much of the so-called "education" of the past is literally definable as the production of artificial defectives. The university teacher of natural science knows this only too well. His adolescent and grown students, even the best and the most diligent ones, are generally inferior to school children of from ten to twelve or fourteen, alike as regards observation and interest, visual as well as verbal memory, and too often in reasoning and in interpretation also. Scanty and

imperfect as is yet this new nature teaching of the schools, it is already preparing a new and healthier type of university student, at least so far as the sciences of observation are concerned, and probably as regards other studies also. To speak of the deeper psychology of the senses, or of the too frequent revenge of the sensory centres in consequence of the starved senses, would carry us beyond our immediate problem. Suffice it here to note the educational value of sensory refreshment in holiday and vacation, in "change of air" and wider travel, with the corresponding convalescence of the dulled and depressed senses, and the renewed growth of the stunted observing and interpretative powers. Here is a main educational use of geography, which is already giving us the systematic development of the school excursion into the school journey at every progressive centre of education, if not as yet fully among ourselves at least largely in every continental country from Norway to Spain, indeed from Russia to the United States. And independently at many such points we see that more intimate correlation of the teaching of science with that of art for which we have been pleading.

Recent improvements of our methods of teaching drawing incline now to the side of detail, again to that of impressionism. Hence one of our most original teachers, Mr. Wyse of Arbroath, begins his children with the loving iconography of their own treasures, the flower, the shell, the butterfly; another, Professor Jackman of Chicago, insists especially on impressionist studies of the trees of his school's park outlook and their seasonal aspects. Must not the immediate future bring the harmony of both methods? And must we not give more and more place in the teaching of visual as of auditive arts, to the taking in a wealth of impressions of beauty before we expect any production of it? How can we go on expecting to bring much beauty out before we have taken much beauty in? Hence, after the innumerable experiments from well-nigh every adult point of view, towards the better teaching of art and science, which have been in progress in our time, must we not now insist more and more upon this developmental point of view, upon these preliminary phases too much forgotten, too often suppressed, even at best probably too imperfectly recapitulated? In generously ministering to mental growth at this fundamental and formative period, shall we not be laying the best of foundations, be developing the true preparatory school? Is not the naturalist, the geographer, or, for that matter, the person efficient in any field of observation or action, most commonly one who (despite whatever later difficulties) has had a feast of impressions in time, and has come into early, however transient, touch with some mind of kindred tune?

To sum up, then, before observing things so as to obtain orderly knowledge from them, let us develop general interest in them. Before producing the ordered beauty of art must come the seeing of beauty. Fundamental, then, to both alike is the art of seeing.

How is this to be taught? May not the pedagogue develop here a gymnastic for his pupil, and train him more and more to see the continually changing beauty of the world, its perpetual changing interest, its "bright and intricate device of days and seasons."

Hence, then, restraining his informational outpour, moderating his instructional zeal, let him seek how to help the pupil to educate himself. Let him keep his own favourite science on the second plane, his elementary psychology—that science of sciences for the educationist—upon the first.

Of this elementary psychology of observation there are no better statements, first, than Meredith's dictum that "Observation is the most enduring of the pleasures of life," and next than Browning's—

"We're made so that we love

First, when we see them painted, things we have passed

Perhaps a hundred times nor cared to see ;

And so they are better painted—better to us,

Which is the same thing. Art was given for that."

Though it should really be no more necessary to insist on the importance of landscapes and world-pictures as much as of maps to the geographer, it is desirable to carry this recognition more clearly into educational practice—always bearing in mind that pictures are to be pictures—satisfactory from the artistic point of view as well as the scientific.¹ Alike in the teaching of children, of students, and of teachers, the writer has found it of advantage to conduct an excursion now from the scientific and now from the artistic point of view—this summer, for instance, at the Cambridge Summer Meeting exploring one day with net and bottle and vasculum the wonders of the Fen, and another leaving aside the wealth of minute life, and seeking only for landscape impressions of all kinds, from the simplest meadow scenes, through the unique magnificence of the backs of the colleges, to sundown on the river.

And as the naturalist observer aids his observation with lens and microscope, so the teacher of landscape observation should use the appropriate optical appliances also—not only viewfinder and photographic camera, but those two inestimable instruments which have left their mark so deep in the history of art, the convex mirror and the camera obscura. How these two instruments not only develop and quicken the artistic appreciation of nature, but the appreciation of art also, and this in both its two great lines of development, academic and impressionist, must be left to the teacher himself, and to a separate paper on the Art of Seeing.

We have started, then, with the general enjoyment of nature, and have seen something of how to educate the pupil's powers of observation, alike with the naturalist as with the artist. We must pass beyond mere observation, and watch the intelligence at work, interpreting its observations and questioning nature.

How to guide and encourage these child-questionings, how from observation to develop inference, yet how to discipline clearly in the discrimination of these, the good teacher does not need to be told.

¹ See Mr. Mortimer Menpes' *World-Pictures*, Mr. Pennell's etchings, and the like, as distinguished from too many so-called pictures for school use.

Many suggestions, however, have been given at the recent Nature Study Exhibition, and will be doubtless brought out in its forthcoming Report, while full accounts alike of American nature study methods as of Philadelphia, Cornell, Chicago, Clark, and of other universities and training colleges, etc., are easily accessible.¹

Keeping to our essential point, the connection of nature study with geography, let us say a word for the child explorer. For here the geographer will at once sympathetically interpret the psychology of truancy, in terms of his own hunger of nature experience, his instinct of travel, and he readily distinguishes the two main attitudes of mind, artistic and scientific, we have been seeing how to develop—Waterton, or Wilson the ornithologist as typical naturalist-truants, R. L. Stevenson or Walt Whitman as artistic ones, while Thoreau and Jefferies oscillate between both. Darwin, of course, is arch-truant of all. He sees, then, that treatment is not merely or mainly by "truant-schools," but largely another method of producing artificial defectives, but primarily by ample excursions with consequent study of resultant treasure-trove in school. Nor need our geographer venture very far into the psychology of locomotion to discover its intimate relation with the feeling of hope, and the joy of rest also; and so understand more fully the familiar anchor-symbol which so well unites all these connotations.

While the nature teacher and art teacher have been collaborating, and the child collections and nature notebooks,² the photographs and sketch-books which have been such encouraging features of the Nature Study Exhibition are all in active progress, the geographical teacher may now at length take up the task. It is for him to encourage his pupils and his colleagues alike to distinguish (so far as circumstances of strength, time, means of locomotion, distance, and expense may allow) the characteristic excursions of the neighbourhood.³ The fields and river banks, the marshes and moors, the parks and woods, every representative scene, if possible, from sea to hill-top, should be visited, and these in each of all their main seasonal aspects as well as in their characteristic web of life.

Here, then, are the beginnings of the higher, the geographical botanising: no longer the mere collecting or even observing of plants viewed singly, or as species, but as Botanical Survey.

Here, of course, must first of all be noted the admirable botanico-geographical labours initiated by the late and much-lamented Robert Smith, whose work, however, in the able and zealous hands of his brother Dr. W. G. Smith, Mr. Marcel Hardy, and others, is becoming, what its projector hoped, the beginning of a general survey of the British Isles, and that in correlation with the survey of France and other countries.

How such regional botanical survey correlates not only with that of other lands, but with all the other elements of a regional survey of our own is a natural and an obvious step; and this, it may safely be pre-

¹ Wallace, R. Hedger, *Nature Study in the U.S.*, Board of Education Special Reports, vol. x. and Webb, W. M., *Nature Knowledge, its Progress and Interpretation*, Board of Technical and Secondary Education, 1902.

² Hodgson, M. L., *Nature Lore and Nature Notebooks*. Ambleside (Middleton), 1902.

³ Beveridge, H., "School Excursions." *Geographical Teacher*, 1902.

dicted, will be more and more systematically co-ordinated by the generation of nature teachers who are now coming forward, and yet more fully taken up by their pupils now in the schools. The long initial insistence of the present paper upon the elemental stuff of nature observation in childhood has been largely in order to lay a broad and deep foundation for this co-ordination, of minutest monograph yet most generalised impression, which regional survey requires and implies.

Even to enumerate the various elements of regional survey now in progress would require a separate paper; suffice it here merely to point out the use of the immediate regional excursions towards building up ideas of the larger world in its landscape and vegetation, in realising its scenes, even of apparently unfamiliar elements. To the child mewed up in the manufacturing town and under the artificial-defective-making processes still predominant, nature is strange and foreign, if not almost unintelligible. But an outing to the nearest golf links on a windy day, with even miniature sand-dunes here travelling before him, or there held fast by their binding reed, or at least with bunkers blowing out, will open to him not only many a long perspective upon our island shores, but upon many a hundred miles along the coast of Europe, from French Flanders round to the Baltic.

That patch of heathery moorland is the Luneburg Heath, and many another; that wetter patch where willows replace heather is the endless Tundra itself. In this fir-wood we are in Norway; in that park with its oldest deciduous trees we are transported to the lower Alps; that fertile carse with here and there a patch undrained or inundated is the English fen-land, the fertile Netherlands; and so on through the world. Even on a winter's day may we not exchange our snowy north for the tropical palm-house at will?

Our regional survey, then, is not one of maps alone; it is a region relief, a season pageant, a region panorama. In each of these our elemental preparation in artistic and in scientific appreciation are fully required, and should go on developing indefinitely side by side through life and culture.

The rambling and gathering of our child-naturalist with his nature notebook has developed into a regional survey, and this again will readily rise into that universal geography, that ever-extending survey of the regions of the world which is the geographer's ideal. Does it not also aid him towards a completer view of geography itself?

Despite its apparently so comprehensive survey from ocean-depth to mountain-peak, and now well-nigh from pole to pole, has not our science been limited in other ways? As maritime survey it is doubtless becoming peculiarly thorough and exhaustive; with the fisher sounding its shallows and deeps, with the mariner charting them, with the merchant-venturer trying every sea-route. In the exploration of strange lands the hunter as geographer has in our day been foremost, but the miner has assuredly not been far behind. In our familiar atlas we may see how it is the soldier who has surveyed strategic points and frontiers, or within our own region how peasant and squire and lawyer have marked out the

property of the individual, the administrative areas of the state, with all the precision that can be desired. From these occupational activities and their corresponding intellectual outlooks our contemporary geography is essentially derived; but does not the broadening educational movement of the times help us to utilise lines of occupational activity as yet less developed into geography, but which not only geographic teachers but professed geographers may follow up more and more profitably in the opening future?

The importance of coal and ore in modern industrial civilisation has given us our well-advanced geological survey, but our botanical survey is only beginning. We have lately had an admirable atlas of meteorology, but we still lack an atlas of soils. We know the mountains of the world, their snows and glaciers, better than the extent and possibilities of the forests; we know much of coasts and sea-bottoms, yet the geography of fisheries is only beginning. We know the deserts of the world, but as yet we are only beginning to see how much of them may be irrigated, how much planted even as they are; we have surveyed marsh and swamp and lagoon, but have still mostly to guess at their reclaimable area. In a word, we have many atlases of geography, but as yet no atlas of geotechnics. Yet what would be more useful to each city and region? to each nation and empire? to the world as a whole? What more serviceable and stimulating in education? and what therefore more conducive to that advancement and to that support of his science which the geographer has so long been seeking, so rarely finding?

Here again we are at the beginning of a new inquiry. Just as we have endeavoured to follow the development from the child's enjoyment of nature around him to the geographer's maturity in visualising the world, so we should now start afresh with the child in nature, and with his activities in work and play, and trace these up along their various lines of occupational evolution; *i.e.* from the fundamental occupations of hunter and fisher, shepherd and peasant, etc. While fully recognising the educational uses, and the physical and moral value of games and sports, we should recognise their limitations also, both largely through study of the origin of games, of course chiefly occupational. The reaction happily now incipient against the prevalent exaggeration of games and sports (an exaggeration largely connected with deficient nature-experience in teachers and taught) presents no very serious difficulty from this point of view. For as the specialising upon particular games and sports has been characteristic of the educational order now passing its climax, so now recapitulation of fundamental occupations (of course with their appropriate measure of derived games) begins to be seen as a main educational resource and method of the opening future.

Thus, in fact, the whole question of technical and even of commercial education now arises before us; and these as standing in connection with nature study as a main primary preparation, and with geography (not merely descriptive, but occupational) as a main further element of secondary preparation, both lines of preparation as primarily and practical experience and quite secondarily of book work. The problem of education is thus not to increase the present overcrowding of new

"subjects," each to be treated by its teachers and examiners in its separate hour and compartment, but to unify and vitalise the whole by help of this literal "Return to Nature."¹ How can we from this contemporary "conflict of studies" return towards their completeness and harmony? How are the many and legitimate claims now before state and family, teacher and child—those of naturalist and of humanist, of utilitarian and of idealist, of statesman and of poet—to be practically harmonised in some reasonable and ever-increasing measure? And how may this be done so far as may be here and now, for the present generation of teachers and schools, and without waiting either for the infinitely distant completion of specialist sciences, or for the settlement of administrative machinery, as so many would have us do? These are the educational problems clearly before us, and particularly before the geographer, as the exponent not of any one special science of nature, nor of any one tradition of culture, but as the concrete synthetic of all these. Hence in a subsequent paper will be attempted more definitely to outline some of the contemporary experimental contributions towards this incipient educational synthesis, and especially of course those within the writer's immediate experience, which have been growing up for many years past in the Outlook Tower and its associated vacation and other studies.

SCOTTISH NATIONAL ANTARCTIC EXPEDITION.²

By W. S. BRUCE, F.R.S.G.S.

NEXT month another expedition sets sail for the Antarctic regions. As is generally known, there are already three such expeditions in the field—German, Swedish, and British. Scotland sends out the fourth expedition. The value of so many Polar expeditions at the same time is questioned by some, but those who have an actual knowledge of our ignorance of this part of the globe see that there is room even yet for other expeditions at the same time in the same region. Few people realise the immense unknown area of that part of the South Polar regions, within which no human being has ever penetrated, but an idea of this area can be obtained when we find that it is possible to include in that area two and a half Europes or three Australias. The second largest unknown area of our globe is the North Polar regions, but even this territory can easily be included within the outline of Australia, whilst the British Isles fill a mere corner when placed within that of the North Polar regions. We do not know exactly the land area of Antarctica, but it is probably as great as the continent of Australia, and of this we only know a fringe of the coast-line along a very limited extent, and know nothing at all of the interior. With the exception of one sounding taken by Ross half a century ago, and of a few soundings taken this year by the Swedish Expedition, there is not a single oceanic

¹ Prophesied and prepared alike by Rousseau and Pestalozzi and many other living educationists before and since, and now happily coming within our reach.

² Read at the British Association Meeting, Belfast, 16th September 1902.