GEOGRAPHY IN EDUCATION AND CITIZENSHIP

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PREFACE

GEOGRAPHY has passed through many vicissitudes since the days of Ptolemy. In Britain " modern " geography may be said to have been preached some thirty or forty years ago by such men as Dr. H. R. Mill and the late Sir John Scott Keltie.

That a popular demand existed for the subject is evident by the position which it occupies in all grades of schools, in spite of the lack of official encouragement, especially in secondary schools, and, until recently, the absence of schools of geography in the universities.

The great salvation in this country has been the well-merited and well-established world-prestige of the Royal Geographical Society, especially in the realm of travel, exploration, and scientific research. Later, the formation of a Geographical Association of Teachers gave to the movement the mutual aid made possible by organisation. If therefore in some respects France, Germany, the United States, and other countries can be pointed out as having given earlier recognition to geography in the schools and universities, there is

little doubt that Britain will occupy ultimately a position which her place in the world and the work of her practical geographers—explorers, administrators, etc.—both justify and demand.

Unfortunately the gospel of the pioneers remained unheeded, and the new school of geography was torn between the natural sciences on the one hand, and history and anthropology on the other. Its greatest claim was that it was " pivotal " between the sciences and the humanities.

More recently it has come to be realised that pure geography is " regional " in character, the " home " region being recognised as the essential laboratory of direct geographical observation. Applied geography, such as economic or commercial geography, becomes thus the application of definite geographic principles to some other branch of learning.

The subject has now taken its place in our educational system, and none too soon. The defects of unconscious and empirical adjustments of social groups to their physical environment are now very obvious, as, for instance, in South Wales and in most large towns. Amateurs in geography are everywhere attempting a new adjustment without knowing exactly the nature of the old. In many parts of the world, e.g. Tropical Africa, economic development is forcing a read-

justment, and the problem is baffling statesmanship because statesmen have not realised the aid which the trained geographer can render.

The book is virtually the substance of lectures on "The Teaching of Geography" given to teachers of Manchester and district. It is natural therefore that much attention has been given to illustrations from that locality; but it is hoped that they will indicate how similar examples in other localities may be used. As far as possible, maps and views have been selected not so much as illustrating a particular point in the text, but as suggestive of methods of geographical illustration.

I wish to record my indebtedness to very many helpers; to my colleagues and students at Manchester University for local material, especially to Miss Willis for the panorama sketches of Manchester and the block diagram of Lincoln, and to Miss Platt for the sketch-map of Rochdale. Above all, my thanks are due to Mr. Leonard Brooks for advice and criticism at every stage of the work.

W. H. B.

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1927

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[A considerable number of the following diagrams are reduced drawings in black and white of sketches which in teaching practice should be built up as the lessons proceed. They should be drawn on a large scale and with coloured chalks or crayons. In this way only can the effectiveness of the specially prepared diagrams be appreciated.]

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GEOGRAPHY IN EDUCATION AND CITIZENSHIP

CHAPTER I

THE SOCIOLOGY OF LOCALITY

GEOGRAPHY, in its etymological meaning, is a description of the Earth.[1] Strabo (*c.* 63 B.C.–A.D. 21) states: "In addition to its vast importance in regard to social life and the art of government, Geography unfolds to us celestial phenomena, acquaints us with the occupants of the land and ocean and the vegetation, fruits, and peculiarities of the various quarters of the earth, a knowledge of which marks him who cultivates it as a man earnest in the great problem of life and happiness."[2] Such a man was Herodotus (fifth century B.C.), keen observer in his own travels, anxious to learn from others of lands untravelled by him. Though known as the "father of history," it is highly probable that were he now alive he would be more at home

[1] Gr. γῆ the earth, γράφειν to write, to describe.

[2] Strabo, I. 1. 1. Hamilton's translation, 1854.

with the Royal Geographical Society than with the Royal Historical Society. Ptolemy (second century A.D.) gave cartographical expression to such travellers' observations, recording by maps the relation of the habitable parts of the earth

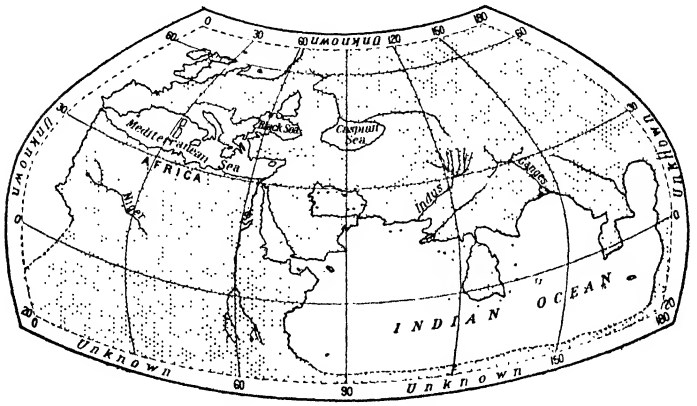


FIG. 1.—PTOLEMY'S MAP OF THE WORLD.
Modern names have been given to some of the features shown.

with the astronomical character of the planet.[1] (Fig. 1.)

From these early days until our own, geography has followed a much interrupted course. Not until recently have the broad conceptions of the Greeks been revived. In the revival they have gained in precision and scientific accuracy. In

[1] Had later scholars emulated the methods of these men to the same degree as they have studied their writings, geography to-day would need no advocate.

this country one might name as pioneers Dr. H. R. Mill,[1] the Rt. Hon. Sir Halford Mackinder, the late Sir John Scott Keltie[2] and Professor Herbertson. In France, Vidal de la Blache created a new and vigorous school of geographers, among whom may be mentioned Gallois, De Martonne, and Demangeon.[3]

The geographical *description* of the Earth implies more than mere travellers' tales, even as *location* in geography means more than position and distribution. London, Britain, the Sahara, the Far East, are geographical terms with a distinctive meaning and a fairly clear definition. They are the names, not of a particular acreage of the surface of the Earth, but of a district in which is expressed regional individuality.

It is essential that a teacher should constantly test both his own and his scholars' knowledge of places by describing them not only verbally but

[1] *Vide* "The Principles of Geography," *Scot. Geog. Mag.*, February 1892; "Geographical Work of the Future," *S.G.M.*, February 1895; "Research in Geographical Science," *S.G.M.*, October 1901; "The Present Problems of Geography," *Geog. Journal*, January 1905.

[2] *Vide* Report on *Geographical Education* (1885), Royal Geographical Society, Supplementary Papers I.—a most valuable and important document.

[3] For a survey of recent geographical work in Europe, *vide* W. L. G. Joerg in the *American Geographical Review*, vol. xii, July 1922.

by model, map, and panorama. *What* is Newcastle-on-Tyne ; *what* is the Amazon Basin ?

" London City," said Carlyle, " with all its houses, palaces, steam-engines, and huge immeasurable traffic and tumult, what is it but a Thought, but millions of thoughts made into one ; a huge immeasurable Spirit of a Thought, embodied in brick and iron, smoke, dust, palaces, parliaments, hackney-coaches, Katherine Docks, and the rest of it."

But the palaces and parliaments are in one place and the Katherine Docks in another. The smoke and dust of the low-lying, marshy East End contrast with the high, gravelly, healthy residential sites of Highgate and Hampstead. Visualise the actual expression of " the Thought, the millions of thoughts made into one," and you have a geographical picture of London.[1]

The " Far East " includes within its composition the extensive river plains of the Yang-tze-Kiang and the Hwang-ho, the seasonal (summer) rainfall of the monsoon winds and the form of cultivation which forty centuries of experiment and experience have shown to yield the maximum food supply.[2]

Space is fundamental in the geographical concept as time is in that of history. The region is

[1] *Vide* Figs. 35 and 36.

[2] *Vide* F. H. King, *Farmers of Forty Centuries.* (J. Cape.)

the counterpart of the epoch, each with a clear definition according to the view-point taken, but having in the one case space relationships with other regions; and in the second, time relationships with other epochs. Space has its own nomenclature, its own method of expression. "Hull is a large port on the Humber" conveys little geographical meaning. The simplest geo-

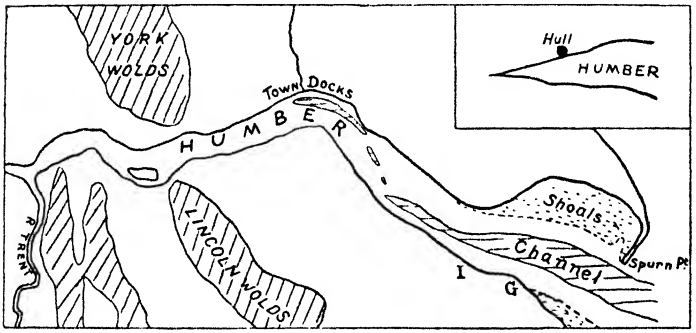


FIG. 2.—THE LOCATION OF HULL.

Physical features essential to the understanding of the position of the town and docks of Hull are here shown. The inset conveys no true idea of the location.

graphic sentence is given in Fig. 2, where the sweep of the Humber, the range of deep water, the River Hull, the town-site and the docks are given in their mutual relationships. Similarly "New York City is the gateway of North America" conveys little geographic information. The elementary statement is given in Figs. 3 and 4.[1] As

[1] The features of a region, essential but not capable of cartographical representation, are discussed later.

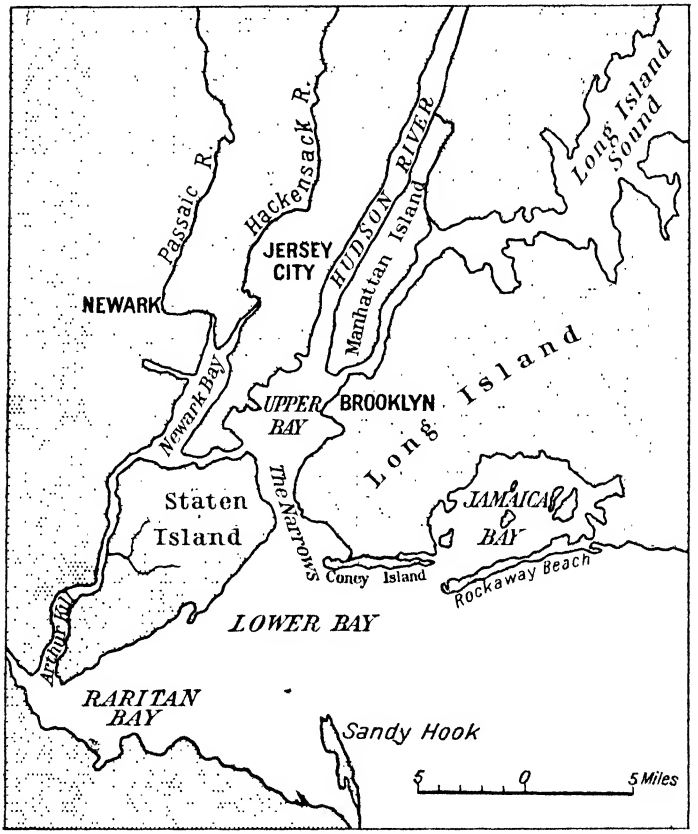


FIG. 3.—THE SITE OF NEW YORK.

The position of New York City on Manhattan Island is here seen in relation to The Narrows, Upper Bay and Hudson River, and to Brooklyn, Jersey City and Newark.

words in literature are but symbols whose meaning must be learned by much reading in phrases and in sentences ; so in geography sketches, plans, and

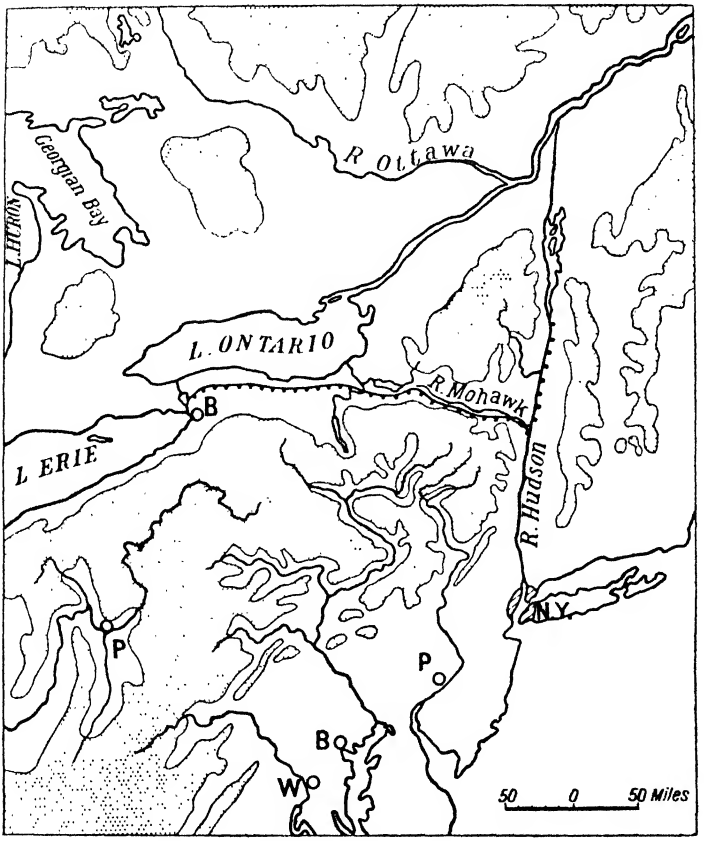


FIG. 4.—THE HUDSON-MOHAWK ROUTE.

The great traffic route, from the ocean to the interior, which has "made" New York City is shown diagrammatically.

maps are unintelligible until their notation can be "read" and widely studied. The atlas is for all classes the "set book" for geographical study.

True geography is recorded in the field and not in manuscript. It is the impress of a living world upon the face of the Earth. Much teaching of geography must necessarily be through the eyes and the experiences of others. But an extremely important part of geographical work must be to give eyes to our pupils that they may see *for themselves* how man has shaped his home in accordance with natural conditions—to appreciate, in fact, the unity of the region in the diversity of its component factors. The true traveller sees with ease the causes and the working of many intricate things. The doings of Nature fall of themselves in luminous order; he views them in all their inevitable and bewitching coherence; facts that had been for him no better than disparate data of separate arts and sciences—points of history, myth, geology, botany—suddenly become members one of another. They give each other their right of completeness and causation.[1]

The historical method of time sequence has hitherto been emphasised in our education. It requires, for a complete training, the complementary method of geography in space relations. So greatly, however, has this training been neglected that we are not yet ashamed of our geographical ignorance. Whilst lack of know-

[1] *Vide* C. E. Montague, *The Right Place*, p. 70.

ledge of the "landmarks" of history would stamp a man as uneducated, no sense of educational incompleteness is felt as yet by one ignorant of actual landmarks—the location of the world's greatest cities, the character of physical conditions and consequent modes of life in the major regions of the world. On occasion, in some great crisis, newspapers feebly attempt to bridge this appalling ignorance by means of maps and pictures and give at least the semblance of intelligibility to the news of the day. Should not a man know the countryside of England as well as he knows its island story? Should he not be able mentally to thread his way along main roads and railways, through the fields, the towns and the industrial regions as readily as he finds his path along the highways of history? Are the physical bases of the Lancashire cotton industry less important than the history of its economic progress or the advancement of technical science? Are not all the historical, the economic, and the geographical studies complementary and mutually necessary?

Moreover, should not "they that go down to the sea in ships, that do business in great waters"[1] at least be familiar with the general conditions in those lands overseas from which they draw

[1] Selected by the Mersey Docks and Harbour Board to be inscribed in the Entrance Hall of the Offices.

supplies of food and the raw materials of industry and on whose prosperity they depend for the sale of manufactured goods ? A country with cosmopolitan interests cannot afford to retain an insular outlook.

The physical and external influences on the life of man are no less important than the psychological and racial ones in determining the culture and well-being of a people. For the purpose of the school, regions of marked human adaptation exceed in importance those regions whose limits are determined primarily by natural causes, though an exception may perhaps be made in determining the major natural regions of the world.

A simple illustration will indicate the nature of geographical observation. The Palatine Road due south from Manchester is carried by an embankment across the Mersey flood-plain to Northenden. From a position on the road near to the bridge the broad flood-plain across which the river meanders within embankments extends eastwards and westwards. The limits of the plain are clearly marked by river terraces upon which stand the old villages of Northenden and Didsbury, with arable land on and beyond the terraces (Fig. 5).

This simple scene illustrates two features of geographical observation. The distant view, confirmed and amplified by a nearer visit, shows

the old adjustment. The church, the old village and the "Ford Lane" of Didsbury have their counterpart in the similar features of Northenden. The nature of the flood plain, the rise to the terraces, and the complete separation of the villages are obvious. A change of adjustment is now in progress and distinctly observable. Only yesterday, as it were, expanding Manchester touched the fringes of the terraces and gave a new

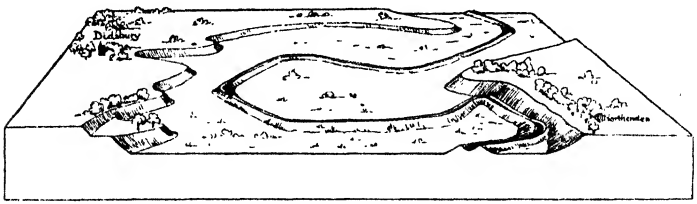


FIG. 5.—DIDSBURY AND NORTHENDEN.

A simple sketch to show the position of the villages on the terraces separated by the flood plain of the R. Mersey, whose waters are now within embankments.

birth to the villages. First, such terrace villages as Didsbury and Chorlton became residential suburbs. New dwellings steadily strangled and swallowed old farms and cottages. The village street, part of the great highway from Manchester to southward, became through much and costly reconstruction, the shopping centre of a populous suburb. Finally, the city incorporated these settlements. For a time the city hesitated at the northern terraces, then it made the leap to the terraces on the south. Northenden,

Sale, and similar places grew under the stimulus of Manchester, not as expanding old-world villages, but as new suburbs of the city. Now once again, the question of incorporation is before the public, and Manchester desires to cross the Mersey into Cheshire. Even the character of the farming has changed to meet the new economic needs of near-by industrial centres. Market gardening provides fresh vegetables and flowers for the million inhabitants of Manchester-Salford.

These and similar changes need to be seen to be appreciated. They are written on the landscape, and not in books.

On a larger scale we may take Clark Wissler's study of the Indians of the North American plains.[1] These people neglected agriculture for the pursuit of the bison which roamed over the almost treeless prairies (Fig. 6). They were nomads of the tipi and the hunt. To-day, the Canadian and American farmers have changed the bison hunting-grounds into one of the great granaries of the world.

Illustrations such as these show that in geography "cause and effect" must have a special meaning. The deep water of the Humber and the affluent of the Hull do not *make* the port.

[1] Clark Wissler, *North American Indians of the Plains*, American Museum of Natural History Handbook.

FIG. 6.—THE HOME OF THE PLAINS INDIANS.

The relationship of grasslands, the range of the buffalo, and the hunting grounds of the Indians is clearly shown. Tribes on the border of grassland and forest combined agriculture with the hunt.

They merely make it possible. The physical conditions of the North American plain do not *compel* the occupants to be either hunters of bison or cultivators of wheat. They only make these forms of adjustment possible. The motive or the urge of the adjustment may lie in the realm of economics or history; the manner of the adjustment is profoundly influenced by natural conditions. These natural conditions may remain constant over considerable periods, but there may arise through a variety of causes a change in what may be called the geographic values. This, as we have seen, may be due to the incoming of another people. It may be due to progress among the same people. In the district of the Sherwood Forest, historical and edaphic factors have hitherto preserved a considerable area of woodland where one might still recall the memories of Robin Hood and Little John. To-day, within this region, new mining villages such as New Ollerton are being built. Collieries, capable of yielding thousands of tons of coal per day, have already begun operations on the concealed coalfields of this district. Ere long we may expect to see the sylvan scenes of Sherwood give place to dismal hills of tips and slag-heaps, to chimney-stacks of industrial works, and over all a canopy of smoke.

By geography is therefore meant a study of the places of the Earth, not as mere locations to be

tested by dots and dashes on an outline map, but as regional entities influencing and being influenced by external regional relationships, capable of graphic as well as verbal portraiture.

From the study of many examples of geographical adjustment or regional association, it

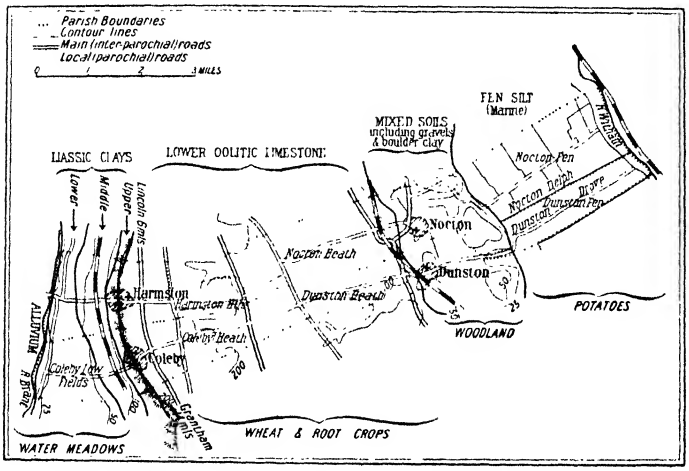


FIG. 7.—PARISHES ACROSS THE LINCOLN HEIGHTS.[1]

Note the elongated character of the parishes with "heath," on the limestone growing wheat and root crops; "low fields," of water meadows on the alluvium and clays; "fen" on the low-lying land to the east, with woodland between heath and fen. Country lanes run the length of the parishes, main roads and railways run transversely through the villages.

is possible to make deductions of a general character. The village of Coleby in Lincolnshire stands at the spring line on the scarp of the Lincoln Heights. The elongated parish includes both "lowfield" and "heath," a "parochial"

[1] See introductory note to illustrations, p. xi.

road linking the village with the meadows below and the arable land above (Fig. 7). Every village along this spring line south, and to some extent north of Lincoln conforms to this arrangement (Fig. 8). We can draw a type village for this

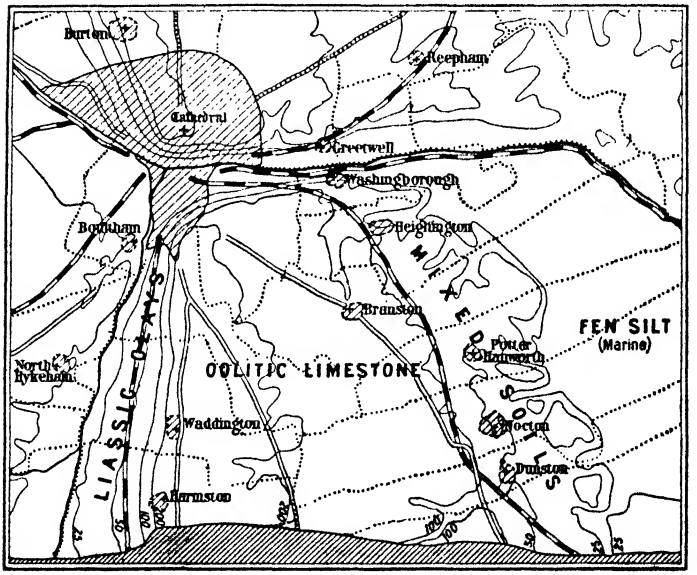
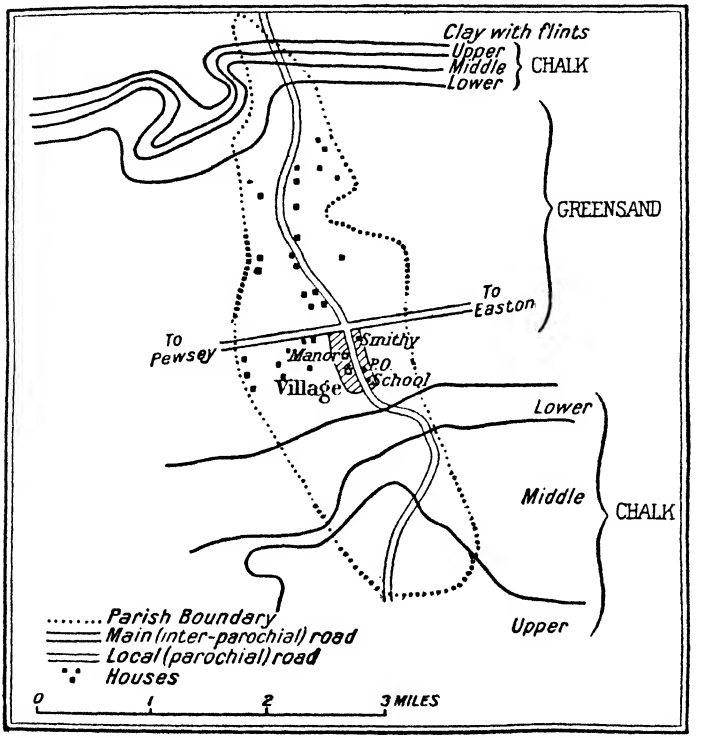


FIG. 8.—LINCOLN AND ADJACENT VILLAGES.

Compare this sketch of the villages and parishes in relation to relief and soils with Figs. 7 and 10.

part of Lincolnshire. This is similar to parishes in the Vale of Pewsey (Fig. 9), on the South Downs and elsewhere. Under similar conditions a similar adjustment has taken place. Villages east of the Lincoln Heights are of the character



[*After C. C. Carter.*

FIG. 9.—A PEWSEY PARISH.

The same elongated form is here seen as in the Lincolnshire parishes with the village linked longitudinally by a country road to the fields on different soils and transversely by a main road to similarly placed villages. Soils rather than relief are determinant factors, though relief is often an expression of the character of the rocks.

of Dunston with " heath " (wheat land) above and " fen " (potato fields) below. A " type " can be developed for this group of villages also.

The Witham gap gave Lincoln such additional

advantages of strategical position and water communication that it rose to be a "regional" market and capital with castle (now Assize Court) and cathedral (Fig. 10) in the days of agricultural England. To-day, when a wider, and even world market is possible, a "new" town has sprung up below the "old" town (Figs. 11 and 12), a geographical growth clearly revealed by the plan of

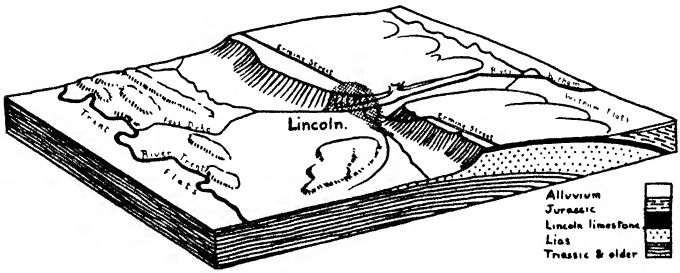


FIG. 10.—THE LINCOLN GAP.

A simple block diagram showing the relation between structure and relief, the character of the scarp and the gap which leads from the Vale of Trent eastwards.

the streets. Lincoln is not unique in this. Many an old-world town shows much the same lines of growth, the same change to fit a modern world. The differences may be little more than modifications due to local conditions.

The three southern continents furnish an illustration of geographical generalisation on a still larger scale. Three land masses project into the southern ocean with consequent similarities in certain natural phenomena. The west wind

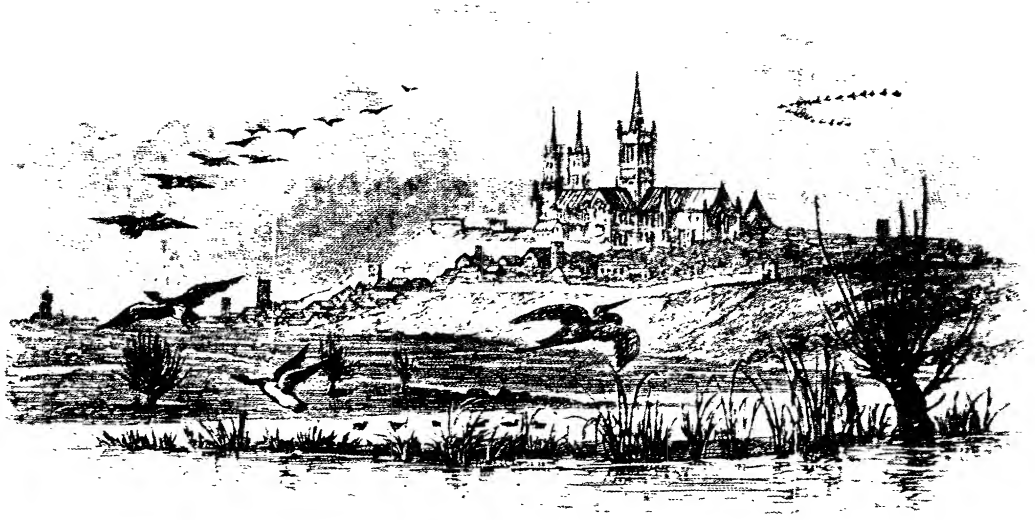


FIG. 11.—OLD LINCOLN

The old city clustered round the Cathedral, the marsh land at the foot of the hills being the home of wild fowl only. (The spire on the central tower was blown down in A.D. 1547, and the western towers were removed in A.D. 1807.)

FIG. 12. - MODERN LINCOLN

The industrial city has grown with the coming of the railways and occupies the drained lowland. Notice the array of chimney stacks in the foreground and the cathedral-crowned hills behind

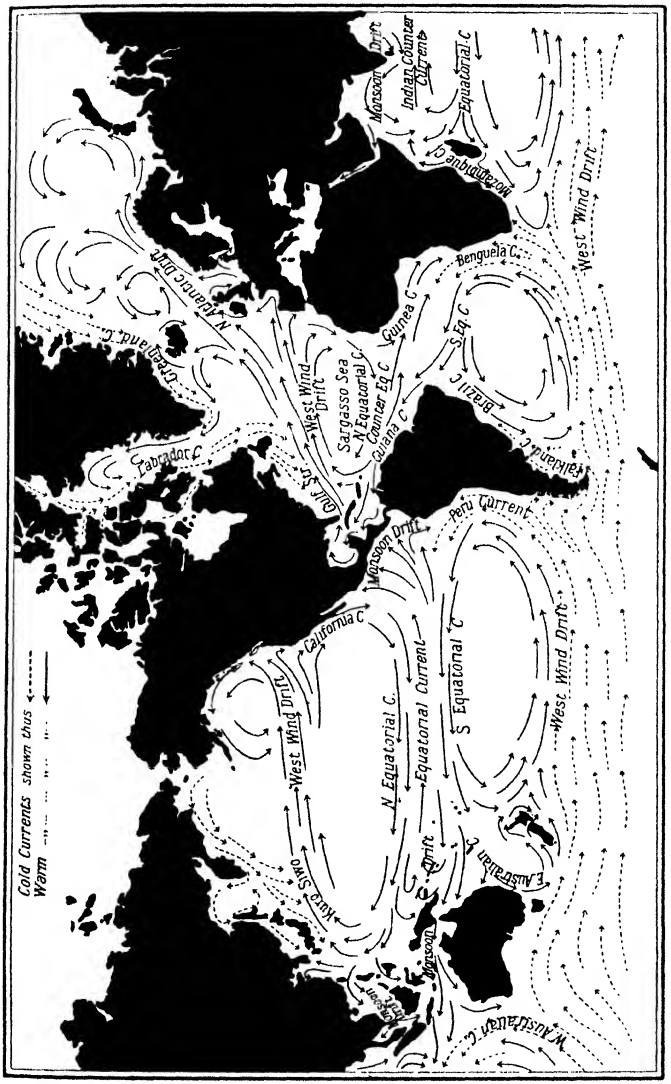


FIG. 13.—OCEAN CURRENTS AND DRIFTS.
Note the similarity of movement in the South Pacific, South Atlantic and Indian Oceans

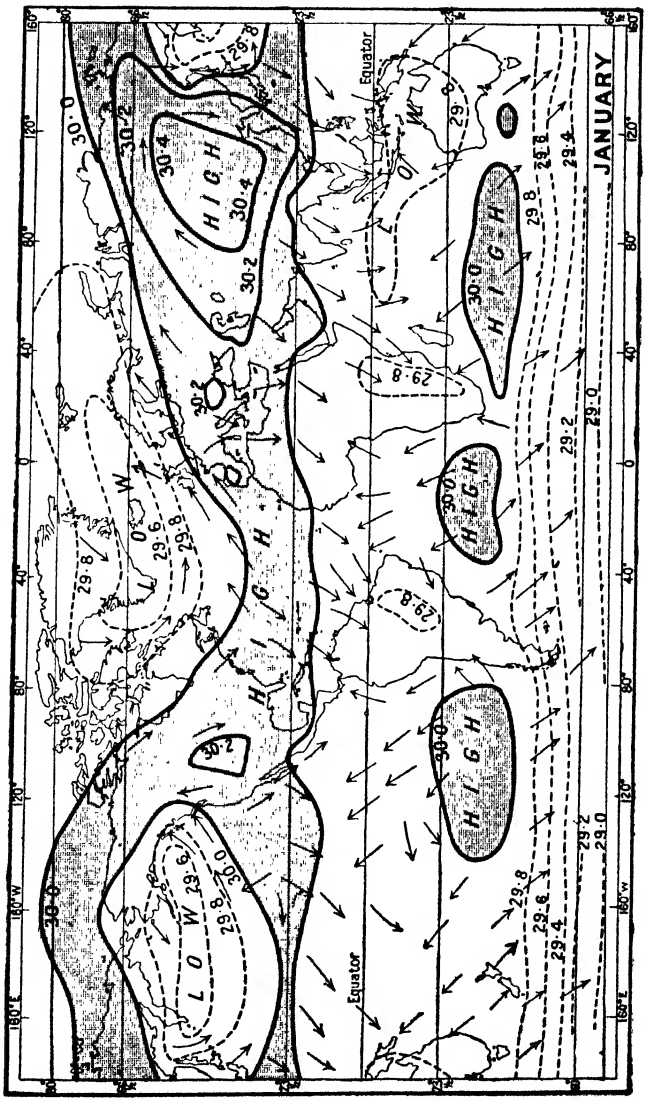


FIG. 14.—PRESSURES AND WINDS—JANUARY. [*After Buchan.*

Note the position of the high and low pressure centres and compare with Fig. 15. There is a marked similarity of conditions within the three southern oceans and their bordering continents.

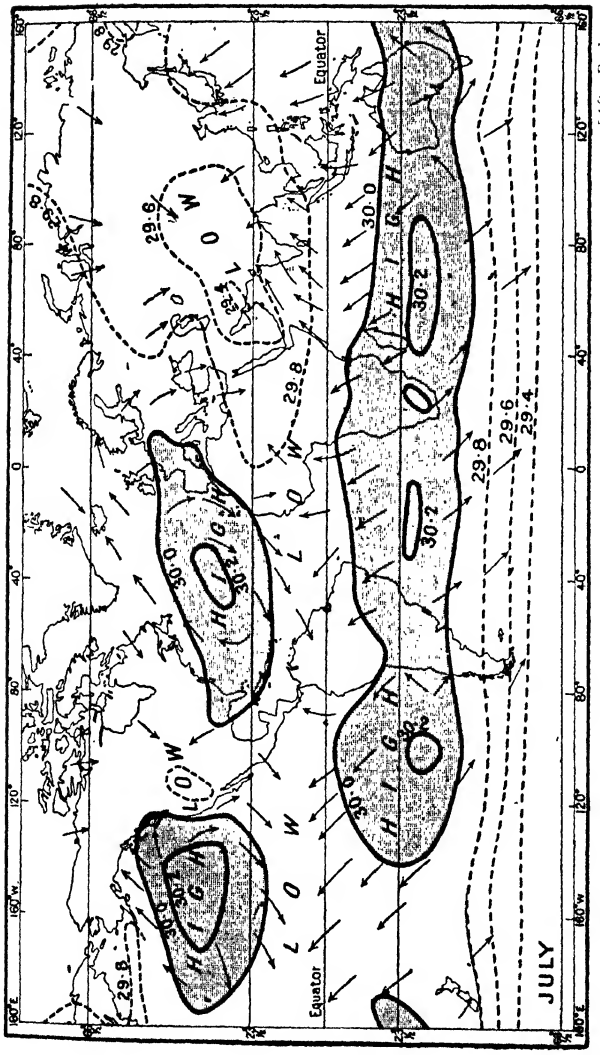


FIG. 15.—PRESSURES AND WINDS—JULY.

[*After Buchan.*

Note that the centres of high pressure and oceanic winds for July in the southern hemisphere may be compared with those for January. On the continental masses there is a complete reversal of pressure conditions and wind direction. These much simplified diagrams should be compared with the generalisation of wind systems given in Figs. 40 and 11.

drift impinges on the western coasts of each of these three continents as a cool drift developing into the Peru, the Humboldt, and the West Australian currents. On the east, the Brazilian, the Mozambique, and East Australian currents flow southwards, impinging as warm waters on the eastern coasts. The meteorological conditions of the intervening oceans reveal in general a prevailing wind system of an anti-clockwise order round a persistent high-pressure centre.[1] Partly under the friction of these prevailing winds the oceanic waters show in each ocean a similarity of movement. Within the narrow limits of the coastal lands the effects of cool waters and general off-shore winds produce the semi-arid regions of the west in Chile, South Africa, and West Australia, just as in the east, warm coastal waters and general on-shore winds produce a richer vegetation and greater habitability.

Each land mass shows in varying degrees the seasonal climatic change due to the swing of the sun. The cooler months of May to July result in a general increase of barometric pressure which makes that of the land approximate to that of the ocean, with a consequent weakening of warm

[1] It is not to be supposed that any particle of air makes the round trip which the diagram suggests. It is rather that the wind systems over the region show a relationship with each other that suggests the high-pressure system.

rain-bearing winds. Drought conditions are then experienced over a maximum of area. In the warmer season from December to February, the great insolation in these low latitudes results in a complete change of relative barometric pressure with profound consequences on wind and rain. The rain-bearing winds carry moisture well to the interior, nourishing the grasslands of the Australian *downs*, the African *veld*, and the South American *pampas*. No such results can follow on a large scale in the west,

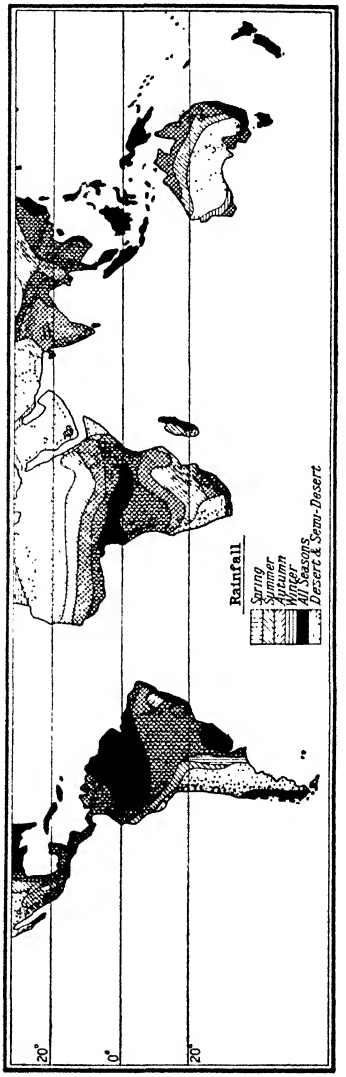


FIG. 16.—SEASONAL RAINFALL.

Similar conditions of air and water movements produce, in spite of differences of relief similar conditions of rainfall both in amount and seasonal distribution.

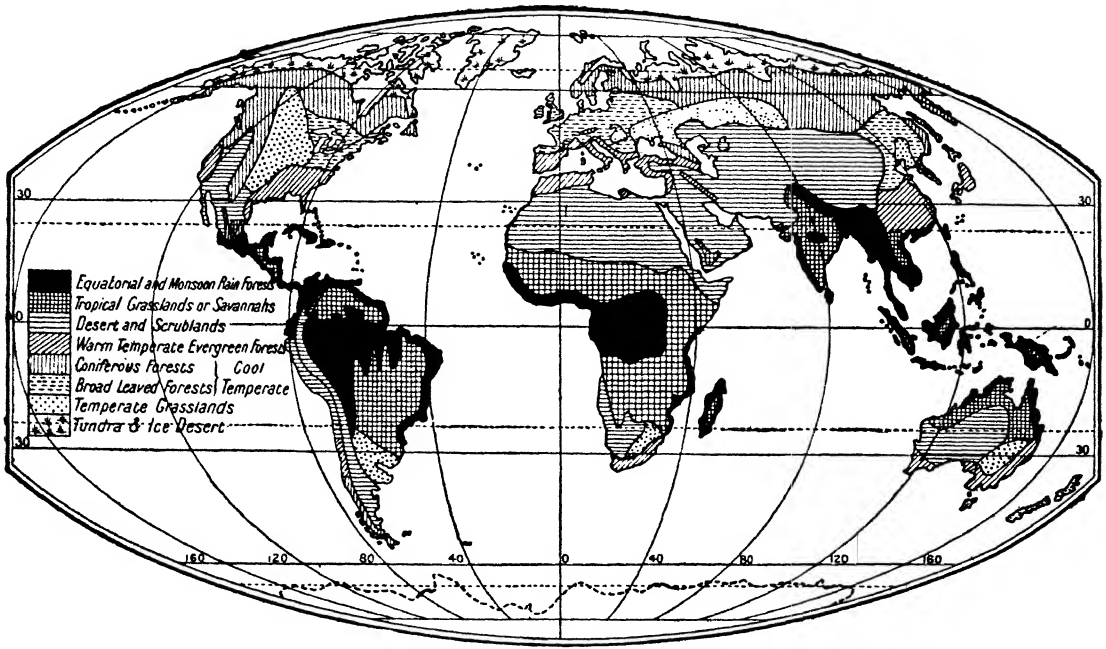


FIG. 17.—DISTRIBUTION OF NATURAL VEGETATION.

This simplified diagram shows for the southern continents similarities of vegetation distribution due to similarities of physical conditions, e.g. the Australian *downs*, South African *veld* and South American *pampas*.

for the cool winds will not in general yield moisture to highly heated lands.[1] May we not therefore derive a type-continent in the southern

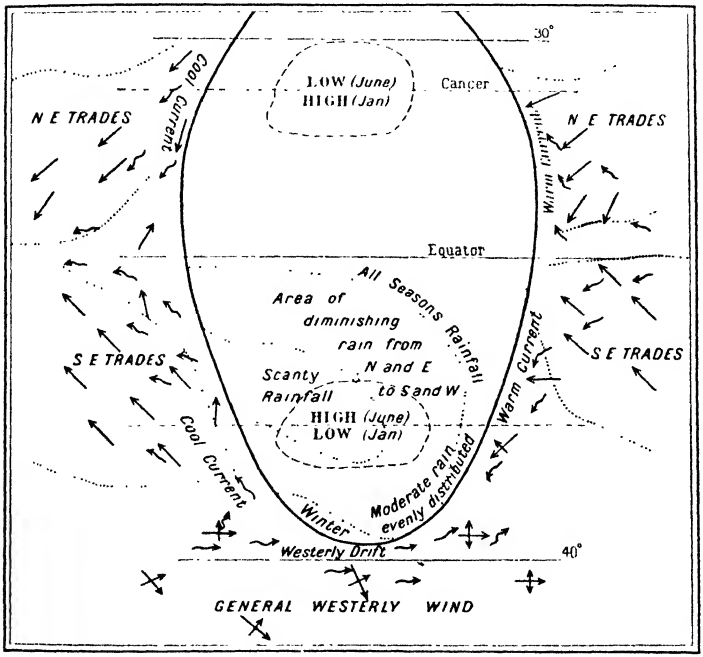


FIG. 18.—A TYPE SOUTHERN CONTINENT.

This sketch has been completed south of the Equator only. In the classroom, it is built up as lessons on natural phenomena proceed. Drawn on a larger scale and in coloured chalks it is more effective than here shown.

ocean by the study of these three examples (Fig. 18)? May we not go further? Having derived a type-continent, may we not once again pass in review

[1] The rapid radiation at night often produces a condensation of moisture, producing a mist which waters vegetation.

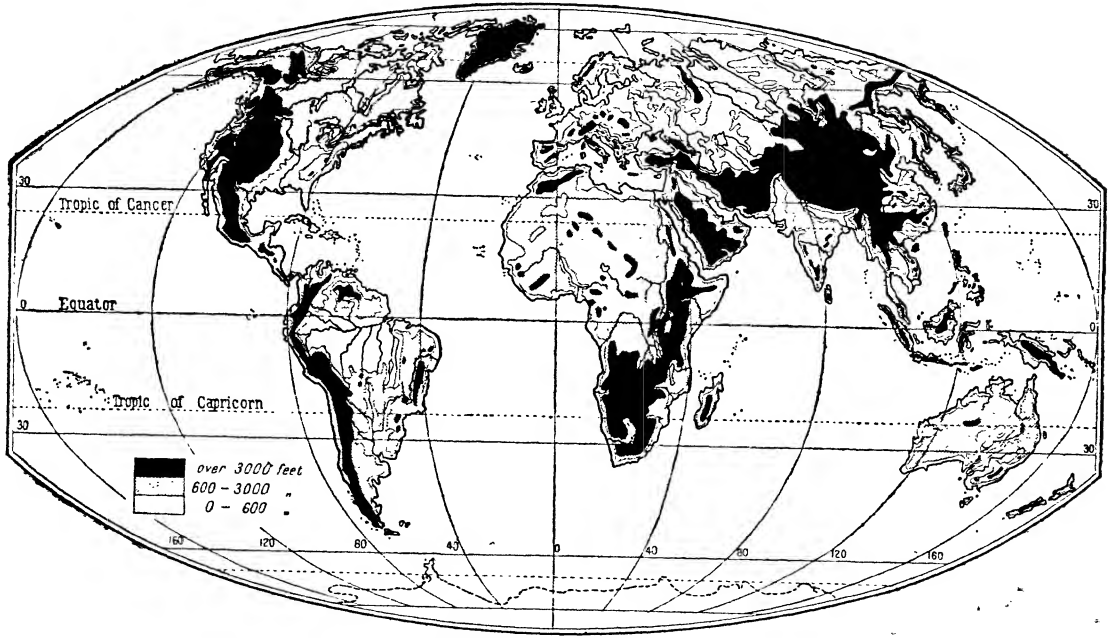


FIG. 19.—THE RELIEF OF THE CONTINENTS.

The greatest modifications of the type continent given in Fig. 18 arise from the shape and the relief of the great land masses. These offer striking contrasts in the southern continents and should be related to both natural and geographic subdivisions.

each land mass, and note how peculiarities of shape, relief, etc., have made modifications in the type? These exercises, though dealing wholly with natural phenomena, are truly geographical. They are the physical components of a single continental form. Beyond this, of course, lies the still greater exercise of placing on these surfaces the distribution of human energy represented by a population map recording also the characteristic activities.

Geography is thus no mere memorising of place-phenomena and names, however useful these may be. It offers a special training in observation direct or indirect, and in regional comparison.

A Report of the British Association[1] states:

"The claim of a subject to a place in the school curriculum must ultimately be measured by the value of its contribution to the history of the human spirit, the development of culture and civilisation, and what may be called the educated mind of the age. The principle assumed here is that the development of the individual mind and character is best fostered by the moral, intellectual, and æsthetic traditions which have been, or promise to be, of most significance in the upward movement of the race. The criterion guarantees the position of the older disciplines, and also justifies the admission of others, such as natural science

[1] British Association Reprints, *Geography Teaching*.

and geography, which have only in modern times attained to the distinctness of aim, the individuality of method, and the coherence of content which have made them important elements in the life of civilised peoples. It points, moreover, to a practical maxim of great weight. A subject, to have its full educational value, must be so taught as to represent faithfully in the class-room the spirit and character of the corresponding movement in the wider intellectual world. This means, for instance, that school geography must be the geography of geographers: not the mere learning of geographical data and results, but a training in the geographer's characteristic methods and principles of interpretation and an assimilation of his characteristic point of view. Only when a subject is taught in this way are the items of knowledge communicated given their true relations and significance, so that the subject as a whole makes its special contribution to the pupil's outlook and habits of thought."

The applications of science and the economic demands of industry have given to most problems a world setting. The daily press records events from every quarter of the globe. To the geographically uninitiated the newspaper is either meaningless on great world-matters or it is his master. To one who has a sound substantial framework of world geography the press is an indispensable servant, assisting him to keep his knowledge of the world up to date.

Moreover, in these days geography has a

practical value. The adjustment of social and economic life to-day is less empirical than in former times. The economic development of the tropics is being consciously and vigorously pursued with geographical consequences as yet almost unestimated. At home, the growth of great industrial centres has led to schemes of town-planning, usually of a Procrustean kind. New areas, as Sherwood and East Kent, are in process of industrialisation. Success in these conscious readjustments can only be obtained by knowing exactly the character of the present adjustment and the lines on which it has been shaped.

> " The town planner never can tell how or where it will grow. Even the mediæval town planner was often baffled by the capricious and unexpected forces that controlled the building activities of the next generations. The town planner under the modern conditions of vast agglomerations, capable of indefinite expansion, will still find this rock ahead of him." [1]

[1] T. F. Tout, " Mediæval Town Planning," *Bulletin of John Rylands Library*, vol. iv, 1917, p. 33.

CHAPTER II

THE HOME REGION

Most Students in Geographie take more delight to contemplate the remotest and most barbarous Countries of the earth, than lightly to examine the Descriptions of their owne.—John Bill, 1626.

THE true approach to geography is by travel. Indirect observation through such means as pictures and description can never have the same value as direct observation in the field. The relative values of the study of "world" geography and "home" geography are not measured by areas but by the educational discipline which they afford. The "home" land, i.e. the region accessible to the scholar, is the laboratory of direct observation. The study of its *present* internal and external space relationships is no less important than the study of its evolution in history.

Accepting in general terms that geography is the study of man's adjustment to his physical environment, how many teachers have worked out a graded series of view-points and exercises in the locality of the school illustrative of this definition

comparable with the graded exercises in other subjects? The first and simplest observations are undoubtedly made from the classroom window. The immediate neighbourhood follows, until finally organised Educational Visits and School Journeys become essential features of the geography course. School journeys for a week or a fortnight to other regions widen the field of direct observation and therefore increase the educational value of geography.[1]

The value of the home region is not limited, of course, to the study of human adjustment in the region. Observations are possible of processes and phenomena in Nature which help towards an understanding of other regions. The passes of the Alps, the deltas of the Rhine and Po, the southern sunny slopes of Italy contrasted with the northern cooler regions, the cycle of climate and the importance of heat and rain, these and many other features may be seen, if only in miniature, near home. Furthermore, the true significance and interpretation of maps or other graphical records are only possible when they are taught in direct relation to the features they represent.

The very attempt of this chapter to state in words methods for using the home region in

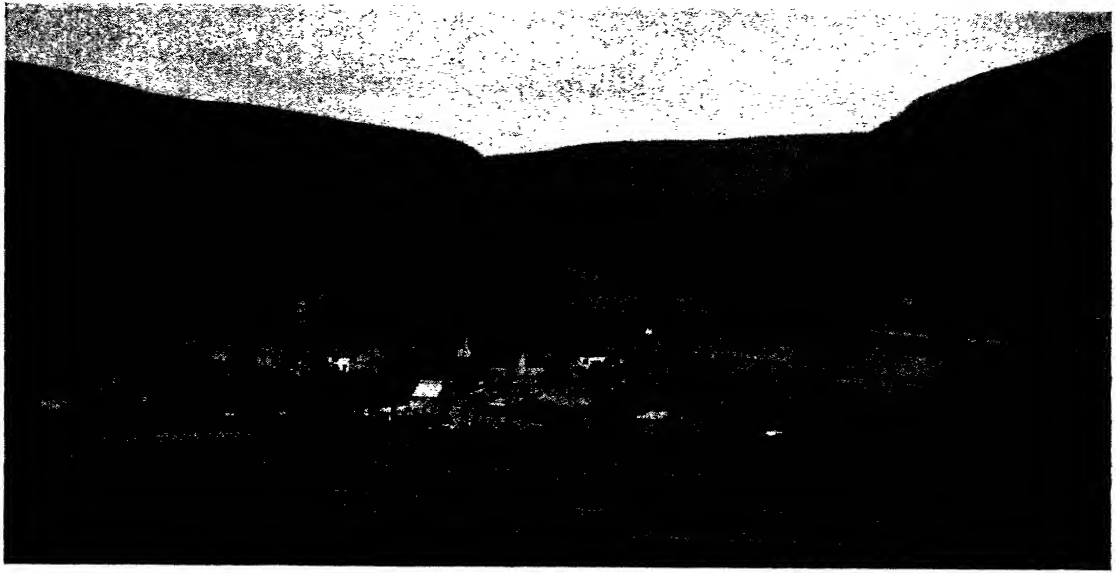
[1] Teachers interested in school journeys may obtain useful information from the School Journey Association, 35 Parkview Road, Addiscombe, Croydon.

geography illustrates its own defects. The description of an experiment in chemistry cannot compare with a demonstration of the experiment itself. The regional descriptions which follow must be regarded merely as an indication of how to perform the experiment.[1]

One or two considerations of a general character may be given first. Every town or village must be viewed from two standpoints; one its site and location, the other its hinterland. For most towns, the site has an historical significance, an adjustment made under bygone conditions with consequent and necessary readjustments, often costly and difficult, to meet the requirements of later times. Often past geographical advantages become in time marked disadvantages, occasionally so great, as in the case of Chester and Durham, that all the efforts of the citizens to maintain the relative importance of their city fail lamentably. These two cities have been replaced as industrial centres by Liverpool and Newcastle respectively. The rise and fall of cities are not wholly due, and in some cases not primarily due, to the initiative and enterprise of the citizens or to their lack of it.

There is one further point of general im-

[1] Suggestions for observation may also be obtained from: J. Jones, *A Human Geography of Cambridgeshire*; Brentnall & Carter, *The Marlborough Country*.



[*Photo: G. Hepworth.*

FIG. 20.—MUKER VILLAGE, YORKSHIRE.

Here is a geographical "specimen" for observation, explanation, and record. Not only does it furnish an example of human adjustment to physical environment, but it furnishes innumerable examples illustrative of physical processes which are helpful in the understanding of physical environments elsewhere.

portance. Each school should build up adequate equipment for teaching the home region.[1] First and foremost a model is required, sufficiently large and accurate, to demonstrate the position of roads, railways, industrial works, and public buildings.[2] Pictures and diagrams (gradually accumulated) will emphasise features on the model, just as maps and prints will illustrate growth and change.

Three types of "home" region have been selected, viz. Lincoln, Manchester, and London;[3] but it must be remembered that every town and village, even scattered hamlets and farms, furnish illustrations for geographical study (Figs. 20 and 21).

[1] The construction of models and the compilation of maps and views both old and new may be commended to those interested in local studies, and especially to associations of historians and geographers.

[2] The model should be on the scale of not less than 6 inches to 1 mile, with a height exaggeration of approximately 2. A useful model can readily be made in clay or plasticine, but where co-operative work among teachers is possible, an accurate cast could be constructed for the production of a number of models. Suggestive book: *Descriptive Handbook to the Relief Model of Wales*, pub. by Cardiff Museum, 6*d*.

[3] The suggestions, maps, etc., given in relation to any one should be applied equally to the other two places.

Lincoln and District

Lincoln presents a comparatively simple "home-land" urban study. It is an old-world cathedral

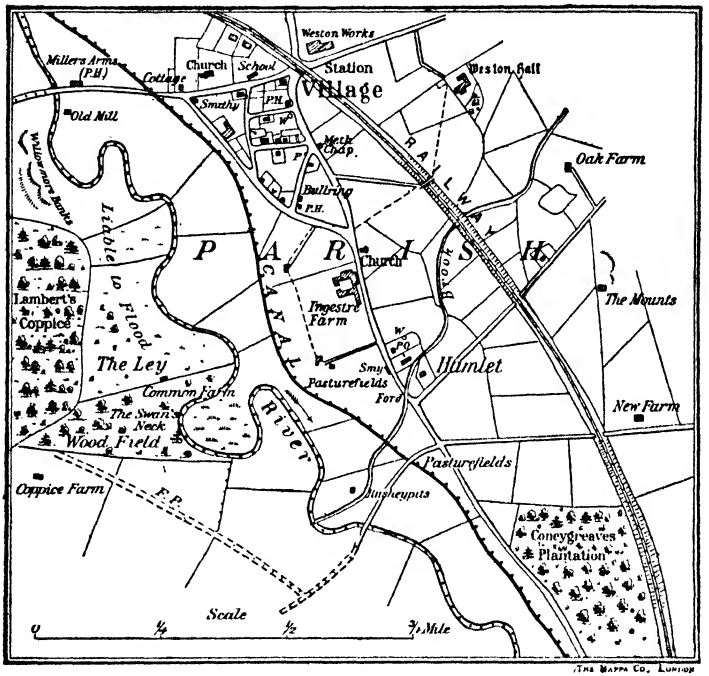


FIG. 21.—A VILLAGE STUDY.

In rural areas such maps as the above may be built up as the geography of the locality is studied. The place-names are suggestive and should be noted.

and market city to which has been added a new industrial town. After the first geographical exercises in and near the school, two view-points are possible of the city as a whole. From the

Great Tower of the Cathedral we look down at the old city clustering on the hill around the Cathedral and the Castle (now the Assize Court).

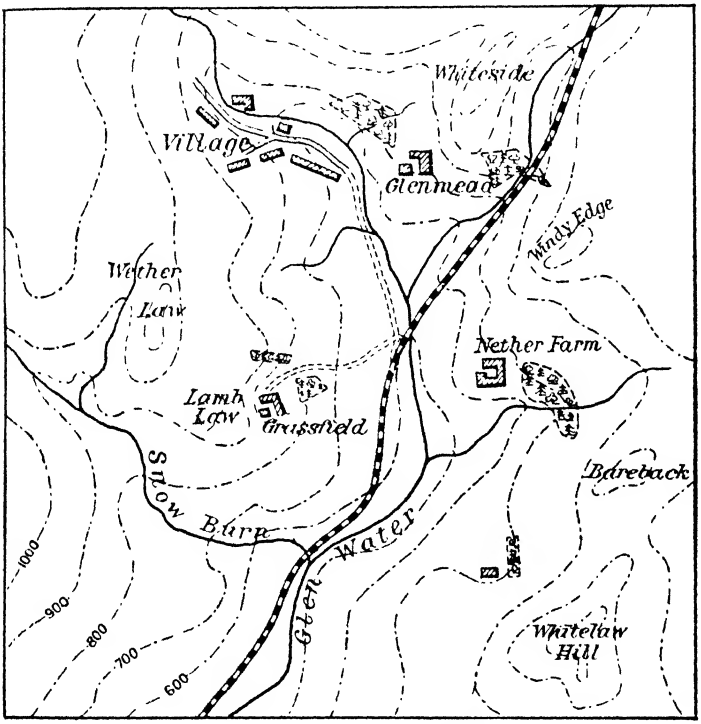


FIG. 22.—A STUDY OF FARMS.

This sketch of part of the Southern Uplands shows excellent examples for geographical study in the position and shape of the farms and wind breaks of plantations. Note specially the influence of relief on the site of the farms and the route of the railway. The place names are also suggestive.

On the low-lying water-meadows at the junction of the rivers Till and Witham, railway-lines, chimney-stacks, smoke, and long straight rows of

streets mark the " new " town of an industrial age. Away to westwards stretches the plain, at first flat and then undulating. Southwards rises the hill which marks the termination of the Heights at the river-gap.

The second view is from the water-meadows looking across the industrial town to the old city set on a hill crowned by the stately pile of the Cathedral. From this point, too, we see the river-gap which gave to Lincoln the additional advantage which raised it above the other (village) sites along the oolitic scarp. The site of old Lincoln, now the centre of the new city, was at the spring line on the Heights, overlooking the crossing of the old road and the Witham water-way to the port of Boston.

Each of the villages round Lincoln forms a study in itself.[1] Their cultural and economic centre is Lincoln. Old inns with commodious yards and stables form but one evidence of this function. But railways and modern business organisation have made possible a wider market. Private enterprise has extended the local activities of brewing, milling, and the manufacture of agricultural machinery until Lincoln has a world-market for its implements. Specialisation has also changed the character of the farming. The " heath " is now highly cultivated for wheat and root crops,

[1] *Vide* pp. 15–18.

the " fen " yields large quantities of potatoes. The " market " character of Lincoln has grown from that of a locality accessible to a farmer with horse and cart to one which trades with other parts of England and with lands beyond the seas. At first dependent on the countryside and now almost independent of it, the " old " and " new " parts of a single city mark the progress of the readjustment under the enterprise of its citizens.

Manchester and District

Manchester offers a striking illustration of growth and change under industrial conditions. It is to-day the centre of a " conurbation " or group of towns intimately bound together by economic ties.[1] To appreciate the present situation, let us go back a century or so. The city then was very small, situated at the junction of the Irwell, Irk, and Medlock. The surrounding villages, now grown to towns, seemed very distant. With the development of the cotton and associated industries all have grown so rapidly that great problems of readjustment have now to be faced not only in the several towns but in the region as a whole.

Let us wander first over the site of old Manchester. The most obvious features now are the

[1] *Vide* Patrick Geddes, *Cities in Evolution.*

large shops and busy thoroughfares, offices and warehouses, railway termini and public buildings such as the Town Hall, the Royal Exchange, and

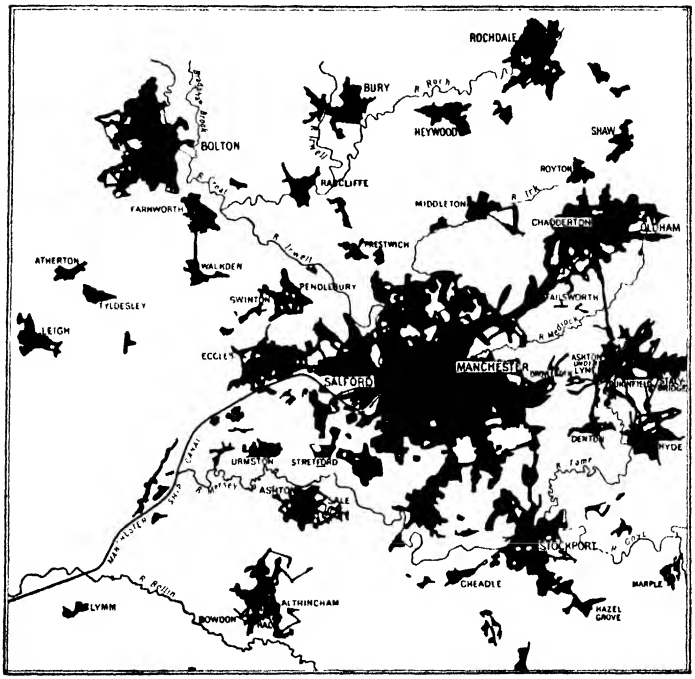


FIG. 23.—THE MANCHESTER-SALFORD NUCLEUS.

This sketch shows the distribution of houses and emphasises the nucleus character of Manchester-Salford. It should be compared with Fig. 24.

the Cathedral. But step aside into some narrow lane and you will see many survivals of the rapidly disappearing old city. This change from old to new is one of the first features to be appreciated.

The old town located at the junction of the Irwell, Irk, and Medlock is the heart of the modern city. Crowded by day, deserted by night, the pulsation

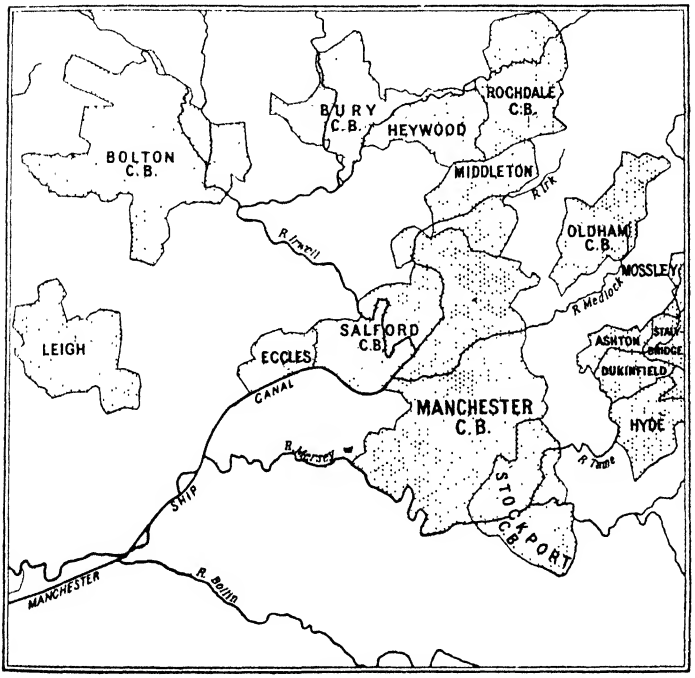


FIG. 24.—THE URBANISATION OF S.E. LANCASHIRE.

The administrative limits of county (C.B.) and municipal boroughs are here shown. It indicates the possibility of complete urbanisation and the urgent need for a regional rather than a municipal scheme for future development.

of the city " heart " is shown by the streams of people wending citywards in the morning and returning to the suburbs at the close of day. Stockport Road, Ashton Road, Oldham Road,

Rochdale Road, Bury Road, are arteries of traffic, and along these we should travel if we would know the hinterland of Manchester. To north

FIG. 25.—S.E. LANCASHIRE IN XVIII CENTURY.

This is part of the Lancaster map contained in an Atlas of English counties by Bowen and Kitchin which ran into many editions. This is from the edition of 1785. It shows old Manchester within the Irk, Irwell and Medlock streams. This is now the heart of a modern city which extends northwards to Heaton and southwards to Didsbury on the Mersey.

and east we pass, in general, through similar conditions—industrial Manchester, a break of struggling rural scenery, an industrial town, and

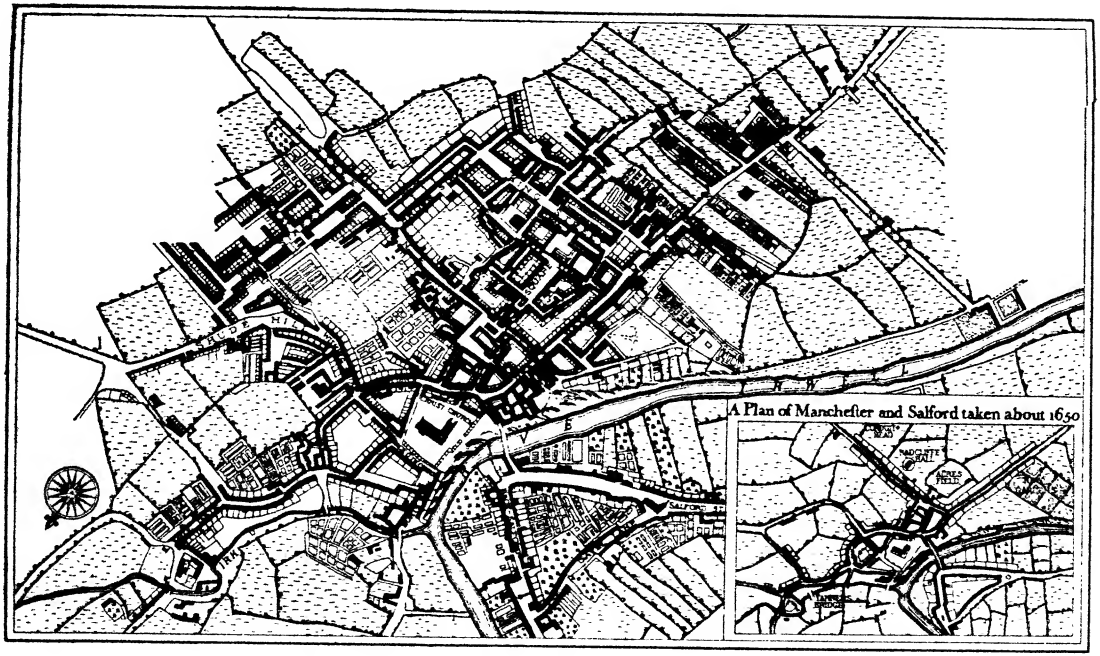


FIG. 26.—MANCHESTER-SALFORD IN 1650 AND 1750.

These enlarged plans from the map of Casson and Berry should be considered in relation to Fig. 25. Note the orientation.

finally the moors. Make a simple model of the region and then will appear the setting of the cotton industry. Up in the moors of Millstone

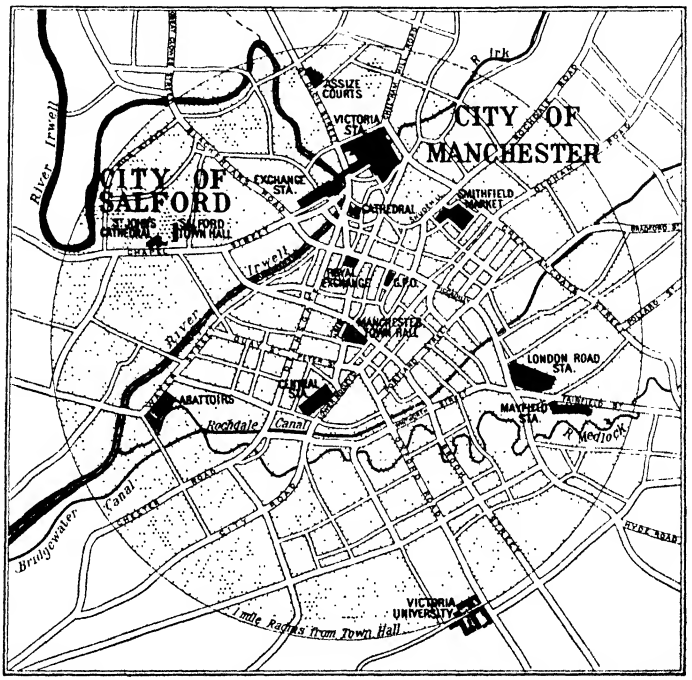


FIG. 27. THE CENTRE OF MANCHESTER-SALFORD.

The old town which grew up at the junction of the Irwell, Irk and Medlock streams has become by progressive reconstruction the "heart" both of the twin cities and of S.E. Lancashire. Notice the position of the Royal Exchange, where business in cotton manufacture is transacted, and the girdle of railway stations.

Grit, V-shaped mountain streams are dotted with bleach and dye works, each with its tiny reservoir. Lower down the widening valley, where the foothills merge into the plain, large mills line the

stream course and form the principal workshops of the ring of towns—Bolton, Bury, Rochdale, Oldham, Ashton, Hyde, and Stockport. It is no mere coincidence that Manchester at the hydrographic centre is also the commercial centre. All roads lead to Manchester. Even journeys from, say, Oldham to Bury can be made more speedily through Manchester than on a direct route.[1]

Such observations and ready models give the first comprehensive but simple study of Manchester. As scholars can appreciate, so we may proceed with our inquiries and build up through greater detail a truer picture of the city. From the old nucleus, the city has not grown symmetrically. Broadly speaking, its growth at first was to the north and east, latterly to south and west. Its early expansion arose through the development of trades—textile machinery and the finishing and shipping of cotton goods—associated with the spinning and weaving towns between Manchester and the moors. Its later and additional activities have come with the opening of the Ship Canal and the development of Trafford Park. The former development resulted in the spread to the deeply carved sand and gravel plateau of glacial origin in the north,

[1] Part of the new regional scheme is to develop peripheral roads and so ameliorate traffic congestion within Manchester.

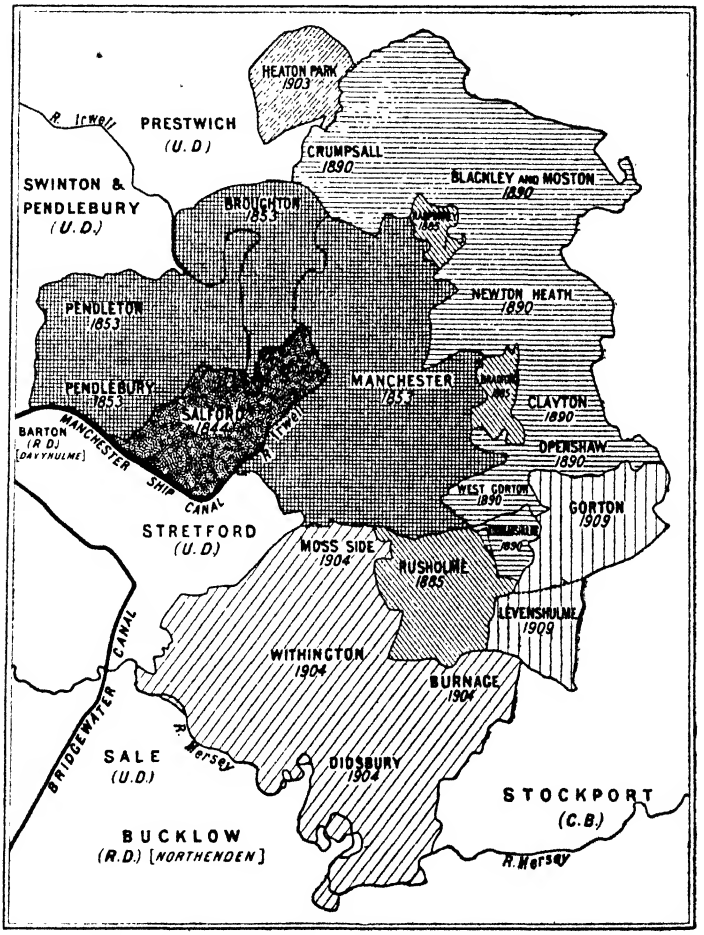


FIG. 28.—THE GROWTH OF MANCHESTER-SALFORD.

Salford received its charter in 1844, Manchester in 1853, in which year Salford incorporated Pendlebury, Pendleton and Broughton. From that date, while Salford has remained stationary, Manchester has grown vigorously first to the north and east, latterly to the south. Notice the position of the urban district of Stretford where the latest developments have taken place on Trafford Park.

extending eastwards until it hesitated at the zone of mosses (White Moss, Moston, and Little Moss) and low-lying marsh land, also of glacial origin.[1]

The later southward extension presents two important aspects, both involving acute problems in administration. The principal docks of the

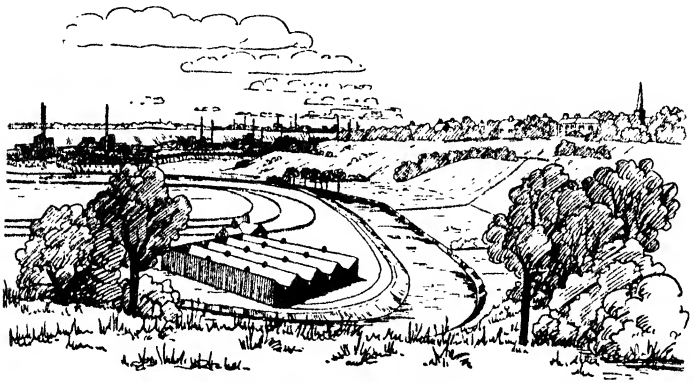


FIG. 29.—PANORAMA ACROSS THE R. IRWELL.

The view is taken looking west across the loop of the R. Irwell in Broughton. To the right is a residential area of high ground. In the distance is the line of miscellaneous industries extending along the railway which follows the Irwell Valley. The steep faced hill behind is due to the great Pendleton fault which marks the eastern edge of a residential area in Salford.

Ship Canal and the Trafford Park Estate are not in Manchester. The former are in Salford, the latter is partly within the urban district of Stretford and partly in rural Davyhulme. Visits to the areas, aided by models and maps, will show that such administrative divisions do not

[1] O. T. Jones, " Origin of the Manchester Plain," *Journal Manchester Geog. Soc.*, 1924.

exist in the geography of the region. The whole area of Manchester, Salford, and the industrialised parts of Stretford and Davyhulme form a single economic entity. We are thus brought in our study to the threshold of a great and urgent civic problem—the problem of some form of administrative union among places already linked by ties of economics and geography.

This southward extension has been over land very different in character from the higher sands and gravels of the north. It is an extensive river-plain across which innumerable brooks (Platt, Fallowfield, Chorlton), now almost entirely covered in, wander to the River Mersey. Old-world villages stood on the terraces overlooking the river, but latterly they have become nuclei of expanding suburbs ultimately incorporated in the city. Now Manchester looks across the Mersey to the terraces of the south, where already her citizens have built their homes.

The relations of Manchester, therefore, with Salford across the Irwell and with Cheshire across the Mersey are only understood if we can comprehend the nature and location of the growth of the several parts of the region. Our survey of the greater city plotted on a sufficiently accurate model or contoured map will reveal many points of great significance—the distribution and character of residential property, the distribution of

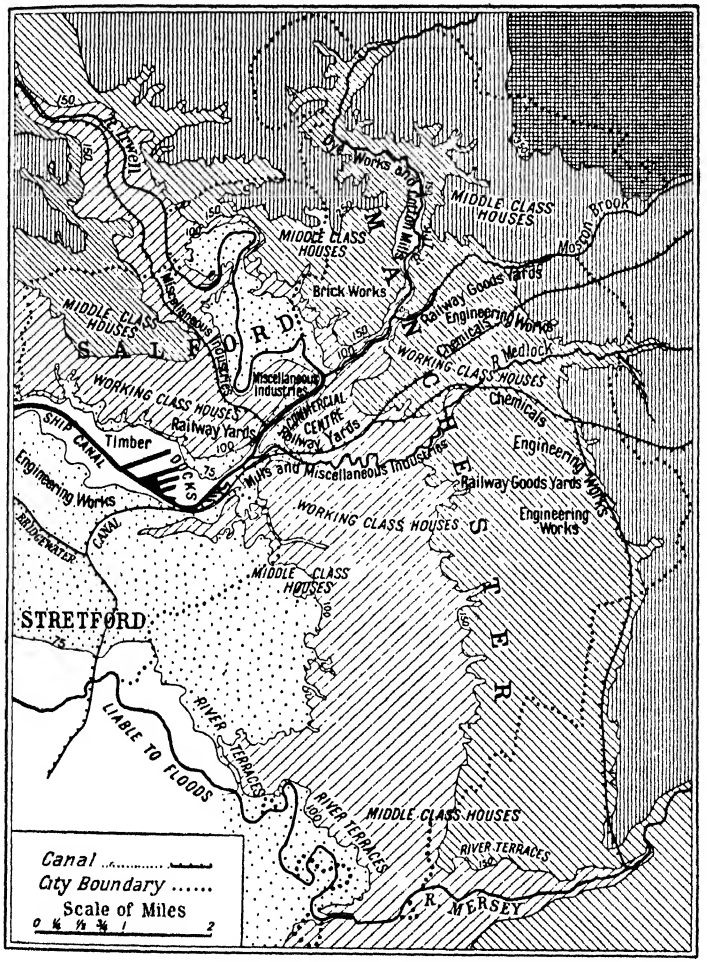


FIG. 30.—MANCHESTER-SALFORD.

The teaching chart of which this is an inadequate reduction shows not only the relief of the area, but the localisation of industries and residences in special areas of the city, the reasons for which may be made in part the subject of field observation.

industries, railway sidings and goods yards, the shopping and commercial centre with its various businesses highly localised—markets within a city market. In brief, we are able to appreciate geographically the following census returns of the activities of its citizens.

TABLE I

	Manchester		Salford	
Population over twelve	266,075	306,904	84,691	95,811
Occupation	Males	Females	Males	Females
Agriculture . . .	1,351	63	293	12
Mining and Quarrying .	1,969	11	991	3
Coal	*1,934*	*10*	*981*	*1*
Makers of Bricks, Pottery, and Glass . . .	1,022	178	305	17
Glass	*650*	*73*	*241*	*14*
Chemicals, Paints, Oils .	1,825	219	507	95
Chemicals . . .	*1,449*	*160*	*215*	*37*
Metal Workers . . .	41,809	2,065	12,088	715
Electrical Apparatus .	4,458	468	1,884	693
Leather	741	463	239	155
Textile Workers . .	5,907	15,270	3,167	7,117
Winders . . .	*97*	*3,781*	*41*	*2,009*
Spinners . . .	*633*	*1,629*	*43*	*539*
Carders . . .	*46*	*1,483*	*19*	*337*
Weavers . . .	*159*	*2,763*	*198*	*1,816*
Makers of Textile Goods .	8,293	28,301	2,275	7,654
Tailors . . .	*3,698*	*8,114*	*1,018*	*3,176*
Wood and Furniture .	10,945	700	3,440	201
Paper Trades . . .	5,078	4,174	1,893	1,763
Printers, Bookbinders .	*4,675*	*2,487*	*1,510*	*1,098*
Builders, Bricklayers .	8,232	57	2,615	23
Painters and Decorators .	3,828	77	1,007	32
Transport . . .	33,070	2,172	13,723	758
Railways . . .	*7,088*	*117*	*2,081*	*31*
Road	*16,264*	*128*	*5,239*	*43*
Water . . .	*1,873*	*34*	*4,046*	*10*
Commercial, Finance . .	28,345	12,409	6,807	3,164

TABLE II

OCCUPATION OF MALES OVER TWELVE, PER 1,000 PERSONS

	Manchester		Salford	
Metal Workers		157		143
Transport		124		162
Railways	*27*		*25*	
Road	*61*		*62*	
Water	*7*		*48*	
Other	*29*		*27*	
Commerce, Finance, Insurance (not clerks)		107		80
Unoccupied and Retired		106		102
Clerks and Public Administration		87		74
Textile Trades		53		64
Textile Workers	*22*		*37*	
Makers of Textile Goods and Dress	*31*		*27*	
Workers in Wood		38		39
Builders, Bricklayers		31		31

There is constantly impressed upon us as we study greater Manchester that it does not live to or for itself. Its life is intimately bound up with a hinterland of towns specialising in the processes of cotton manufacture, and also with a world-market for raw materials and manufactured goods. The physical factors contributing to this regional life must be observed to be appreciated and mapped or placed on a model to be comprehended. The moorlands with their heavy rain supply from the sandstone an abundance of lime-free water. The coalfield—studied not geologically, but by the distribution of collieries and mining villages—supplies power. The salt deposits of Cheshire and the salt and chemical works of Winsford, Northwich, Warrington, Runcorn, Widnes, and

St. Helens form the western contributory zone to the cotton area. At the centre of these

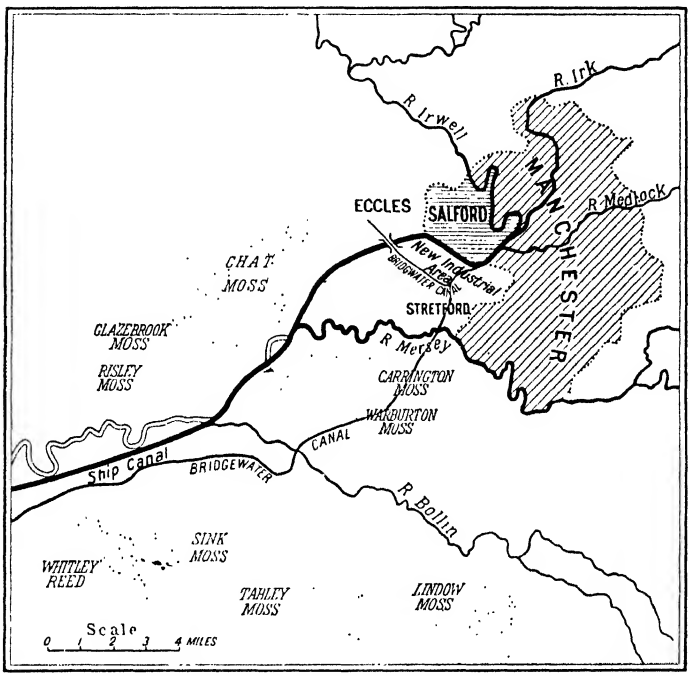


FIG. 31.—MANCHESTER AND THE WESTERN MOSS-LANDS.

The mosses which border the Mersey and Irwell rivers made transport west of Manchester difficult. Villages clung to the terraces between the mosses and the rivers. The Ship Canal is the canalised Irwell-Mersey with its docks in Salford. The effect of the new waterway has been to stimulate industry in the neighbourhood of the Docks and the Canal, see Figs. 32 and 33.

specialised centres of related industries stands Manchester[1] as the commercial capital.

[1] Manchester is also the physical centre; situate where the Irwell drainage approaches that of the Mersey, it has within its boundaries coal workings, while bores have shown the presence of salt.

Under such conditions as we have now surveyed, communications are of prime importance. That all roads and railways lead to Manchester has in our travels become obvious. There remains the study of communications with the markets overseas, for the region as a whole is one vast workshop for the manufacture of cotton goods to serve a world-market reached by the open highways of

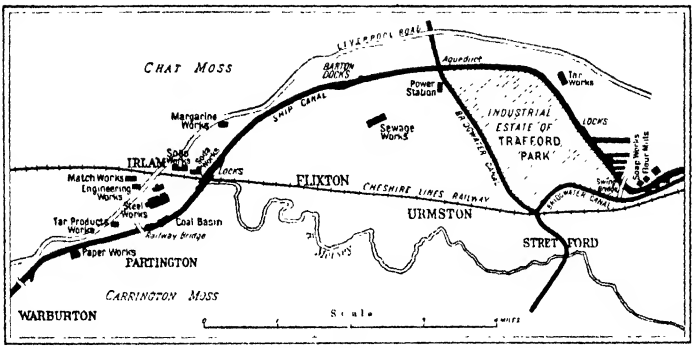


FIG. 32.—TRAFFORD PARK AND SHIP CANAL.

The new industrial region lies within the Bridgwater and Ship Canals, affecting the rural area to the south-west of Manchester-Salford. Many industries, too, are springing up along the Ship Canal.

the sea. Two methods, both at great cost, have been adopted. Roads and railways put S.E. Lancashire in touch with the sea at Liverpool. The Ship Canal carries the sea to Manchester. But how different the effects of these two methods! The shortest railway route crosses the great moss lands which, besides proving a difficult engineering feat, passes through sparsely inhabited regions.

The Ship Canal, making use of the channel of the Irwell-Mersey and the low-lying basin in Salford for the docks, has not only created the port of Manchester, but is potentially a port at every point along its thirty miles of length. More-

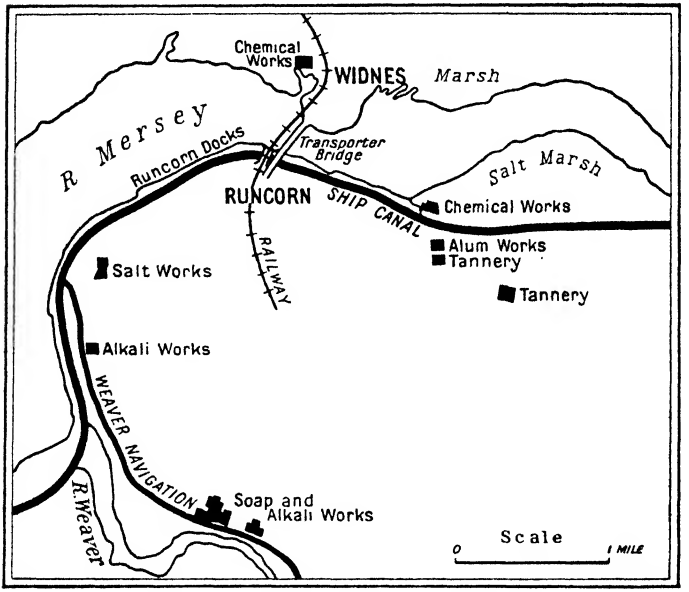


FIG. 33.—THE SHIP CANAL AT RUNCORN.

The Cheshire salt area lies in the Weaver basin. Where the Weaver Navigation Canal joins the Ship Canal there has been a development of the chemical trades.

over, the gravel terraces of the Mersey become useful sites for works and residences. The canal gave a new geographical value to the lands south-west and west of Manchester-Salford, and the new adjustments now in progress may be

observed by the dual but related phenomena of the iron and steel works of Partington and the disappearance of the oaks and orchards of Carrington. Even the mosses have been drained and serve in a double capacity the needs of Manchester.

" Carrington Moss, now drained and cultivated, was within living memory a delightful low-lying moor. The Moss was one mass of purple ling, with here and there bell-heather, pink andromedas, or sheets of silky cotton-grass. In damp spots, where grew the white-beaked sedge, the hungry little sun-dews dined on the insect hordes. Cranberries and bilberries supplied food in berry time, and the crowberry with its shot-like fruit was abundant. Grouse were plentiful ; it was the best-stocked grouse-moor in Cheshire. Curlews whistled and bubbled as they rose from their nests ; the yellow-nebbed twite built in the clumps of ling that overhung the deep treacherous ditches—neat little nests lined with cotton-down. The short-eared owl reared its young in the open, and its long-eared cousin and the brown owl hooted from the fir-woods that bordered the Moss. The nightjar churred in the evening, lying prone and quiescent by day ; the skylark and meadow-pipit made day lively with song ; the little blue merlin was resident ; the moorland was just what merlins love. Vipers were common, and the lizards basked in the sun. Here grew the yellow Lancashire asphodel, here flew the Manchester treble-bar—locally named plants and insects. Gorgeous emperor moths, whose bright green, pink-warted cater-

pillars spun bottle-shaped cocoons, were frequently captured; while wavy-lined heath-moths and brown heath-butterflies were so common as to be beneath notice. It was a paradise for botanist, ornithologist, and entomologist. Now all is changed; market gardens and nurseries have replaced the moorland; tomato tins and broken bottles, scrap-iron and mouldy bones are ploughed in where once the red grouse crowed and curlew called. Carrington Moss is a memory and a name. Its glories have departed." [1]

Though we have taken by way of illustration the largest human settlement in S.E. Lancashire, it must not be forgotten that every town and village furnishes abundant material for geographical observation of space-related facts. Reference has been made already to the terrace villages along the Irwell-Mersey and how all of them are in process of change. Some have become or are becoming residential suburbs, others show the beginnings of industrial centres. The Cheshire villages show in their site a remarkable adjustment to certain glacial and post-glacial features, and in their activities an adaptation of land utilisation to serve the near-by industrial populations with milk, meat, and vegetables.

Every town within the area teems with geographical data, but one example must suffice. Rochdale stands at the north-east gate leading

[1] T. A. Coward, *Picturesque Cheshire.*

through the Walsden gap, Todmorden, and Hebden Bridge to the woollen towns of the West Riding. The nucleus of the town is thus the old ford across the Roch, marked by the Parish Church on the height above and the Town Hall and Esplanade on the narrow river-flat below. The road swung round the spur of Tandle Hill at Castleton above the bad land of the Marland and " cut-offs " of the Roch. It passed to the north side—to Yorkshire Street—to avoid the swamp lands of the lower Beal. The " ford " was more important than the " castle." Stand on a clear day first in the churchyard overlooking the Town Hall Square and then in Broadfield Park, and you will see tall chimneys marking the line of the Roch and the valleys of its northern tributaries, with residential property on the slopes above and between the brooks. These streams early furnished water for power and other purposes. Mills with houses for operatives around became small woollen industrial nuclei, at first self-contained and isolated. Smallbridge is a good example. Gradually they expanded, means of communication improved, and Rochdale, born at the ford, grew mainly to the north and in touch with Yorkshire. More recent developments spread to the south and in touch with Lancashire. The Rochdale Canal, no longer of prime importance in transport, nevertheless serves a useful

purpose for mills using so much water for steam power. The newer mills, therefore—mostly cot-

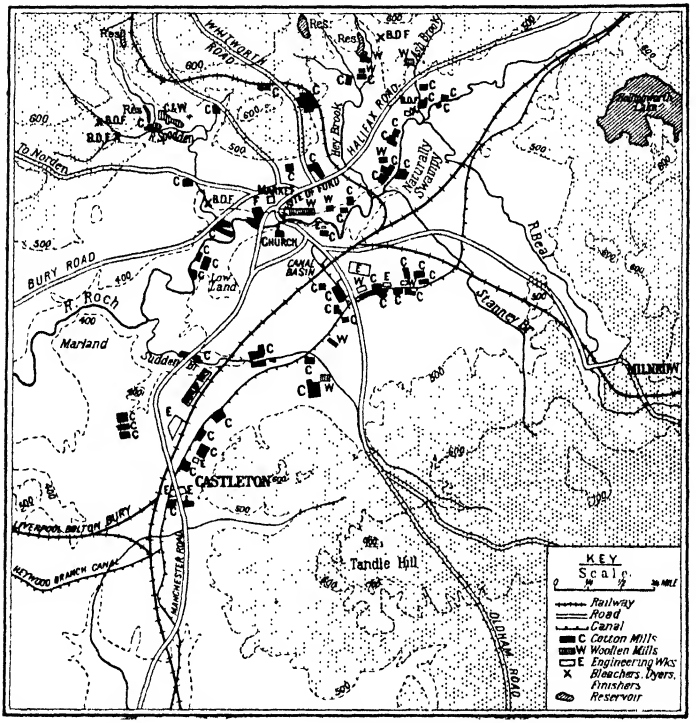


FIG. 34.—ROCHDALE.

The ford, church and market form the nucleus of Rochdale. The northern streams and the R. Roch itself gave a water supply for the early development of woollen and cotton textiles. Large modern cotton mills extend along the canal from Castleton through the south of Rochdale.

ton—have sprung up on the south side, not along the railway but on the banks of the canal. This definite orientation of Rochdale towards Lanca-

shire is shown in many ways, such as the new housing schemes and Rochdale's association with the Lancashire schemes of regional planning.

Thus may each town be studied, and when the importance and significance of its geography are appreciated, an adequate equipment in the way of models, diagrams, and pictures, to assist the scholar in his own observation and record, will be forthcoming through the stimulus of education authorities and the combined efforts of teachers.

London

London is a world in itself. Its geography presents a twofold difficulty. The school is usually surrounded by a congeries of crowded streets. And who shall say what are the limits of the district or hinterland of London? Harwich, Folkestone, and Southampton as ports, Ramsgate, Margate, and Brighton as residential towns, are essentially part of greater London. The limits of direct influence have been placed as far west as the great Jurassic escarpment.[1] It is obvious that the home geography in London schools presents very great difficulties. Fortunately, the educational authorities recognise these difficulties

[1] Mackinder, *Britain and the British Seas*, p. 232.

and give exceptional facilities for educational visits and school journeys.[1]

One school in the neighbourhood of Dalston has utilised the names of streets and similar regional survivals to reconstruct the simpler conditions of a century ago. This has then formed the groundwork of the pure geography. Another school near the Elephant and Castle worked through the character, the place of origin, and the destination of goods carried along the roads which there converge. A third has made a complete study of the geographical conditions of its local river basin (the Wandle). The children know that river from source to mouth. A Lambeth school has made a regional study of its own borough.[2]

After the simple exercises in the school itself, a teacher must weigh up all the possibilities of the neighbourhood and choose that which will

[1] The London County Council acting in co-operation with the School Journey Association, have spent the following sums assisting elementary school children to spend a fortnight outside London: (1922) £8,000; (1923) £10,000; (1924) £12,000; (1925) £12,400; (1926) £14,000. In 1926 458 schools spent a period of their school year in some area for local geography, nature study, history, etc. Arrangements for free travel on trams and a limited number of journeys by bus are part of the scheme for educational visits in school time.

[2] *Vide* also E. J. Orford, "Home Geography in London" (Southwark), *Geog. Teacher, Autumn* 1906, and "The Book of Walworth"; K. J. Wallace, "Field-work in S.E. London," *G. T., Summer* 1908.

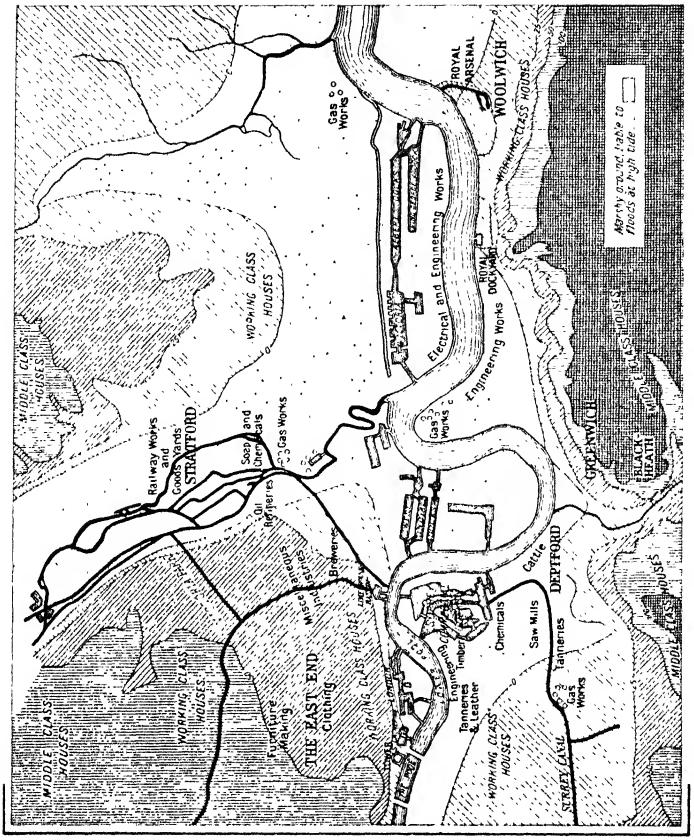


FIG. 35.—LONDON DOCKS.

The Docks have been constructed in the marsh lands within the loops of the R. Thames east of the Tower. On the low-lying land adjacent to the Docks industries have developed which with the activities of the Docks have necessitated large numbers of working class houses on what is not really good building land. Middle class houses occupy the higher land to north and south.

lead most easily to an understanding of the locality and its relation with London as a whole. Little by little opportunities will arise whereby

the horizon may be rolled back, here a little, there a little, until something like a complete—if only outline—picture of London is constructed: The River of Thames[1] with its docks, warehouses, and factories; the City with its banks and business offices; the markets of various kinds from Billingsgate and Smithfield to Mark Lane and the Stock Exchange; the localised shopping centres, professions, and trades; the distribution and extent of "dormitory" suburbs; the lungs and food-producing lands and the larger hinterland linked to the city by telegraph and rail, wireless and cable, cargo tramp and ocean liner. These should all be studied not as mere locations but as illustrations of adjustments to physical conditions.[2] Each of these features of London may be made a study in itself. Two—the Docks and the City—will serve as illustrations. It is no historical accident which determines the position of the Docks with relation to the City[3] with all

[1] How unfortunate it is that there are no ways of taking London's children along the river from Westminster to Greenwich!

[2] *Vide* A. M. Davies, "The Geography of Greater London," *G.T.*, February 1902; E. R. Johnson, "An American Study of London," *G.T.*, Summer 1907; C. E. N. Bromehead, "The Influence of its Geography on the Growth of London," *G. Journ.*, Aug. 1922; H. Ormsby, *London on the Thames*.

[3] For this brief sketch the City and Westminster nuclei are treated together.

the consequences of their space relationship. Together they form the nucleus of the commercial and political capital of both the British Isles and the British Commonwealth of Nations—a busy hive of eight million people. Though placed at the entrance to the English agricultural plain, farthest removed from the coal-fields, the County of London forms the largest and most compact of our industrial regions. Unlike Chester, Winchester, and Durham, London has been able to readjust itself continuously to the needs of a changing world, and thus retain in a developing state the premier position which it obtained through advantages in a former age.

When the continent of Europe was the world, the estuary of the Thames, reaching far into the plain of England, had a special value. The lower river swinging in wide meanders flowed through extensive marshes which made cross-river routes impossible until the gravels of Southwark and the approach to Ludgate Hill made a crossing possible. London Bridge—or the Tower—may be taken as marking the head of navigation and the junction of the Docks and City.[1] The great loops of mud which formerly obstructed cross-

[1] Note that London Bridge and Tower Bridge are the lowest bridges even now, the crossings below being either by ferry or by tunnel (Woolwich and Blackwall). *Vide* also H. Belloc, *The River of Thames*.

river traffic became the site of extensive docks. These docks have specialised in their traffic. St. Katharine Dock, constructed in 1825–8, has in its warehouses tea, perfumes, marble, tortoise-shell, mother-of-pearl and similar valuable articles. London Docks, opened in 1805, enlarged in 1858, handle wool, ivory, spices, gums, rubber, wines, and spirits. In the Surrey Docks—the only docks south of the river—built in 1807, immense quantities of timber, grain, and dairy produce are landed. At the West India Docks the chief cargoes are rum, sugar, hops, grain, and furniture woods. About two-fifths of the grain imported into London is discharged at Millwall Docks, constructed in 1864. The Royal Victoria, Albert, and King George V Docks, opened in 1855, 1880, and 1921 respectively, form the largest single sheet of dock water in the world. The main commodities unloaded at these docks are tobacco, grain, frozen meat, wool, green and dried fruit.[1]

Docks are markets where imports and exports are exchanged. Ships form the links with the lands overseas, roads and railways the links with the hinterland. Britain exports manufactured goods and imports food and raw materials. Our study of dockland will reveal these facts in a special manner. The intricate system of railways,

[1] The Port of London Authority issues a number of useful booklets.

goods yards and sidings, and general railway works as at Stratford are evidence of transport facilities to and from the country. Much food and raw material brought into a port can be treated near the port instead of being transported inland. Thus we find milling, chemical works, sugar and oil refineries, furniture making, tanneries and leather work, and a great number of miscellaneous activities developed in the neighbourhood of the docks. Our final study of this part of London leaves us with map and picture records of the Lea and Thames marshlands converted into a hive of industry east of the City of London.[1]

We turn now to the cities of London and Westminster.[2] Important and indeed dominant features of their growth are historical rather than physical. Historical growth is not the prime motive of our study. Our aim is to build up a mental model of actual conditions to-day, with such explanations, be they historical, economic, or physical, as will assist an appreciation of the present survey. Fig. 36 shows the position of the com-

[1] The estuary of the river offers a complementary study based on such features as the Tilbury Docks, Woolwich Arsenal, the naval dockyards of Chatham, and the residential towns of Southend and Margate.

[2] *Vide* H. Ormsby, "London and Westminster Contrasted," *G.T.*, Spring 1922; Vaughan Cornish, "London as an Imperial Capital," *Scot. Geog. Mag.*, July 1921.

mercial and political capitals, the former on the spur of high land approaching the river at the highest crossing, the latter at another ancient crossing higher up the river.[1] Growth has been natural from both centres, and no better means of studying the history of this growth can be found than in such maps, plans, and views as have been reproduced by the London Topographical Society.[2] But to return to the present. The river is still markedly in evidence. Along the banks and especially south of the river industrial centres are evident. Between Westminster and the City, the Strand has become a business thoroughfare. The Embankment—separated from the Strand by the steep drop of the old river-bank—has given reclaimed land on which a wide thoroughfare overlooked by hotels and offices has been constructed. On the south, similar reclamation is in progress and a fine frontage of noble buildings, as St. Thomas's Hospital and the County Hall, is slowly replacing unsightly workyards with a foreground of slime and mud. Though the

[1] *Vide Journal of Royal Society of Arts*, Dec. 16, 1910, p. 117. The choice of this site for the political capital does not have any physical basis probably beyond the fact that it was a suitable site on the "highway" of the river adjacent to the merchant city of London.

[2] *Vide* also G. L. Gomme, "The Story of London Maps," *Geog. Journ.*, vol. xxxi, p. 489, and "The Geography of Early London," *Geog. Teacher*, Autumn 1910.

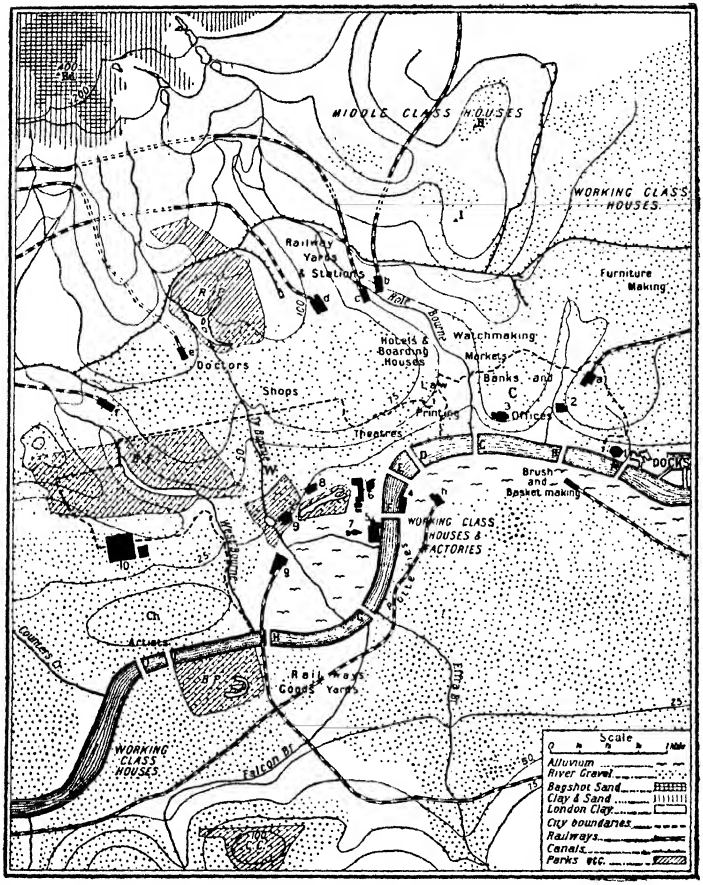


FIG. 36.—THE CITY AND WESTMINSTER.

Bridges: A, Tower; B, London; C, Southwark; D, Blackfriars; E, Waterloo F, Westminster; G, Vauxhall; H, Chelsea; I, Albert; J, Battersea.

Buildings: 1. Tower; 2. Bank and Royal Exchange; 3. St. Paul's; 4. County Hall; 5. Houses of Parliament; 6. Government Offices; 7. Westminster Abbey; 8. St. James's Palace; 9. Buckingham Palace; 10. South Kensington Museums.

Stations: a, Liverpool St.; b, King's Cross; c, St. Pancras; d, Euston; e, Marylebone; f, Paddington; g, Victoria; h, Waterloo.

Parks: R.P., Regent's Pk.; H.P., Hyde Pk.; B.P., Battersea Pk.; C.C., Clapham Common; I., Islington; H., Highbury; Hd., Hampstead.

This map represents the result of very many class lessons in which the sketch is built up on a large scale and with coloured chalks. It brings out the importance of position of surface deposits and of relief in relation to the works of man.

activities within the region now under review are predominantly related to commerce, business, and the professions, yet they are so distinctly and definitely localised that place-names have come to signify professions and callings—Lombard Street, Fleet Street, Harley Street, Covent Garden, Temple, Whitehall, and so forth.

In this part of London the great pulsating movement is that of men. In dockland, the coming and going of goods result in the settlement of a large resident working-class population near the docks and the establishment of adjacent industrial enterprises. The City is dominantly "office" land—a place where the business machinery of a world is situate. Morning and evening millions of men flow and ebb both over and under the ground.[1] The character of the goods traffic is also of interest—the collection and distribution of food, fish, meat, milk, fruits, and vegetables; the circulation of newspapers, magazines, and books; and the manufacture of a million and one articles of an extremely miscellaneous character, each too small to

[1] The blue clay which has facilitated the construction of tubes for the rapid handling of this moving human energy may well be compared with the mud flats which facilitated the construction of docks for the rapid handling of goods.

receive special mention but in the aggregate representing much activity.[1]

Roads and railways form the gates of modern cities, and in this respect London has far more " gateways " than had the mediæval city.

Thus may we select, not the whole of London, but some special part. Each presents some phase of geographical adjustment and is capable of separate observation and study. Each furnishes tags by which to tie the several parts together, until we have a reasonably complete picture of modern Greater London.

[1] These general activities of London to serve the needs of the country may be compared with the general services of Manchester to serve the needs of the whole of S.E. Lancashire.

CHAPTER III

FIRST STEPS IN GEOGRAPHY

" If education is a training for intelligent citizenship rather than for the satisfaction of examiners, a boy, especially in his later years, should be increasingly brought into contact with the world in which he is to play his part."

This world is not within book covers, but lies open on the surface of the earth. What magic carpet may we employ to convey scholars to the various regions of the world ? It is obvious we cannot do it by speculative theories nor sweeping generalisations. With patient care the architecture of each region great or small must be constructed by building the requisite but diverse facts into one great geographic form. The globe, model of the planet Earth, must carry on its surface, to our mental eye at least, a world of living pictures. We require more than such statements as " Delhi is the capital of India," or " Brazil is the largest country of South America." The place-name should connote the place as a definite portion of the Earth's surface, with an entity, even a personality of its own.

From the Kindergarten onwards these pictures of the world are in process of construction—at first with faint but yet definite lines, later with increasing boldness and still greater detail. But always the whole globe is our canvas, the whole world our field.

In the Kindergarten there should not and indeed cannot be any formal division into "subjects," but many "roads" direct toddling steps towards geography. Carefully selected stories of natural phenomena, of peoples, and of things; simple exercises in modelling, colouring, and drawing may provide avenues to more formal studies. Myth, legend, and folk-tale, too, sometimes have a geographic basis; it may be a race-memory of former modes of life or a subtle recognition of the influence of some physical phenomenon.[1] In these very early years, a suitable geographical background for the story may be obtained by such means as pictures[2] and cut-out cardboard models.

The "preparatory" course extending over four years (ages seven to eleven) opens with stories and simple observations. It closes with a des-

[1] *Vide* R. M. Fleming, *Ancient Tales from Many Lands.*

[2] The National Geographic Society, Hubbard Memorial Hall, Washington, D.C., publish monthly ($3.50 a year) *The National Geographic Magazine*, which is exceptional in the abundance and character of its world-pictures.

criptive account of the major regions of the world. The principles may be summarised as follows:

Age 7–8 *years.* (*a*) Local observations and the acquisition of the use of geographical tools—plans, weather observations, and similar exercises. (*b*) Stories of other kinds of homeland—to widen the scholar's horizon.

Age 8–9 *years.* World-studies of life in markedly contrasted physical environments. Much in the home region can be used as a standard of reference.

Age 9–10 *years.* The British Isles with special attention to the "homeland." Educational visits should now become an integral part of "home" geography.

Age 10–11 *years.* A descriptive geography of the World. The position of the homeland (e.g. Manchester and District) in world trade and commerce should be taken along with a first study of the physical conditions connected with the industry and transport of the region.

What kind of observations can be made in these early years? Clearly for our purpose we require only those which have some geographical significance or consequence. In agricultural Britain a fundamental feature is the dual character of our seasons, or, expressed geographically, the manner in which human activity in crop cultivation has been adjusted to our climatic régime.

The natural seasons are winter and summer. But the period of transition from one to the other has a special significance in human activity. The transition from winter to summer when the trees bud and blossom is the time when man ploughs and sows, a period of great activity and of festivities associated with fertility and life. It is springtime, a season of toil and joy, not merely the transition from winter to summer. Similarly, autumn is the harvest season of reaping and ingathering, another period of human activity and of harvest festivals. As the scholars become older, these seasons will become associated with our climatic régime and the temperature divide of, say, 42° F.–44° F. which separates vigorous plant growth from plant hibernation.

At first observations must be both simple and general.[1] An observation chart may be constructed for each week, either by averaging out daily observations or less usefully, but possibly more conveniently, by taking observations on a particular day each week. These may be represented graphically by an agreed scale (Fig. 37). By means of simple apparatus the altitude of the mid-day sun may be obtained also for each week [2]

[1] Temperatures: cold, cool, warm, hot. Rainfall: much rain, little rain, drizzle, fine. Wind strength and direction: strong, light, southerly, westerly.

[2] *Vide* V. C. Spary, "Weather Records in the Concrete," *Geog. Teacher*, Autumn 1921.

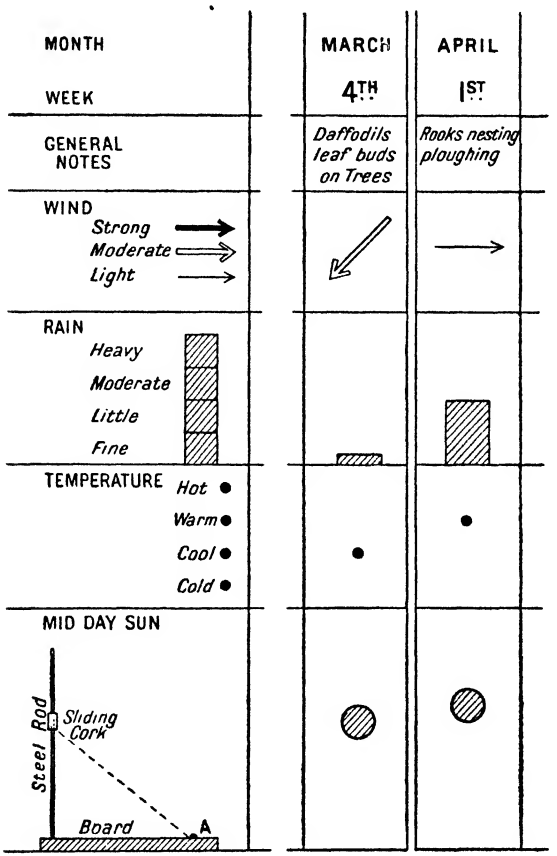


FIG. 37.—SIMPLE WEEKLY WEATHER CHART.

This suggestion enables various phenomena to be graphed together in weekly columns. The data are derived from impressions rather than instruments except in the case of the simple apparatus shown for measuring the relative changes in the height of the mid-day sun.

(Fig. 37). In this way two of the most profound functions of our latitude—the seasonal cycle and the changing altitudes of the mid-day sun—are under observation.

The only change in these annual and related observations is one of better instruments and more accurate readings. Ultimately scholars will read with ease a rain gauge (readily home-made) and thermometers. With what object? Not as exercises in physics, but in order to construct a pictorial or graphical representation of the climatic régime with its related vegetational and agricultural consequences. Some such graph as Fig. 38 can be constructed and the significance of temp. 42° F.—44° F. appreciated by observations of natural vegetation and of cultivation.

The construction of one such representation of climate enables data of other regions to be appreciated. A "Mediterranean" climate will conjure up a particular temperature-rainfall graph and not some almost meaningless phrase as "winter rain, summer drought."

Moreover, such observations as these enable, somewhat later, important contrasts to be made. Farther north, the temperature divide of 44° F. (approx.) lengthens the winter, shortening the summer, though the lengthened day of the northern latitudes compensates somewhat the shortened growing-season and lower midday altitude of the

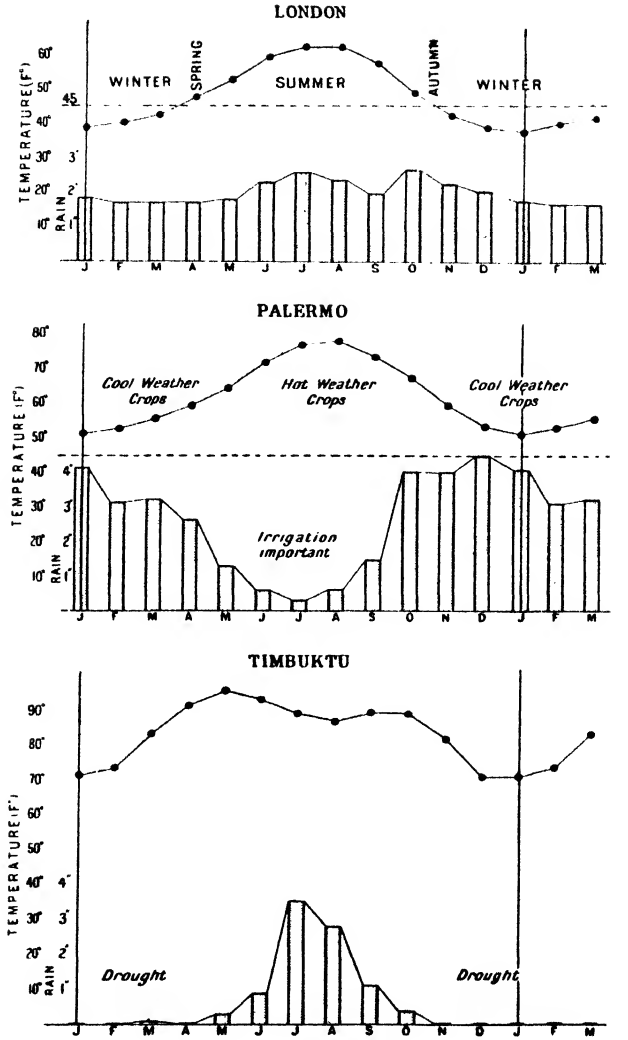


FIG. 38.—CLIMATE GRAPHS.

It is as important to visualise the climate of regions as it is to have a mental picture of their relief. These graphs show the relationship of rainfall and temperature there by defining graphically seasonal changes and their effect on vegetation and crop production

sun. Selected crops—oats, rye, potatoes—may be cultivated on the borders of the Arctic circle. It may be that the " Barren Lands " of northern Canada have been misnamed and should be viewed as the " prairies " of the Friendly Arctic[1] where large herds of musk-ox and reindeer graze.

Farther south, the winter of plant stagnation disappears. Cool and warm seasons alternate until, within the tropics, the variation of temperature almost ceases to count. A new factor in many places now appears to perform the function of " divide " in plant growth and cultivation. Rainfall in many zones is periodic, and " dry " and " wet " seasons displace the winter and the summer of the temperate latitudes.

Other simple observations of geographical usefulness are the effects of running water. Even the runnels of the roadside give examples of V-shaped channels down which muddy water courses, and of alluvial fans or miniature flood plains. The north and south aspects of a wall, the degree and character of the weathering of the gravestones in the churchyard illustrate hill slopes in the sun and shade and the processes of rock disintegration and soil formation.[2]

[1] *Vide* Stefansson, *The Friendly Arctic* and *The Northward Course of Empire.*

[2] *Vide* J. L. Myres, " Wayside Geography," *Geog. Teacher*, Spring 1925, Spring 1926.

The twisting curves of the High Street, the actual and relative position of the parish church and market, the ford and bridge, the uncultivated woodland or water-meadow, may all be made the subject of some story, the object of observation.

The accompaniment of all these observations is the recording them. Writing may be said to be in great measure the essential vehicle of literature, and in early training the mechanical art of writing accompanies the literary art of reading. So in geography. The writing of space-phenomena must accompany their reading. A *place* has at least two, usually three dimensions. Simple modelling and drawing are therefore the first exercises in *writing* place observations. " Practical " work—something done by the children—should be an integral part of all geography teaching, especially in the early stages. It should form part of the ordinary class work. No one would think of learning off a dictionary as a preliminary to the study of language. The meaning of technical words, symbols, and formulæ is acquired by usage. The recording of simple weather observations, the modelling of land forms in clay or sand (upon which may be superimposed man-made features, as roads, bridges, houses), simple panorama sketching, the drawing of plans of various objects, the school-room, the school-grounds and nearby streets—these are the

first exercises in the use of geographical tools, the first expressions of geographical thought. "Reading maketh a Full Man . . . and Writing an Exact Man."

Up to the age of eight or nine a scholar is perhaps best taught by stories rather than by formal studies, utilising his inquiring mind and his make-believe to appreciate some of the salient phenomena related to natural and human history. Description is far more important than logical reasoning. In so far as such descriptive stories are preliminary to formal geography, they should be so selected that they prepare the young mind for exact inquiry later into geographical phenomena. Thus a group of stories might well be related to the consequences of the major distribution of land and water.[1] The Old World island is almost completely divided into the major and minor divisions of Eurasia and Africa by the Mediterranean and Red Seas. This may be made apparent by a globe, preferably one in which land and water are shown as white and black areas respectively.

In the west, that is, in the Mediterranean lands and North-west Europe, important civilisations developed. Similarly in the south-east of Asia equally important civilisations developed in lands

[1] *Vide* Junior Regional Geographies, *The Peoples of the World.*

which supported far greater populations. So important do we regard these eastern and western lands that we describe them as the East and West. From earliest times trade has passed between the two, either utilising the long inlets of the Persian Gulf, the Red Sea, and the Mediterranean, or the great land-routes north and south of the Tarim Basin and north of the Altyn Tagh, which converged on the old trade centre marked by the towns of Bokhara, Samarkand, Tashkent, Merv, and Herat. Thence trade moved around the south of the Caspian and on by mountainous routes to Trebizond and the Black Sea or east through Hamadan and Kermanshah to Baghdad and the Tigris-Euphrates Valley.

Innumerable stories may be told illustrative either of the settled lands in East and West or of the traffic ways between them. Among the latter may be classed those early Biblical narratives of the days of Abraham and his immediate descendants.

Such an appreciation of Old World relationships may well lead to stories of adventures of a different order. The Old World island lies across the lines of latitude with its northerly regions of Siberia within the Arctic Circle and its southerly regions of Africa projecting into the foggy and stormy latitudes of the Roaring Forties. The spirit of adventure in the fifteenth and sixteenth centuries

was to make the seaway from West to East round the *stormy* Cape—but also the Cape of *Good Hope*—and to search for a North-east Passage among the snows and ice of the White and Barentz Seas.

Similarly the New World island offers possibilities of stories dependent on this same distribution of land, as, for example, the voyages of Columbus, John Cabot, and Magellan, with scores of others from their time to our own.

Another group of descriptive stories may be taken to illustrate the seasonal changes of climate which occur in almost every latitude, on account of the planetary phenomena of the earth. In our own latitude the change is principally recorded by such lowering of temperature at the period of the winter solstice that vegetational functions are considerably reduced, while at the summer solstice vegetational life is at its maximum. We thus have the two seasons, winter and summer. Between these, however, the transition is so marked by vegetation, natural and cultivated, that seed-time and harvest warrant the recognition of two other seasons, spring and autumn. In lower latitudes this yearly cycle of seasonal change is recorded not by temperature but by rainfall, the vegetation in great degree responding to these conditions.

It is possible, therefore, to impress these

seasonal changes by pairs of stories as the ploughman and harvester, Eskimo life in winter and in summer, the activities of savannah peoples in the " rains " and in the " drys." Indeed it is possible to consider the whole relationship of natural environment to primitive cultures by stories descriptive of life in many latitudes. Thus the physical conditions of the American prairies may be related in story to what we know of the culture of the Plains Indians[1] and the farming life of a modern Canadian settler in the same region. Similarly the life of the Shamba and Tuareg nomads and the dark-skinned oasis dwellers of the Sahara furnish innumerable examples of this relationship between physical environment and culture.[2]

Lastly, as one of the important elements of modern geography is the study of the exchange of commodities which improved communications make possible, some stories may be given illustrative of this principle. Thus the story of common articles as sugar, tea, and wool may be linked up with articles which form return cargoes for the ships, as agricultural implements, machinery, and coal. If, for example, we describe wheat as coming from Canada for the making of our bread, the farmer

[1] Wissler, *Indians of the Plain.* (Natural Hist. Mus., N.Y.)

[2] Gautier, " Nomad and Sedentary Folks in North Africa," *Geog. Rev.* January 1921.

of Canada may possibly be purchasing machinery from us. Similarly, our cocoa may be grown by a West African negro, who with the purchase money buys cotton-piece goods made in Lancashire.

Stories of other kinds of homeland—*always illustrated by adequate pictures, models, and photographs*—not only widen the scholars' horizon, but also give point to the deductions from observations made at home. The little V-shaped valleys are magnified to the hill and valley country of Upper Burmah with isolated villages and difficult transport; the miniature flood-plain expands to carry the millions of the Ganges plain. On every hand in or near the school, illustrations may be found of principles which, when operating on a large scale, profoundly influence the activities of man.

On the large scale of the southern slopes of the Italian Alps and on the smaller scale of the vine-clad slopes in many parts of France we see but the same principle writ large which melts the snow on the south-facing housetop while the north remains snowclad. The vast flood-plains of the Hwang-ho and the Yang-tze-Kiang with their teeming millions are but enormous examples of the tiny flood-plain of the near-by stream. The processes of Nature differ not in principle but in degree, and the dual studies of local observa-

tion and life in other lands are both supplemental and complemental to each other.

In all instances, the true geographical emphasis is attained only by a study of the *annual cycle* of life conditions. The Eskimo in the warm Arctic must not be forgotten in the more attractive pictures of snow houses and fur-bedecked children. Similarly the vast sand-wastes of the Sahara must not hide entirely the nomadic life of the Shamba and the Tuareg camelmen nor the centres of sedentary life at the oases and the regular traffic along immemorial routes between the lands of the Mediterranean in the north and those of the Sudan in the south.

By the end of the second year the great contrasted regions of the world—grasslands, deserts (hot and cold), forests (temperate and tropical)—should have received attention and have had their position located on a globe. The description of each region should be based upon the narratives of competent observers and may well be amplified by the reading of suitable books of travel.[1] The

[1] The following, among others, have had chapters selected as school readers (Oxford University Press): Abbé Huc, *Tartary, Thibet and China*; Lord Dufferin, *Letters from High Latitudes*; H. W. Bates, *The Naturalist on the Amazons*; W. A. Bell, *New Tracks in North America*; Messrs. A. and C. Black issue for each continent a *Descriptive Geography from Original Sources*, in which extracts from travellers' narratives are given.

aim must always be to build up a body of regional FACTS, not a number of speculative theories nor generalisations. The literature of exploration is full of suitable illustrations. No better account of Mongol life can be obtained than that given in the narratives of Carpini and Rubruquis (Hakluyt Society). The works of Stefansson, Gautier, and Roscoe[1] may be given as examples of modern travellers whose narratives furnish material for simple geographical accounts of specific groups of people.[2]

Map studies form a very important part of practical work. They should be included at all stages of the teaching. Simple ideas of form and scale begin with making plans of objects and of the school-rooms, the latter introducing also the idea of orientation. It is a comparatively easy stage to a street-plan of the school neighbourhood.[3] This may well be combined with a model of the area if the land has marked relief. The choice of symbols and scale furnish exercises in initiative and originality. Later, the home-made map may be compared with the O.S. 25-inch map of the same locality.

[1] Gautier, "The Trans-Saharan Railway," 19 pp., *Geog. Review*, January 1925; Roscoe, *The Soul of Central Africa*.

[2] Brunhes, *Human Geography*, is a compendium of illustrations for teachers.

[3] E. M. Sanders, *Geography from the Air*, is useful in suggesting exercises.

As a larger and still larger area is mapped, main roads and railways, rather than small streets, become the framework. The scale is diminished, symbols need simplification, and the general

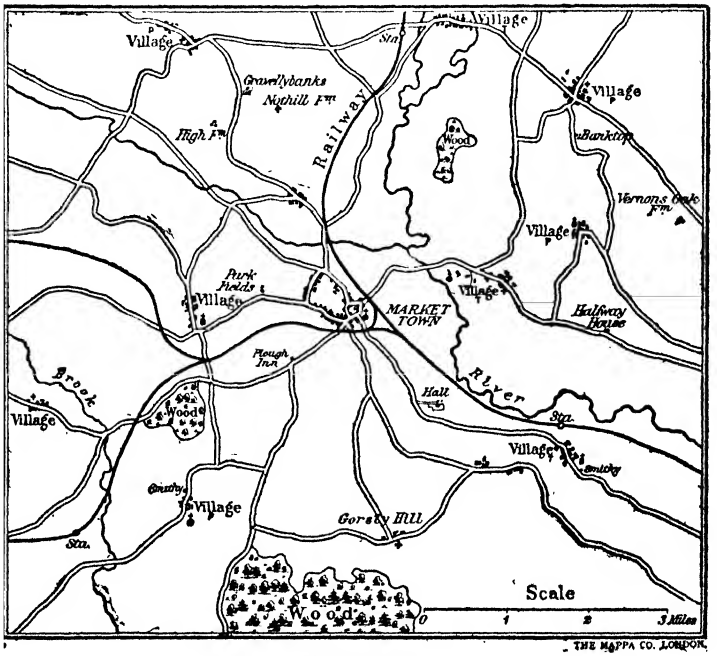


FIG. 39.—A SIMPLE MAP STUDY.

This sketch is a plan of a large region on a small scale. It is an extension of such studies as represented in Figs. 7 and 21. It presents the problem of how to show relief and soils in relation to routes, woodlands and similar features.

character of the map changes. The sketch-map is coming into use. The accounts of local activities—farming, quarrying, mining—can be located and villages and towns placed in approxi-

mately correct position with relation to each other. It is possible at this stage to compare the sketch with the 6-inch and 1-inch maps of the O.S. The scholar arrives at his third year ready to appreciate a map record of the work of the home region and its extension to other regions of the British Isles.

The descriptive geography of the British Isles furnishes an excellent opportunity for teaching geographical facts in place of geographical fancies.[1] Pictures abound, our literature teems with verbal illustrations, and, potentially at least, every part of Britain is easily accessible. Our island geography—the country-side and industrial lands of Britain—can be made a much more powerful study because more truly realised than even our island history.

The four-year course of descriptive work closes with a survey of the world.[2] Age eleven is as critical in the life of the scholar as it is in school organisation. Change of school, or at least change

[1] The Scylla and Charybdis of geography are the mere names of features and places on the one hand and mere description without a knowledge of features and places on the other. The only method is to build up a regional model or map as the regional study proceeds. *Vide* Junior Regional Geographies, *The British Isles.*

[2] *Vide* Junior Regional Geographies, *The Regions of the World.*

of study, may compel a break in the course of instruction. It is essential, therefore, that the period shall close on a world note. The stories of the earlier years can be recalled in a description of the major regions of the world which should now be analytical—the study of the relationship between regional phenomena.

An excellent illustration may be given from the grasslands of North America. The rainfall maps in part explain the absence of tree growth over the interior plains of North America, parched in summer with continental heat, bound in the winter by frost and swept with icy blizzards. The open grasslands are a register of these annual conditions. These plains formed the feeding-grounds of innumerable herds of bison. The Indians of the Plain adjusted their life to the bison hunt.[1] The horse, the tipi (tent) and the hunt were the distinguishing features of these Indian tribes—nomads following the bison in the summer, seeking the shelter of the western mountains in the winter.

Physical conditions there are much the same to-day. But how different is the life of the modern Canadian and American farmer! First, vast cornfields and cattle ranches; now as roads and railways follow or precede closer settlements, intensive cultivation on small mixed

[1] Cf. the trapping and agriculture of the forest Indians.

farms is slowly displacing the extensive farming so common half a century ago. The *motive*, the *impulse*, of the change may be historical, or racial, or economic, the *manner* of the adjustment is geographical. Indian and farmer alike adjust their activities and their settlements to their physical environment and its direct consequences.

In this manner the whole world in broad outline may be passed in review—the river-plains of rice cultivation of Far East monsoon lands; the semi-arid pasture-lands of Australia; the timber and mining camps of the "shield" of Canada; the natural hot-house of the tropics with unmeasured potential wealth though inhabited by backward people. The pages of romance cannot equal the wonders of man's adjustment—conscious or unconscious—to the physical environment in the great regions of the world.

CHAPTER IV

THE MAIN COURSE: PRIMARY SCHOOLS

A SCHOLAR at approximately the age of eleven finds by many concrete evidences that he has reached the close of one educational period and is about to enter another. By scholarship, he may transfer from the primary to the secondary school. Even if he remains within the same institution, there is generally a marked change both in the curriculum and in the demands made upon his studies. Some subjects are considered of greater importance than others, and his journey through the school is usually determined by his proficiency in them. Continuity of instruction in the remaining subjects becomes, under these circumstances, extremely difficult. In framing any scheme in geography it is essential that each scholar at the close of his career shall have no marked nor serious lacunæ in his geographical knowledge of the world. Two or three courses on the British Isles will not compensate for lack of knowledge of the United States or China. Moreover, all schemes must take cognisance of the expanding mentality of the pupil. The study

of South America, say, at the age of twelve cannot be regarded as sufficient at school-leaving age. All schemes must make provision for revision and amplification of regions already studied.

In the main course, no matter what the type of school, there may be infinite variety in the formal studies of pure or applied geography. But the observational and descriptive geography prior to this age should form both an introduction and a background to all later work. It is reasonable to expect scholars of this age to show on the globe or map the large regions of great and least population density, the location and character of the dominant activities in the principal countries of the world, the distance in miles and time between, say, London and New York, Buenos Aires, Calcutta, and Sydney, the zones of the world's forests and grasslands and the uses to which they are put. In brief, they should be able to mark on the globe or map the dominant geographical features[1] with the broad reasons for their location. They should also be able to read the geographical literature contained in school atlases and to think in terms of space.

[1] *Note.*—" Geographical " does not mean physical features only. The position of a port, an industrial region, or the route of a railway are equally geographical. The product of human thought and energy on the surface of the Earth is comparable with the work of running water and other natural agencies shaping land form.

Main Course

Three years may be taken as the usual period for the Main Course in a primary school. Certain principles must be observed in drawing up the scheme. The great factors of major regional subdivision must be recognised, viz., the land and water masses usually styled continents and oceans, and the great planetary systems of air and water circulation, together with the effects of both these on insolation and the resultant major natural regions. These regions cannot receive equal treatment. The intensity of their study must vary with their geographical importance. The British Isles must obviously receive most attention, and the British Empire *in a world setting* takes a very important place; but no area of any size and importance can be wholly disregarded. The following are alternative suggestions:[1]

Scheme I

Age 11–12 *years.*—Major Natural Regions of the World, with a special study of the geographical regions of the three southern continents.

Age 12–13 *years.*—Eurasia and North America. (1) A contrast of the agricultural basis of a large population in the East of Eurasia with the industrial basis of a large population in the West. (2) A

[1] A further outline scheme is given in the *Geog. Teacher* Summer 1919.

comparison of the industrial lands of Western Europe and Eastern North America with their agricultural hinterlands.

Age 13–14 *years.*—THE BRITISH ISLES, with reference to world connections and especially to the British Empire. By this year also, the home-region study should have given opportunity for scholars to make some special local investigation and to discuss matters raised in official Regional Reports.

SCHEME II

Age 11–12 *years.*—NORTH AMERICA AND ASIA.

Age 12–13 *years.*—EUROPE (including the British Isles).

Age 13–14 *years.*—WORLD (including the British Empire).

A course of this character assumes that the descriptive work in the previous year (age 10–11) supplied a moderately full account of the three Southern Continents.

The following general points should be noted:

(1) The groundwork of physical geography should be covered, incidentally, during the course from age 11 to 14. Local examples of river work, climate, and relief should be fully utilised.

(2) Observational work (local weather conditions, educational visits, etc.) should be maintained throughout the whole course.

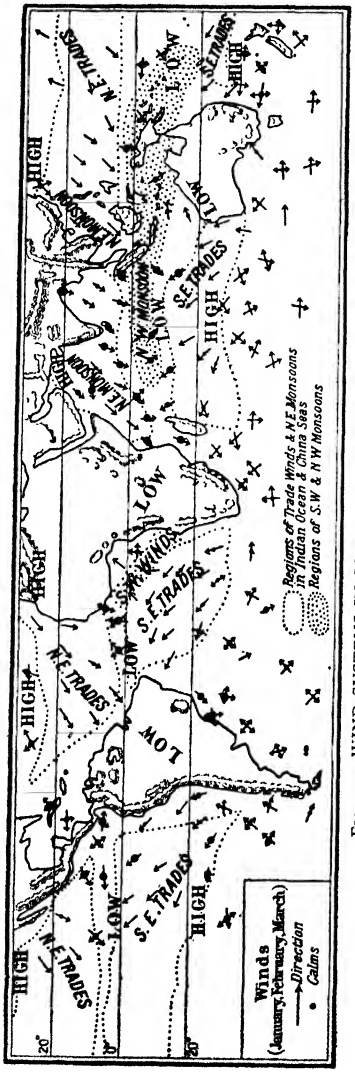


FIG. 40.—WIND SYSTEMS IN SOUTHERN HEMISPHERE (JANUARY).

Figs. 40 and 41 are generalised maps to be built up in class on a large scale, and with coloured chalks from the actual observation of winds contained in official atlases. The winds are the essential facts to be known by scholars and not necessarily related to pressure systems. If the relationship of winds to pressure is learned, it must be remembered that the pressure centres must be derived from the winds and not *vice-versa*. Cf. Figs. 40 and 41 with the generalised maps of winds in Figs. 14 and 15 based on pressure distribution.

(3) The teaching should be on a *regional* basis throughout.

(4) The *Home Region* should be referred to at all stages.

The main course may well open with a survey of the fundamental phenomena determining major natural regions. The instrument of tuition is a black-and-white slate globe. The inclination of the axis and the distribution of the land and water masses are shown. The

length of day and night in different latitudes and seasons, the altitude and apparent movement of the sun, may easily be demonstrated and the latitude of the polar circles and the tropics determined. Insolation and radiation form simple applications of physics to the surface of the earth and pressure and air-movements are easy corollaries. The great seasonal wind systems of the earth may be marked upon the globe. The ocean drifts and continental rain-belts follow.

Such comments and explanations, however, should be given—if at all—after the *facts* of wind

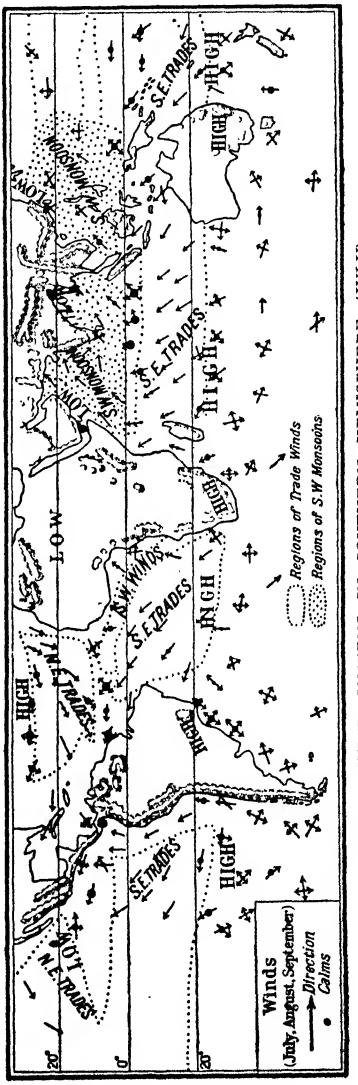


FIG. 41.—WIND SYSTEMS IN SOUTHERN HEMISPHERE (JULY).

and water circulation have been recorded and studied. These may be legitimately taken as fundamentals, in the same way that we accept the distribution of the continents and oceans as fundamental. Figs. 36 and 37 are generalised charts based on official documents,[1] whilst Fig. 18 is an attempt at a generalisation for any one of the three southern continents. The value of such a diagram as Fig. 18 is that a capable teacher may discuss by way of explanation how the distribution of land and water masses has produced modifications of a probable system on a rotating homogeneous surface. It must not be taken as a statement of facts.

East coast-lands differ in their characteristic climate and vegetation from west coast-lands; the continental interior differs from both the east and west oceanic margins; high latitudes contrast with low, whilst a certain symmetry is discernible north and south of the equator. The three southern continents offer parallel studies in natural regions, but with contrasted adjustments based on the utilisation of the resources by immigrant peoples from Europe[2]—the wheat and

[1] Information on atlases and charts of ocean winds and currents may be obtained from J. D. Potter, 145 Minories, London, E.1.

[2] In South Africa there is also an indigenous virile black and coloured population which complicates the question.

cattle of Argentina, the coffee of Brazil, the sheep and gold of Australia, the fruit and gold of South Africa. On the map of natural regions there should be superimposed the principal regional economic products, the framework of communications and the foci of large cities.

Eurasia and North America furnish an extension of the studies of the southern continents. Here the physical conditions of oceanic and continental lands are comparable with those south of the equator, but the human impress is much greater. In the East on the extensive flood-plains of the rivers of India and China watered with summer rains, irrigated from wells and rivers when rainfall is not sufficient, teeming millions live on rice which the experience of forty centuries has shown to be the most advantageous food-crop. In the West, primarily on the power basis of coal, later amplified by hydro-electric power, large industry has developed. Overseas markets for manufactured goods, for raw materials, and for food-stuffs became essential since the home markets could neither absorb all the one nor supply all the other.

North America, with its 200,000,000 inhabitants of European origin, is in a measure a replica of Europe. New England, New York State, and Pennsylvania compare with industrial Europe. The Middle West and the Pacific States compare

in part with the intensive cultivation of European States and in part with the extensive farming of portions of South America or Australia. May we not expect a boy at the age of thirteen to sketch and to comment intelligently upon the course of the Rhine or Danube with the large towns on or near them, to explain the significance of New York, New Orleans, or Montreal and the transport and economic activities of North America, to have, in short, a geographical view of the great lands north of the equator?

This broad survey of the world makes it possible in the last year of the primary school to give a somewhat more intensive study to the British Isles and Britain Overseas. What journeys may be made, what holidays may be taken, by means of the magic carpet of geography! Take, for instance, the Wessex basin with its downland, sheep, and corn, its commons and heaths on gravels, sands, or clay; the New Forest and Cranborne Chase; the fruit and market gardens of the Botley plain; snug villages and towns as Lyndhurst and Brockenhurst, old-world cities as Winchester, the port of Southampton, the naval port of Portsmouth, health and pleasure resorts as Bournemouth. If we can but give to children a glimpse of this part of England, bring to their mental eyes scenes which otherwise would be hidden from their view, we shall accomplish

more than Hardy with all his praise of Wessex. The Weald, the London Basin, East Anglia, Fen-

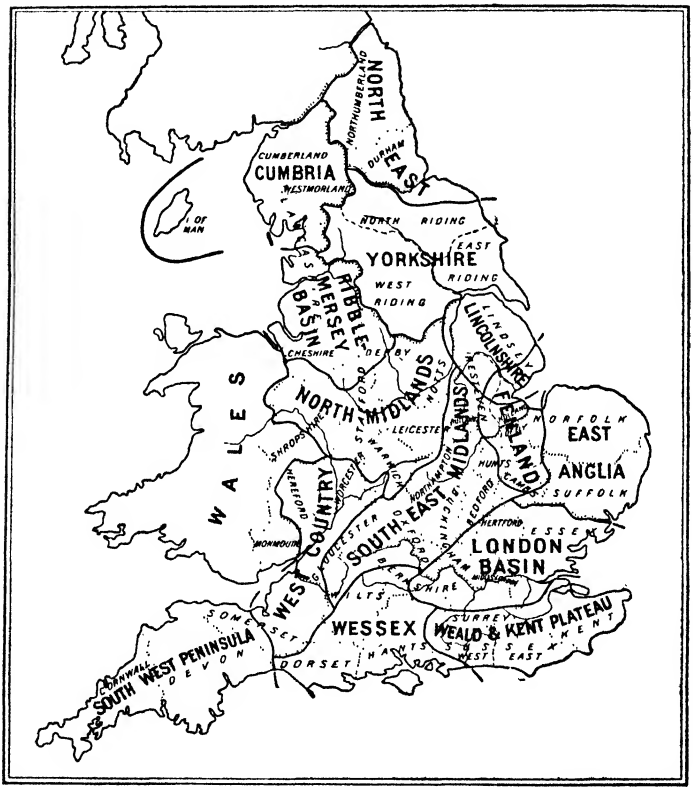


FIG. 42.—REGIONS OF ENGLAND.
The ultimate geographical concept of England must be well marked regions, each showing a special adjustment of life and economic activities to physical conditions.

land, these and many more are easily recognisable regions of England. Can we but give to children the secret of their personality, the reality of their

regional entity, England herself will become real, a country to be travelled until her children know and understand her.

In the industrial north, specialisation of manufactures gives definition to the geographic regions —the North-east, the West Riding, South-east Lancashire, the Black Country. South Wales is similar. What pictures may we build by model, map, and illustration! That of North-east England will include its collieries, the deep-trenched Tyne, the ironstone quarries of Cleveland, the blast furnaces of Middlesbrough, the north-south route via Ferryhill Gap, the middle Wear, the Team, and the Ouseburne, and greatest of all examples in changes of geographic values, the old-world capital of Durham, and the modern industrial capital of Newcastle-Gateshead.[1]

Can we not make this last year at school one which shall open wide the gates of Britain and arouse in every scholar the desire to explore! He has travelled England once in the preparation of his note book, his record of descriptive lessons illustrated by pictures, maps and diagrams. On his actual travels this becomes his guide book and companion. "Let us improve the hours of our imprisonment by discovering England."[2]

[1] L. Rodwell Jones, *North England*, an economic geography; an excellent book for industrial areas.

[2] A. G. Gardiner, *In Praise of England.*

The foreign trade of Britain indicates at once the " workshop " character of the country, and the world-wide connections for the export of our manufactured goods and the import of raw materials for manufacture and of food supplies to make up the deficiency of our own production. The whole world is our market, but with the British Empire we have closer links than merely those of trade. Part consists of great Dominions of almost equal status with Britain in the British Commonwealth of Nations—Canada, Newfoundland, South Africa, Australia, New Zealand, and the Irish Free State. India stands alone in its vastness and its relationship. The third division consists of scattered territories administered from London principally as colonies and protectorates. To sketch in barest outline these territories of the Empire as they lie upon the surface of the earth is perhaps as much as can be done, but at least we shall have transformed names into places; mere phrases to mental scenes. If the youth of Britain can but learn and understand the geography of Britain Overseas, the geographer may well look upon his task as no mean contribution to the stability of our people. Pinkerton, writing amid the stirring events following the Napoleonic wars, wrote :

" Geography is a study so universally instructive and pleasing, that it has for nearly a century been taught

even to females, whose pursuits are foreign to serious researches. In the trivial conversations of the social circle, in the avidity of the occurrences of the times, pregnant indeed above all others with rapid and important changes that affect the very existence of States and Empires, geography has become an habitual resource to the elegant female as well as the profound philosopher." [1]

An instructive study! And yet such was the short-sightedness of our educationists that geography was in a great measure deliberately excluded from the school curriculum.

"Education may add the spur of mental necessity to the whip of physical want; but there was an almost total lack of education among the English peasantry of the early nineteenth century. Such education as there was did not include the dangerous subject of geography; even in the National and British schools of the period (to say nothing of the workhouse schools) there was such a prejudice against the teaching of geography that in many cases the schoolmaster was forbidden to hang any map on the walls of the schoolroom." [2]

This was in marked contrast to the methods which Robert Owen adopted in his New Lanark

[1] *A Modern Atlas*, 1815.

[2] A. Redford, *Labour Migration in England*, 1800–1850, pp. 82–3.

Schools. At the end of one room were "hung very large representations of the two hemispheres; each separate country, as well as the various seas, islands, etc., being differently coloured but without any names attached to them. . . . The children at four and above that age showed an eager desire to understand the use of the maps of the four quarters of the world upon a large scale purposely hung in the room to attract their attention." As Podmore remarks,[1] in this manner the study of geography, to many of the less favoured children of a later day the dreariest remembrance of their childhood, was made interesting and attractive by frequent reference to the large coloured maps hung on the walls, by descriptions of the natural scenery and climatic conditions of each region, of the inhabitants and their appearance, their dress, manners and customs and mode of life. But the study of geography was also made to point with peculiar emphasis a valuable moral lesson. For—

"In this manner are circumstances which induce national peculiarities and national vices exhibited to them; and the question will naturally arise in their minds: 'Is it not highly probable that we ourselves, had we lived in such a country, should have escaped neither its peculiarities, nor its vices—that we should have adopted

[1] F. Podmore, *Robert Owen*, I. pp. 138–9.

the notions and prejudices there prevalent ? In fact is it not evident that we might have been cannibals or Hindoos, just as the circumstances of our birth should have placed us in Hindostan, where the killing of an animal becomes a heinous crime ; or amongst some savage tribe where to torture a fellow creature, and to feast on his dead body, is accounted a glorious action ? ' A child who has once felt what the true answer to such a question must be, cannot remain uncharitable or intolerant."

It was perhaps because of the moral significance thus made to attach to it that the study of geography formed so prominent a part of the education at New Lanark. Surely we shall now completely reverse the old " national " policy and emulate the methods of Robert Owen, teaching our children to understand their own and other lands. How else can they view sanely the great world-movements or understand the part which they must play in a world whose several parts are so inextricably intertwined ?

CHAPTER V

MAIN COURSE: SECONDARY SCHOOLS[1]

GEOGRAPHY makes a twofold demand upon *all* its students. First it requires them to see the disparate data of separate arts and sciences becoming members one of another in a subtle regional coherence. Then it expects them to observe and to understand the relevant physical phenomena with the cold detachment of scientists, daring them to go further and link up the knowledge thus acquired with certain facts of human history. The former is for schools the more important. It is obvious that a region which may be seen directly offers an entirely different type of study from that which is untravelled by the scholar. In the one the process of inquiry is from the regional unity to the factors—natural and human—which contribute to that unity. In the other, the relevant data already selected by the teacher are placed together like some great jig-saw puzzle to make the picture of the region. The picture determines the pieces, not the pieces

[1] The principal points given in Chapter IV for primary schools apply equally to secondary schools.

the picture. In other words, fragments of geology, climate, economics, and sundry other sciences and arts are *not* compounded into a regional geography. An old method, not yet dead, followed some such sequence—position, structure, relief, climate, vegetation, and so on—independently of the regional picture and justly gave rise to the criticism that geography had no separate existence. Certain phases of structure, climate, or economics *may* enter into the explanation, but one naturally asks, the explanation of *what* ? That *what* is all-important. It is the *facts* unique and peculiar to geography viz. (for most school purposes) the adjustment of life to physical environment. This adjustment is the picture seen by scholars in the home region. For other regions it must first be described as a whole by the teacher before it can be analysed into its component parts. An accurate picture of life as it is lived to-day is of prime importance in geography. This can only be given by pictures, maps, and diagrams amplified by reliable verbal descriptions. When this has been done, scholars are in a position to appreciate comments on the relationship of physical environment to human activity. Only when we have brought together certain pieces of information can we stand, in imagination, say, on the forested Niagara scarp and look across the fruit belt of

the Iroquois beach to Lake Ontario, or journey amid strange scenes of the equatorial forest where a new order of adjustment is jostling violently with the old. Armchair travel, you will say. It is true that the bodily eye—*if trained*—will see more truly than the mind, but it is better to travel the world by the map than not to travel it at all. "I am told," states R. L. Stevenson, "there are people who do not care for maps, and I find it hard to believe." Maps constitute, when actual travel is precluded, the open sesame to the highways of the world. Reference has already been made to the home region [1]; the world now calls for our attention.

The *order* of study is not of prime importance, though it should be clearly recognised that some regions offer less difficulty than others and some exceed others in importance. The Southern Continents are easier to study than is Europe, and the British Isles must obviously receive more intensive treatment than Japan. Two suggested courses [2] follow:

SCHEME I

Age 11–12.—British Isles *or* World *or* both.

Age 12–13.—The Americas.

[1] Chapter II.

[2] The Geography Syllabus in use at the William Ellis School, N.W. 5, is given fully in the *Geographical Teacher*, Spring 1922.

Age 13–14.—Asia and Australasia.
Age 14–15.—Africa and Europe.
Age 15–16.—World (including British Empire).[1]

SCHEME II

Age 11–12.—British Isles.
Age 12–13.—Southern Continents.
Age 13–14.—North America and Asia.
Age 14–15.—Europe (including British Isles).
Age 15–16.—World (including British Empire).

The final result is the same, whether one follows the division of north-south continental "gores" or of east-west continental "zones." The chief danger often lies not in the scheme but in the method. Meaningless narrative—even when accompanied by maps—may take the place of scientific training. The hills and vales of England must be taught by maps—not by words only. The O.S. map of England (1 : 1,000,000) or the Surface Relief map of England and Wales (1 : 1,700,000 published by the Royal Geographical Society)[2] depicts the physical regions of England—if the selected contours can be correctly read. Contour lines show land form with its three dimensions on the two-dimensional map. But

[1] This scheme is followed in *The New Regional Geographies*, L. Brooks.

[2] Vol. xxiv, p. 621. Reproduced in Bartholomew's Advanced Atlas of Physical and Political Geography.

the interpretation of contour lines can only be learned by reference to an actual stretch of country. Scenery and contour map must be studied together in the open field with the aid of modelling and sketching exercises.[1] Otherwise "the odds are that the great illumination will escape you all your life; you may return to the grave without having ever known what it is like when the contour lines begin to sing together, like the Biblical stars."[2]

The climatic régime of Britain shown by isotherms, isobars, and isohyets is given in most atlases. But these charts as they stand bear little resemblance to the actual facts of weather, though they are derived from them. Climate charts as such can only be interpreted when their mode of derivation has been understood, and their use should be postponed until that is possible.[3]

[1] "Levelling" exercises are not necessary. The making of a map by survey work is not an essential part of geography teaching. If teachers are qualified in the subject, there is no reason why some survey work should not be done, providing that the methods of real map-making are used.

[2] C. E. Montague, in *The Right Place*.

[3] A graded course of weather observations should accompany the class-work throughout the course. Records should be cyclic in character and they should be used and related to each other. At the top of the school it is possible to study the daily weather report. Teachers of science, mathematics, and geography should map out a course of observations

They may, however, be used as symbols to record graphically descriptive accounts of our climatic régime.[1] It sometimes happens that teachers who would be horrified at learning off such a list of names as Tyne—Wear—Tees—Ouse—Trent, have no compunction in giving to the scholars an outline map on which to copy the January and July isotherms when these to them are meaningless.

At some stage in the course the equable climate of the British Isles will be related to the westerly winds and the North Atlantic drift. There is but one sound way in which the essential facts of air and water movement can be placed before children. The monthly Admiralty charts show by suitable symbols the normal movement of air and water over the oceans. The scholars' generalised diagrams should be made from these. How often are scholars asked to accept such statements as the following without any evidence of the fact, still less of its explanation:[2] "A

which should help the work in all three subjects, since for every subject the standard of difficulty is always the same, being determined not by the subjects, but by the capability of the scholar.

[1] The climatic quadrants of N.E., N.W., S.E., and S.W. Britain may be marked by what are actually the winter 40° F. and the summer 56° F. isotherms, even though the full significance of these lines will not be understood until later in the course.

[2] It is not implied that the explanation *should* be given.

Mediterranean climate is one with cool moist winters and warm dry summers." Surely such a statement is inadequate. The facts are easily ascertainable and may be graphed (Fig. 35). The graphs of certain other parts of the world show similarity of form and in this way may be compared and the regions of "Mediterranean" climate plotted on a globe.

Enough has been said perhaps to show that the relevant data for regional study should be based on *facts*. It is part of the geographical discipline to handle the actual data by means of which the regional entity is established.[1]

In the first year of the course, instruction must be largely descriptive, but the teacher's narrative must be based on original sources. Rainfall, temperature, and natural vegetation should be derived from authentic maps and the description of travellers freely drawn upon to build up a picture of the adjustments of the life of the various peoples to their physical environment. Much progress can be made, even in these early years, towards an understanding of climatic variation, especially in different latitudes, by means of the

[1] This does not mean that scholars require always to know how all the data are acquired. The data constitute the bricks with which the geographer builds. Often at present the scholar is asked to build without material or make his own bricks but without straw.

globe. The position of polar circles and the tropics may be demonstrated. From the ocean charts, the larger movements of air and water may be drawn upon the globe. Rainfall and vegetation can also be shown, and thus at least the regional association of related natural phenomena seen upon a model of the Earth, for upon the globe may also be shown the largest plateaus, mountain masses, rivers, etc. The globe, indeed, should be in constant requisition, taking precedence of flat wall-maps whenever possible. The great land masses may readily be subdivided into suitable large regions for descriptive treatment—Western Europe with its agriculture and industry, its international railways and its waterways; the vast Russian peneplain where evergreen and deciduous forests meet the grasslands; Scandinavia with its Norwegian fiord coasts and the forests and hydro-electric power of Sweden. In Africa, the Barbary States, Egypt, the Sahara, the equatorial forest lands, the Central African mountain zone, and the South African veld are obvious subdivisions. What is not so obvious is the value at all stages of the four-year course which should be attached to a description of the oceans in relation to their adjacent lands.

The great oceans have ceased to be the barriers they once were and are rather links uniting opposite shores into what may be regarded as a single

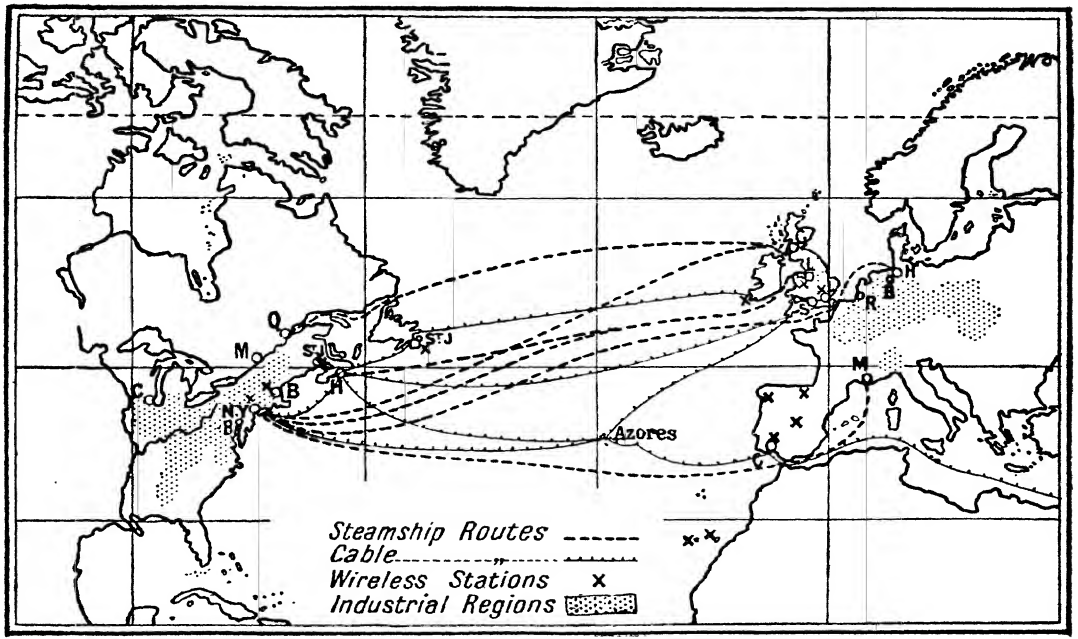


FIG. 43.—THE LINKS OF THE N. ATLANTIC.

Modern science has not only aided the development of great industry, it has bridged the vast oceans, linking together widely separated lands on opposite shores.

group. Thus the industrial areas of Western Europe are linked with the similar industrial regions of eastern North America by cable, wireless, steamship, even by telephone, and possibly in the near future by aircraft into an economic region which may be styled the Lands of the North Atlantic.

In a similar way the Pacific Ocean, once the back of beyond for European peoples, whether at home or in America, is now assuming the rôle of an oceanic basin with countries on its periphery having related if conflicting interests. The Pacific has both its problem and its riddle. We might even view the Indian Ocean as a great British sea. To the south are the great bulwarks towards the Roaring Forties of South Africa and Australia ; in the north is the Indian Empire, whilst the passages to east and west are guarded by such strategic bases as Singapore and Aden with Perim. It may be necessary, as the effect of the great world-ocean becomes more pronounced, to divide the world for geographic study according to its oceans rather than its continents.

In the second year one large section of the Earth is selected for somewhat special treatment. Synthesis, under careful guidance, slowly displaces regional description. Why are these regions so ? If the three southern continents (Scheme II) are taken, similarity of phenomena

produces comparable natural regions, but with differences due, it may be, to the relief or shape of the continental mass. In some respects even the utilisation of the natural resources may be compared, though the distribution of the population and of cities offers interesting contrasts.

In the Americas (Scheme I), the discipline is the same, though the comparison is that of continental masses north and south of the equator. It is thus seen that in this year the climatic factor is taken as dominant and its influence—direct and indirect—specially studied.

The third year study of Asia either with North America or Australia carries the geographical investigation a stage further. The seasonal climatic changes may be compared with those of lands previously studied. But within the larger climatic regions there are many geographic regions of special significance and importance—India and China with their subdivisions, Mongolia, Siberia, Iraq, Arabia, Syria, and Asia Minor. In North America and in Australia a new basis for a geographical region is introduced in the mining and manufacturing activities in centres advantageously placed for power or raw material.

This leads to the still more difficult geographical study of the powerful industrial States which we find in Europe. The tripartite or quadrupartite

natural division[1] is geographically superimposed and almost obscured by the political States with their strong nationalism. Nevertheless, within each State the relationship between physical environment and mode of life is often clearly discernible. In the British Isles the regional studies become of extreme importance.

British trade emphasises the economic interdependence of the whole world. The inventive genius of the modern age has not only converted the world into an economic unity, but it has changed the outlook of nations and placed a new demand upon our education. The gory revelries in Coomassie or the excitements in the budding republics of South America passed with scarcely a comment from our great-grandparents. To-day a shot in Serajeva can call a world to arms and the ravages of the boll-weevil in the American Southern States can set in motion policies whose effect is equally world-wide.

The survey of the Earth in the last year allows previous studies to be amplified and brought into line with the capabilities of scholars at age fifteen to sixteen. Regions which for one cause or another have been omitted may now receive the treatment they require.

Certain general notes may be added. Teaching

[1] i.e. North-west, Mediterranean, and Russian plain (with or without the mid-European plateau and Alpine zone.)

methods should be *regional* throughout. Physical geography should not be taken separately, but the most important principles should be covered incidentally during the course as opportunity offers or the need arises. Practical work, i.e. " things to be done by the pupils," should form an integral part of all geographical teaching.

Map studies form a very important part of practical work. They should be included at all stages of the teaching. Earliest map studies should be used in connection with the home region and the globe. The study of contours with related field work can be left until after eleven years of age. Later in the course there could be a fairly detailed study, through maps and educational visits, of some suitable area which can be visited. Modelling, so important in connection with early teaching of home regions and typical environments in other lands, may be commenced at this stage.

In upper classes it is also possible to make maps showing various distributions from agricultural, population and other statistics. Children should also be taught to illustrate their work by sketch-maps, drawn rapidly and boldly to show special points, or to show the influence of one set of factors on another (e.g. relief and routes). They should be taught to express themselves in maps as a form of geographical shorthand.

A word may be said in conclusion on the subject of examinations. It is often contended that the ideal course must give place to the practical necessities of the external examination. Such is not the case. In the first place, is it not reasonable that a scholar who has followed a four-year course of study should be subjected to some test of his attainments? The Examinations Boards attempt to supply this test. They deprecate "cramming" in the last year with its consequent mental indigestion, and desire to test in a reasonable manner the average attainments of a normal scholar working steadily over a four-year course of study. Complete harmony may exist between the ideal course and the examination test, even under present regulations.

CHAPTER VI

APPLIED GEOGRAPHY

PURE geography may be defined as the study of present-day conditions. It is obvious, however, that the present is unintelligible without some reference to the past out of which it sprang. Equally is it true that we cannot ignore the economic impulse which drives men to make such and such use of the resources of their region. Both these phases of geographical study may be so stressed that they assume a somewhat different form from that of pure geography. They become in a sense regional history and regional economics comparable in many respects with regional geography.[1]

They are forms of *applied* geography. This conception is of the utmost importance. If so-

[1] Often in so-called economic or historical geography the " principles " of geography are almost entirely ignored. The mere *location* of cities or the *distribution* of commodities is thought to be all that geography implies. The following books may be suggested as good examples of the broader principles of geography: Mackinder, *Britain and the British Seas* and *The Rhine*; Barker and Rees, *The Making of Europe*.

called *economic* geography or *historical* geography is to have any real value as a discipline in geographical thought, we must not lose sight of the principles of *pure* geography. We are in effect applying these principles to the laws of economics or the processes of history. Furthermore, these applied studies cannot replace the foundations of *pure* geography. They can only replace the more advanced studies of the subject, and only as such are they here considered.

Economic Geography

A scheme for the study of economic geography may be based on one of two principles. On the one hand it may proceed from a study of commodities—the location and physical conditions of their production, the markets to which they are sent, and the routes which they follow.[1] Wheat, cotton, iron-ore, etc., become great themes of study. On the other hand, the scheme may be on a regional basis, as in pure geography, that is, it may be the study of the utilisation of natural resources for trade and commerce.

A bias in either of these directions can readily be given even in the early stages. Stories of

[1] C. Chisholm, *Handbook of Commercial Geography*, is invaluable in this connection. *Economic Geography*, pub. quarterly by Clark University, Worcester, Mass., U.S.A. ($5 per ann.), furnishes useful material not otherwise available.

[*After O. E. Baker.*

FIG. 44.—NORTH AMERICA, ECONOMIC REGIONS.

This sketch illustrates an aspect of regional economics, i.e., an examination of the actual or potential productivity of the regions. It is obvious that in this map local conditions have been ignored, and only large questions of continental relief, temperature and rainfall have been considered.

common objects such as articles bought in the shops or in general use at home make a suitable and adequate foundation for the scheme based on commodities and transport. The second scheme differs from *pure* geography only in the emphasis which it gives to economic resources and development. An illustration of each method may be given from work suitable for scholars in the last year of a school course (age 15–16).

Method I.—From trade returns and agricultural statistics we may learn (i) the principal wheat-producing countries, (ii) which of these regions have surplus supplies for export, and (iii) the direction of movement of the grain. We shall learn that Canada is one of these world-granaries. Why? There is a geographical answer. Physical conditions *make possible* the cultivation of wheat, and the Canadian farmer has taken advantage of these potentialities. This is *pure* geography. But *actual* production, i.e. production from the economic standpoint, depends also upon such considerations as distance from the railway, transport rates, and marketing organisation. It is even concerned with the kind of grain, and there is a real sense in which the importance of Canada in the world's wheat-market may be said to depend upon the researches of the agricultural scientist. Fig. 45 shows the direction in which the wheat for export moves. It does not indicate,

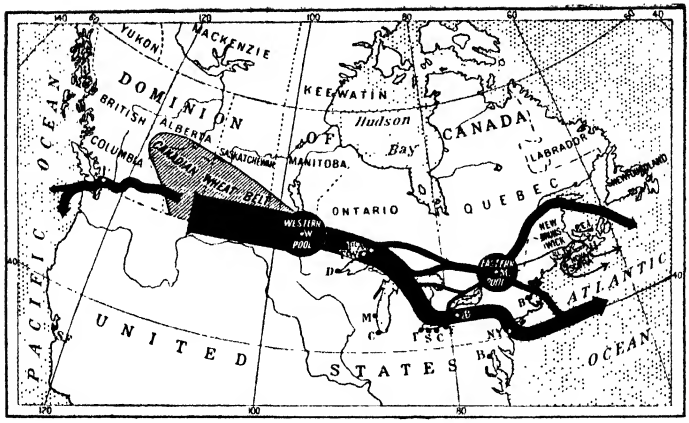


FIG. 45.—THE MOVEMENTS OF CANADIAN WHEAT.

This map based on official documents shows the direction and relative quantities of wheat, eastwards through the Western Pool at Winnipeg, the Eastern Pool at Montreal and New York, westwards a steadily increasing amount through Vancouver.

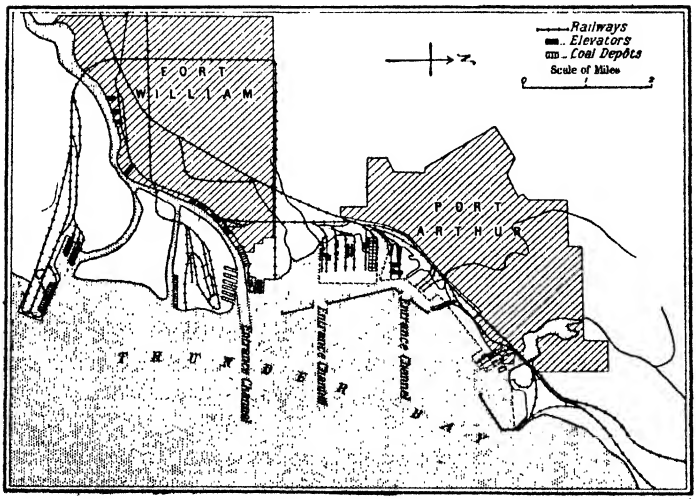


FIG. 46.—FORT WILLIAM AND PORT ARTHUR.

To facilitate handling grain from rail to ship a number of elevators have been constructed in Thunder Bay, L. Superior. See also Fig. 47.

what is geographically important, the physical conditions facilitating or hindering transport in these directions. By means of pictures and descriptions scholars must have made clear to them such matters as the facilities along the railway for receiving and dispatching grain to the Western Pool (Fig. 48) and the situation of the enormous elevators at Fort William and Port Arthur (storage capacity of 65,000,000 bushels) for transhipping grain eastwards by the Great Lakes (Figs. 46 and 47). The extension northwards of the wheat-lands [1] and the movement of the grain westwards through Vancouver are typical prob-

[1] A NEW WHEAT

EXTENDING CANADA'S GRAIN BELT BY 40,000,000 ACRES

Yet another wheat likely to revolutionise Canada's contribution to world bread supplies is announced from Ottawa, says the Canadian Official Press Bureau in London. It is only a few weeks ago that the perfection of " Garnet " wheat, ripening ten days earlier than " Marquis," was made known. The latest variety, " Reward," which, like " Garnet," is a production of the Government experimental farm at Ottawa, also ripens ten days earlier than " Marquis," but yields a whiter flour. It has milling qualities equally good and its heavier weight gives greater yields. Selected bushels grown at the experimental farm have weighed as much as 68 pounds.

The virtue of these new wheats is that by earlier ripening they can be grown in regions 100 miles above the present grain belt and will open to settlement and cultivation forty million acres of virgin land—an area twice the size of Ireland.

News-clip, November 1926.

Photo: W. H. Barker

FIG. 47.—ELEVATORS, PORT ARTHUR.

Some of the enormous grain elevators at Fort William and Port Arthur, seen from the lake.

[*Photo: W. H. Barker.*

FIG. 48.—RAIL-SIDE ELEVATORS.

Along the railway in the wheat zone, small elevators are used in the collection of grain in transit for Winnipeg.

[*Photo: W. H. Barker.*

FIG. 49.—THE NIAGARA ESCARPMENT.

The steep wooded escarpment is here seen overlooking the fruit belt which extends from the escarpment to Lake Ontario.

[*Photo: W. H. Barker.*

FIG. 50.—THE FRUIT BELT.

Seen from the Niagara Escarpment, the fruit belt extends towards Lake Ontario, cut up into rectangular areas of intensive cultivation of peaches, vine, and many small fruits.

lems which arise in economic geography. An "improved" wheat accounts for the first; special railway rates, the new sea-route via Panama, and the opening of a new wheat market in China and Japan largely explain the second.

Thus we may proceed in our study of wheat from Canada to the Argentine and other wheat-producing regions. In this manner we build up a *world* picture of the production, movement, and consumption of wheat.

Method II.—As an illustration of the economic utilisation of the natural resources of a region, we may consider the scarp and coastal plain south of Lake Ontario. A railway traveller making the journey for the first time from Buffalo to Hamilton in August or September is astonished at the scene to the northwards as the train suddenly reaches the edge of the escarpment. Accustomed to what appears to be interminable woodland principally of conifers, he is amazed to see beneath him the level fruit-belt of Ontario extending from the foot of wooded escarpment to the shores of the inland sea. Special conditions of climate and of soil have made possible the cultivation of peaches, grapes, and other fruits. The nearness—by fast trains—of large industrial markets has furnished the incentive. This is one special utilisation of the natural resources of Ontario.

The Niagara River carrying the waters of Lake Erie across the Huron Plain falls over the Niagara escarpment by impressive falls. The first utilisation for hydro-electric power was made at the

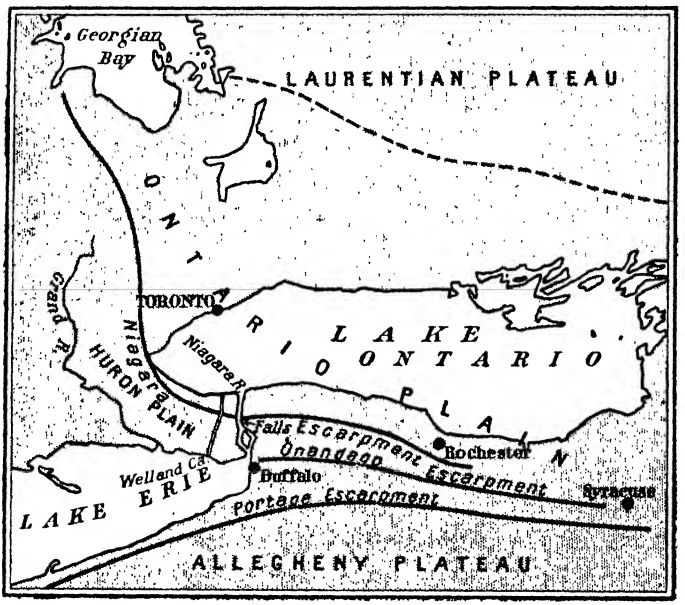


FIG. 51.—THE NIAGARA ESCARPMENT.

The Niagara Escarpment is important in the study of economic geography for two reasons. Firstly it limits the fruit belt south of L. Ontario, and secondly the Niagara R. in falling from the plateau over the scarp furnishes power for the generation of electricity.

actual falls, thus losing a considerable fall in the Gorge itself. To-day, engineering skill has overcome this defect and now harnesses the full drop of the escarpment. From the Welland River a

canal has been constructed to the escarpment edge at Queenston. Thus at the new Chippawa Station the full fall from Lake Erie to Lake Ontario of approximately 300 feet is obtained, instead of the 160 feet at the Falls themselves. The power thus generated is carried along the plain of the fruit belt westward to Hamilton and so to Toronto. This is a second illustration of utilisation of natural resources in Ontario. Others would be the gold, silver, and nickel mining in the Porcupine-

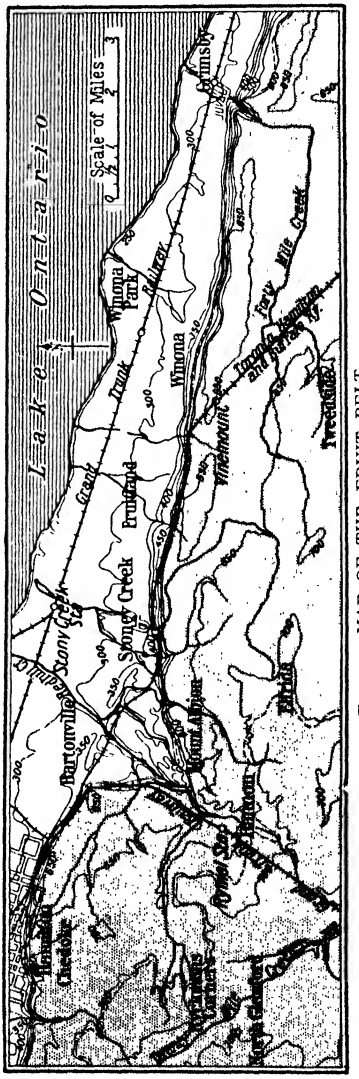


FIG. 52.—MAP OF THE FRUIT BELT.
This map shows part of the plain that lies between the high land to the south and the lake to the north. Notice the sudden drop from plateau to plain.

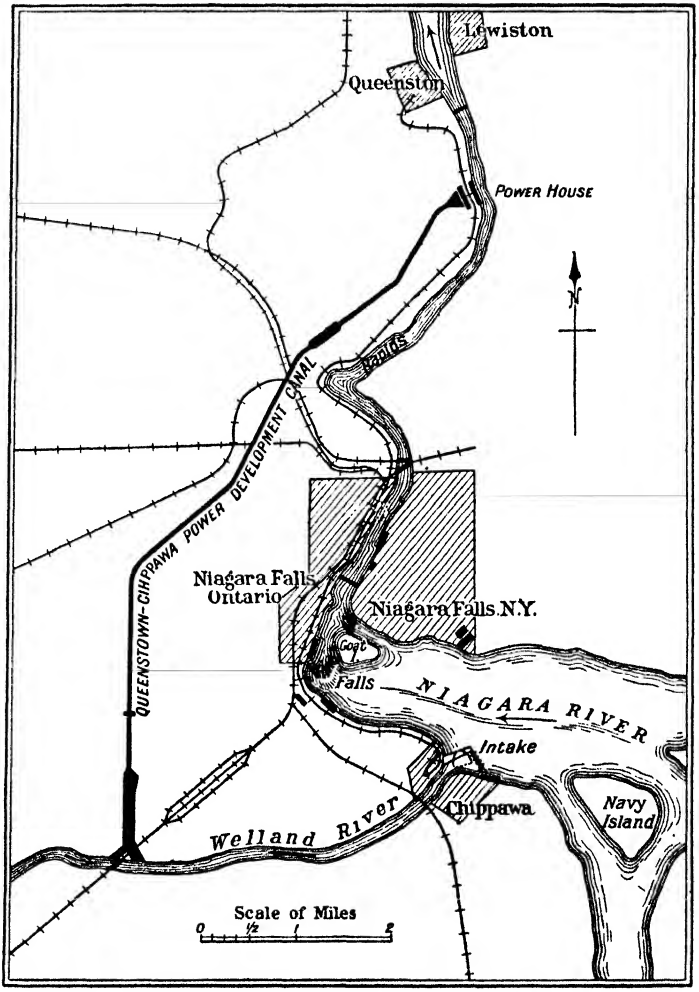


FIG. 53.—THE CHIPPAWA POWER SCHEME.

The first power plant was placed at the Falls on both the Canadian and American banks. But there is a considerable fall in the gorge from the Falls themselves to the foot of the escarpment at Queenston. By means of a canal from the Welland R. across the plateau to a point near the scarp face, the full drop over the Niagara escarpment can be obtained.

Sudbury-Cobalt triangle and the wood-pulp and paper works such as those of Abitibi. Economic geography is essentially the economic study of places and not the detached study of economic statistics.

The whole world may be considered in this manner. It would reveal in a remarkable fashion how the application of modern science in the utilisation of the regional resources of Nature for the use of Man is changing and refashioning the world.[1]

[1] The following news-clip (May 1926) is typical of these changes :

WATER-POWER IN CANADA

WILDERNESS TRANSFORMED INTO INDUSTRIAL CENTRE

It is estimated that by 1930 development works in the new industrial area on the Saguenay River in Quebec will represent an expenditure of nearly $200,000,000. . . . A few years ago the Saguenay was almost an unknown wilderness. The late Sir William Price recognised the possibilities of water-power development at the mouth of Lake St. John, and in 1925 the Duke-Price Power Company was organised. . . . The company's plant at Isle Maligne is one of the largest hydro-electric stations on the North American continent, being exceeded in installed capacity by only two plants—those at Niagara Falls. . . . The Aluminium Company of America intend to spend many millions of dollars on the construction of great mills to manufacture aluminium ingots and on the development of a city in connection with the mills. . . . Other large developments in this area are expected. Terminal harbour facilities are now being constructed at Port Alfred which shall accommodate large ocean-going vessels.

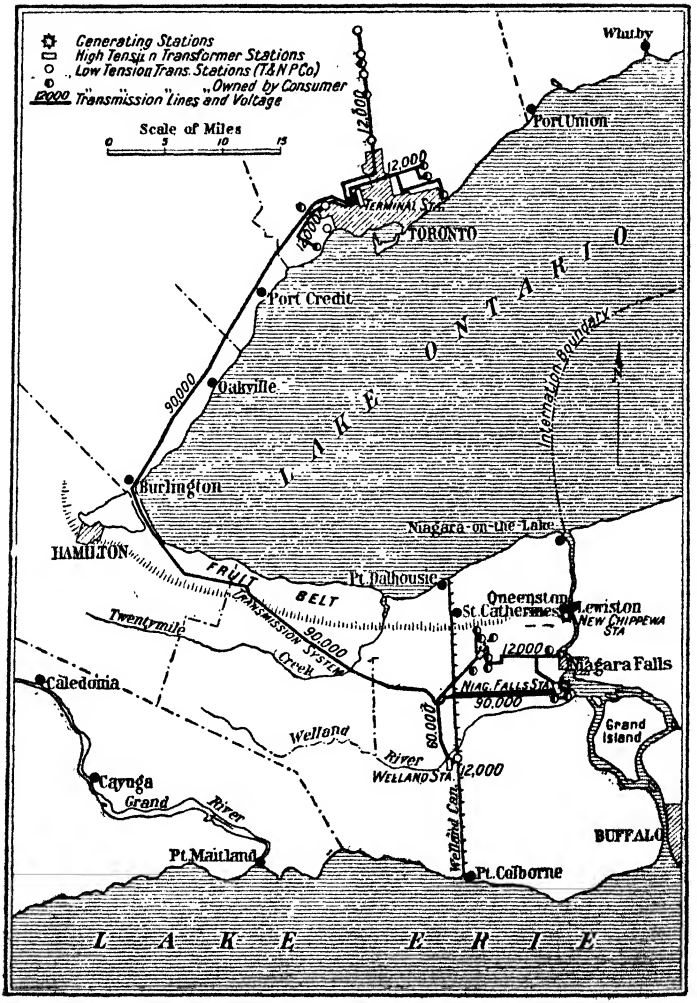


FIG. 54.—POWER TRANSMISSION FROM NIAGARA.

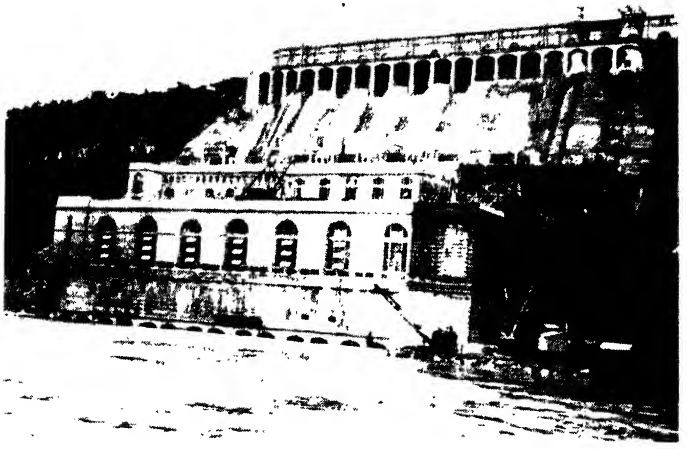


Photo. W. H. Barker.

FIG. 55.—CHIPPAWA POWER HOUSE.

This power house has the full fall of the Niagara escarpment. Seven of the penstocks are here seen completed. The remaining two have now been finished.

Photo: W. H. Barker.

FIG. 56.—FOREST AND LAKE.

The vast Laurentian plateau consists of forests of soft woods with innumerable and inextricable waterways and lakes. Hydro-electric power can be readily generated either for making paper pulp from the timber, or extracting metals from the rich ore bearing rocks.

Historical Geography

The adaptation of man to his physical environment is never fixed nor final. Readjustment is constantly necessary to meet changes in man or nature. The introduction of the horse into North America by the Spaniards ultimately changed the whole life of the Indians of the Plains; the displacement of the Indian by the settler farmer made still greater changes. Climatic desiccation in the Tarim Basin has altered entirely the region of Lop Nor. The Hwang-ho—China's Sorrow—may change completely the geography of its lower flood plain by a return to its course south of Shantung, which it abandoned in 1852.

Progressive adjustment is historical geography—the history of places instead of peoples. We may express it in another way. Each region has for every epoch, its geography. If we could reconstruct the physical conditions of long ago, we might discuss the response of man to those conditions in each succeeding age—the geography of the Midlands in the Bronze Age, in Roman times, in the Stuart period, and so on. Consider all these " geographies " as stages in a continuous evolution, and we have historical geography. The significance of such a subject may be shown by two examples.

The eastern route of Britain from the English

plain to that of Scotland passed northwards between the E. Durham plateau and the Pennine Moors. Through the gap at Ferryhill it reached the middle Wear, followed the valley of the

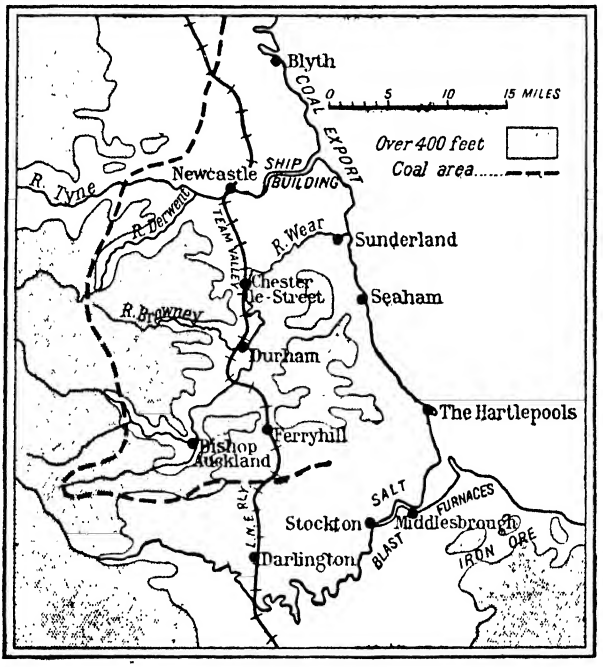


FIG. 57.—THE EASTERN ROUTE.

The great natural eastern route to the north is here shown passing from the North-allerton "gate" through the gap at Ferryhill, past Durham and Newcastle for Berwick.

Team—the old course of the Wear—to a crossing of the Tyne where the Ouseburne directed the route northward. Within this section no site could compare in strategic importance with the

hill of Durham, almost completely surrounded by the natural moat of the Wear. In days when defence was of first importance, Durham with its cathedral and castle (now the University) became the capital city of this region.

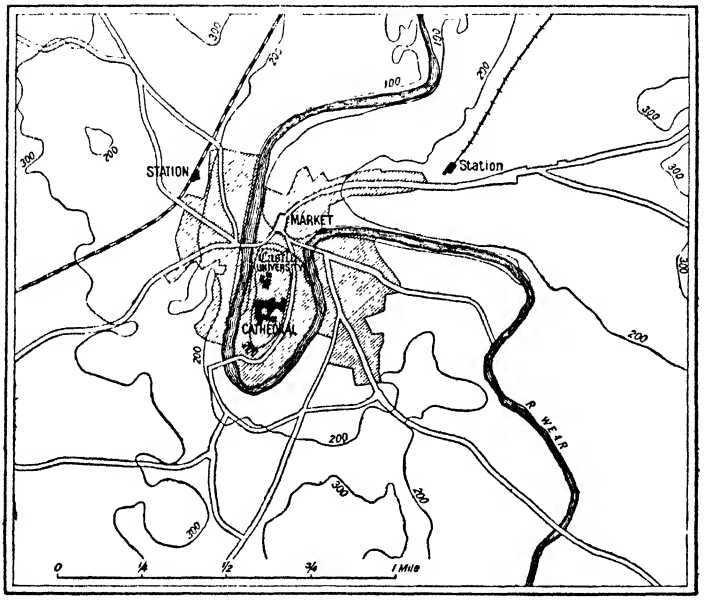


FIG. 58.—THE SITE OF DURHAM.

With the development of coal-mining on a large scale and the consequent growth of big industry, accessibility, not inaccessibility, became essential for the growth of large industrial centres. Though Durham stands in the midst of the coal-field, it remains an old-world city, its " capital "

function for the region as a whole being transferred to Newcastle-Gateshead, where the north-south route crosses the navigable Tyne[1] at approximately the head of navigation.

The study offers a striking example of changing

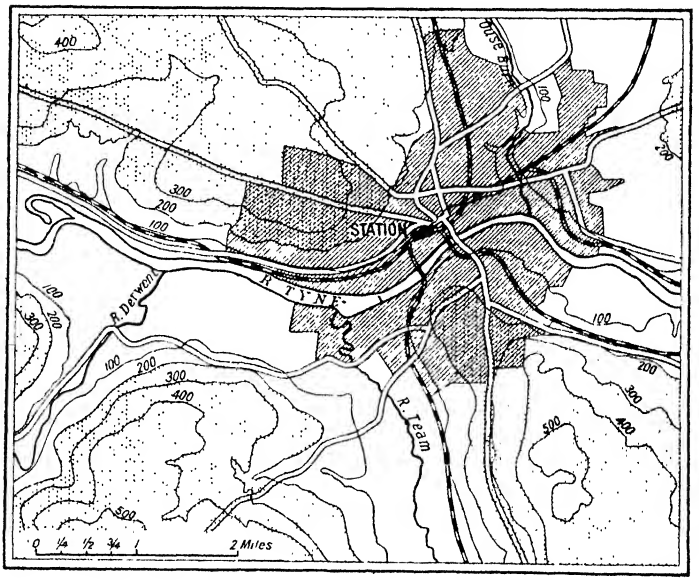


FIG. 59.—THE SITE OF NEWCASTLE-GATESHEAD.

geographic values. No effort on the part of the citizens of Durham could have retained under modern conditions the premier position of their city. On the other hand, Nature *made possible*

[1] Made so by dredging.

certain developments at Newcastle, if the citizens made an effort, as in the construction of docks, the dredging of the river, and so forth.

A similar but more striking illustration may be taken from the Mersey basin. The traffic from Scandinavia which crossed Britain in the Bronze Age followed routes determined in great measure by physical conditions. "One route led from the Yorkshire coast through York to the Aire Gap. Others have been traced from the borders of the Fens into Leicestershire, where they met at Bardon Hill; thence the route passed through Ashby-de-la-Zouch as far as Burton-on-Trent; where it seemed to be pointing to the Peak District. There appears to be a route running thence by Macclesfield and Knutsford towards Warrington, while there are signs that the route through the Aire gap also turned south towards the same spot.

"The fact that both these trade routes run to Warrington, which seems then to have been an island in the middle of the Mersey, shows that here we have a port from which in the early Bronze Age Baltic traders set sail for Dublin Bay. Warrington, therefore, rather than Chester, was the first predecessor of Liverpool, and the Mersey holds its own as the earliest estuary used for the western trade."[1]

[1] H. Peake, *The Bronze Age and the Celtic World*, p. 46.

In Roman and later times the dominance of the English Plain for a variety of reasons, the significance of the Midland Gate, the routes north to the crossings of the Mersey and west along the North Wales coastal plain, gave prominence to Chester, which, in addition to these regional relationships, had a good strategic site and could be used as the port for Ireland.[1] With the growth of England there was nothing to check the prosperity of Chester, nor did she fear a rival. Liverpool was but a "creek." Then came the silting of the estuary of the Dee and the frantic efforts of the citizens by outports and the "New Cut" to save their trade and port.

The "bottle neck" of the Mersey between the sandstone bluffs is scoured free of silt at ebb and flow of tide. Tidal race and lack of anchorage made a great "port" at Liverpool impossible until the days of docks. Then the triumph of Nature in the Dee and of Man in the Mersey saw Liverpool displace Chester and draw vitality from the rapidly developing industrial region of S.E. Lancashire.[2] Transport from the cotton

[1] For a short study of Chester, *vide* F. T. Howard, "The Geographical Position of Chester," 6 pp., *Geog. Teacher*, Autumn 1919.

[2] Parkgate was developed as an outport of Chester and a century ago a ship canal to Manchester was suggested with

towns was developed at great expense across or round the mosses of the Mersey.

Then at the close of the nineteenth century a new epoch commenced. The increased size of the Atlantic ferries—floating palaces—and the difficulties of the bar at Liverpool in spite of dredging and training walls, have been important factors in deciding the transference of that type of shipping from Liverpool to Southampton. Moreover, Manchester conceived the plan of canalising the Irwell-Mersey and bringing the sea to Manchester. Consequently Liverpool finds that even cargo boats which normally would have discharged their cargo on her wharves now pass by and traverse the thirty miles of ship canal to the docks at Salford.[1]

Warrington, Chester, Liverpool, and Manchester, what a study these ports offer in historical geography! This, however, is but an illustration of what the historical geography of the home

Parkgate as the seaward end. But Liverpool was by that time in a position to scoff.

These lords of the shuttle
By a process most subtle,
A canal mean to cut from the ocean,
And the great Irish Sea
They'll unite with the Dee
But it's Fiddle de Dee I've a notion.

Vide Coward, *Picturesque Cheshire*, p. 186.

[1] Even so, Liverpool's trade is steadily increasing.

region may offer to every school if the teachers of history and geography will co-operate.

History of Geographical Discovery

We may close this chapter with brief comments on two suggestions for co-ordinating geographical study with history and science. The history of geographical discovery may be made a useful combination of the methods of history and geography. Such narratives as those of Hakluyt and Purchas as they stand have little bearing on geography. But the great voyages and expeditions may be followed on a globe or map and the narrative read in the light of our present knowledge of physical conditions.[1] Maps and globes made or inspired by travellers and explorers may be studied and compared with modern maps. The revealing of the world to children may actually be based on the revealing of the world to European explorers. First would come the Biblical lands of " the fertile crescent "—Mesopotamia, Syria, and Egypt; then the Greek and Roman world based upon the Mediterranean; the Arab world touching Europe in " Africa Minor " and the Mediterranean, expanding east to Central Asia and south to the Indian Ocean. Then follow in turn Marco Polo and the mediæval travellers to

[1] *Vide* J. Jones, *Geography in Discovery*—a book for scholars on these lines.

the East, the great Age of Discovery and the opening of the ocean routes, and finally the penetration of the continents—the romance of history and geography rolled into one !

Geography and Science [1]

Of recent years, some scientists have urged a close bond between elementary science and geography in the interests of elementary science.

It is agreed that all scholars should have some acquaintance with the elements of biological and physical sciences. The danger, one is informed, lies in the fact that only " snippets " of the various sciences can be given. It has been urged, therefore, that a unifying principle should be sought in geography—at least in the elementary treatment of the science. Simple studies in biology, physics and mechanics can be associated with man's increasing knowledge and utilisation of the powers and the resources of Nature. The wisdom of this course has not yet been fully tested in practice.

[1] *Vide* British Association Reprint, *Geography Teaching*, p. 329.

CHAPTER VII

EQUIPMENT

VAGUE generalisations can be avoided only by continual exercise in the reading and writing of geographical documents. It has been said that the " new " geography lacks the precision and definition of the " old." This is but a partial truth. To state, for example, that Flamborough Head and Spurn Head are capes on the Yorkshire coast, even to point them out on the map, falls far short of modern requirements. The chalk cliffs of Flamborough, the even sweep of the south extending coast with Bridlington and other health-resorts, the extension and cusp character of Spurn Head, constitute associated features largely under the influence of the shore currents of the North Sea. The two capes stand related therefore, and their appearance can only be visualised by scholars by means of photographs or views. Their own record of the region must take some form similar to Fig. 60. This is but a simple illustration of a general principle. The " imaginary forces " of the scholars are not sufficient to bring the world into the class-room.

Equipment for geography teaching is essential. Bricks cannot be made without straw nor structures be erected in the air. Maps, globes, pictures, and such like aids are requisite and accommodation is needed for their display and use. Talk and text-book alone cannot develop accurate regional pictures. Geography is not an exercise in the association of ideas having a time-sequence, but is the association of phenomena having space-relationships. The fury of the sea on the buttress of the wolds, the sweep of the shore currents, the effect of the Humber mouth, the health-resorts of the coast, and the farming character of Holderness, all these together make the living—or rather changing—picture of this region. The change in Nature and the adjusted works of man is slow but sure, as shown by the retreating coast and the "lost towns" of Holderness (Fig. 61).

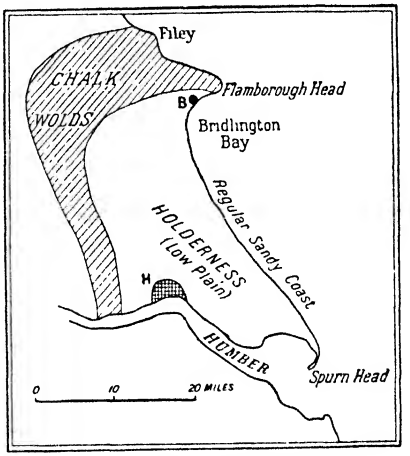
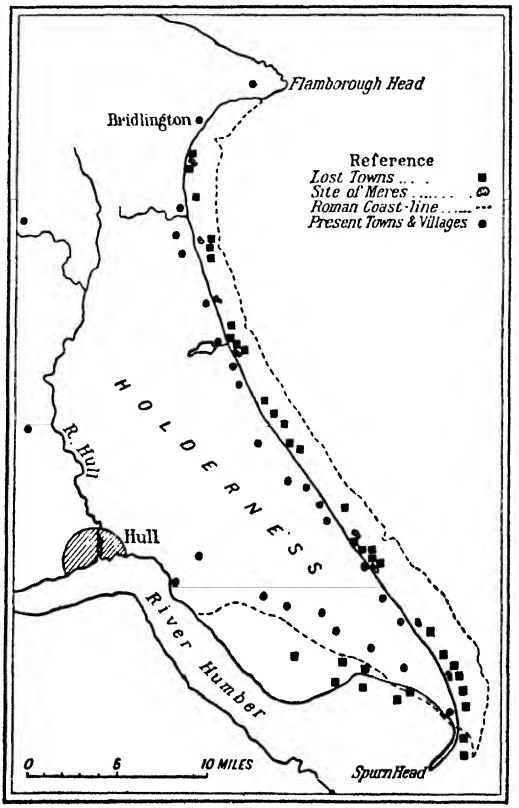


FIG. 60.—A SCHOLAR'S SKETCH.

Inadequate equipment and unsuitable accommodation too often result in inaccurate geography.



[*After T. Sheppard.*

FIG. 61.—THE CHANGING COAST OF YORKSHIRE.

Of maps and globes the following may be taken as minimum requirements :

Primary Schools.—(1) (*a*) Black and white globe. (*b*) Physical globe.

(2) Clear physical wall-maps of (i) the world, (ii) the British Isles or preferably the separate maps of England and Wales, Scotland and Ireland, (iii) each of the Continents.

(3) A wall-map of the local region.[1]

Secondary Schools.—(1) In addition to the apparatus enumerated above, a school should have maps of the world, of each continent, and of the British Isles showing seasonal—rather than annual—climate conditions, vegetation, communication, and political divisions.[2]

(2) Teaching sets of O.S. maps of the school locality.[3] One set should consist of all the map sheets in which the school is located. One other should be a class set of the 1 inch to 1 mile map of the locality.

(3) A full year's set of (i) the daily weather charts issued by the Meteorological Office, and

[1] If not published, one can be made either by the teacher or by mounting together the O.S. map sheets ($\frac{1}{2}$ inch or $\frac{1}{4}$ inch to 1 mile).

[2] Some map publishers issue Wall Atlas series of approximately six maps for continents showing these phenomena. The edition eyeleted and folded may be found most convenient.

[3] For particulars of cheap rates for educational purposes communicate with the Director General of the Ordnance Survey, Southampton.

(ii) the monthly charts of the North Atlantic and Indian Oceans.[1]

Much useful apparatus, however, can only be acquired slowly and with patience. Suitable picture postcards, views from newspapers and magazines can be mounted and made into teaching sets. Railway companies, local authorities, Dominion and Foreign governments willingly assist with pamphlets often containing maps and views, many public bodies have sets of lantern slides which they issue to schools on loan.[2] Some of the principal motor-bus companies have models of the district over which their buses pass and for a school in one of these districts, a replica can often be obtained at small cost.[3] It is now a frequent occurrence for newspapers and illustrated magazines to issue diagrammatised maps

[1] Sold by J. D. Potter, 145 Minories, E.1. The charts of a previous year will serve the purpose of geography, and these can often be obtained at a considerable reduction.

[2] For slide sets on the colonies and dominions of the British Empire, teachers should communicate with the Visual Instruction Committee of the Royal Colonial Institute, 22 Eccleston Square, S.W.1.

[3] An organisation of teachers could readily construct a cast from which any number of models could be obtained. For the construction and use of a relief model *vide* (i) *Model Constructing*, A. H. Spary, *G. T.* Summer 1913. (ii) *Descriptive Handbook to the Relief Model of Wales.* W. E. Whitehouse. National Museum, Cardiff, 6*d.*

and panoramas of regions for the moment in the public eye. Teaching sets of simple diagrams and sketch maps can be made on the cyclostyle or similar apparatus. Messrs. D. Gestetner have a process for reproducing on the cyclostyle line drawings from books, etc., which large schools or groups of schools could use. Any ordinary line map or illustration can be reproduced on an indestructible silk capable of being used for reproduction purposes over a considerable period.

Many schools which at present have not felt the full flood of the new movement which regards a working knowledge of the modern world as essential have not taken advantage of many new inventions—the epidioscope and the school kinema. Even the ordinary lantern and the stereoscope have not yet been utilised to their full capacity. Those schools which have used these means of bringing actual scenes vividly before the scholars speak highly of the results which follow, not only in geography but in general education.

From the tabulated material thus accumulated may be drawn the " specimens " required ; with them may be performed many geographical experiments. Sailing-lists and time-tables of shipping companies and Canadian railways enable journeys to be made with picture sets for scenery. A cut-out map of the British

Isles to scale may be placed on the map of Australia or any other region for comparison of size. How do Europe, India, China, Arabia, and the Sahara compare in area with each other? How does a railway journey from Bombay to Calcutta compare with that from London to Glasgow or Paris to Constantinople?

The notes of the pupil are similar in form and character to the teacher's apparatus. They consist of sketch-maps and diagrams—possibly his own collection.

From these particulars it may be seen how teaching apparatus can be built up—often with the help of the scholars themselves—with maps, views, and diagrams appropriate to each lesson or group of lessons.

Practical exercises—taken as part of the ordinary lessons—require suitable accommodation for the spread and manipulation of maps and other material. Modelling in clay and cardboard is important in connection with the early teaching of home regions and typical environments in other lands. In senior classes it is possible to make distribution maps from agricultural, population, and other statistics. Children should be taught at every stage to illustrate their work by sketch-maps drawn rapidly and boldly to show special points or to show the influence of one set of factors on another, e.g. relief and routes. They

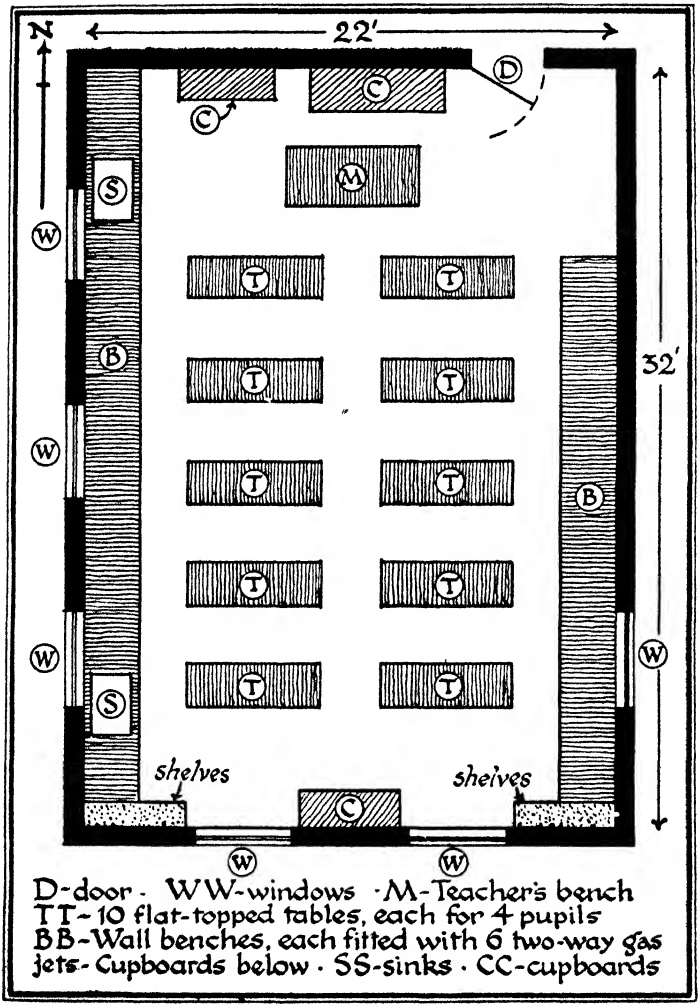


FIG. 62.—PLAN OF ROOM IN AN ELEMENTARY SCHOOL ADAPTED FOR PRACTICAL WORK.

should be taught, in fact, to express themselves in maps as a form of geographical shorthand.[1]

The geography-room is not a luxury, it is a necessity. Even if the teacher could carry his apparatus about with him, it is highly probable that the rooms would be unsuited for its display

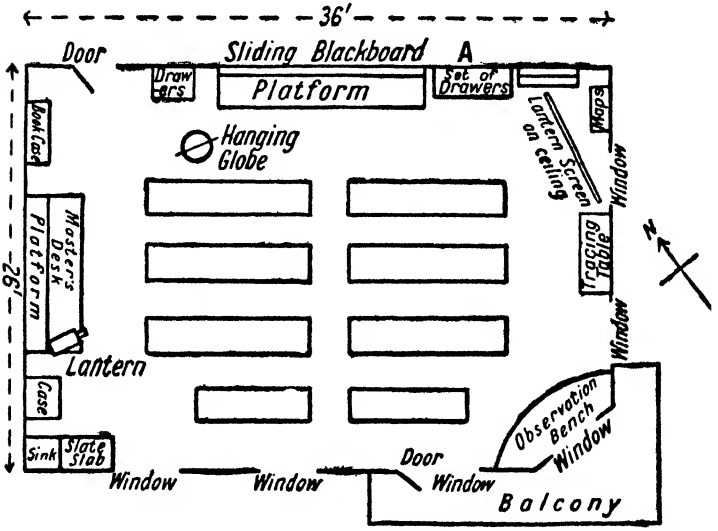


FIG. 63.—PLAN OF THE GEOGRAPHY ROOM, WILLIAM ELLIS SCHOOL.

and for the map work of the scholars. In the primary school a room similar to that shown in plan in Fig. 62 would meet the common requirements of geography, science, nature study, and practical mathematics. An empty room where one exists

[1] The following books are suggestive: Taylor, *Sketch-map Geography*; Lobeck, *Block Diagrams*.

FIG. 64. NORTH CORNER OF THE GEOGRAPHY ROOM, WILLIAM ELLIS SCHOOL.
(From *Geography in School*, facing p. 317.)

FIG. 65 WEST CORNER OF THE GEOGRAPHY ROOM, WILLIAM ELLIS SCHOOL.
(From *Geography in School*, facing p 346.)

can readily be adapted. For the secondary school a specially designed geography room is essential.[1] The room at the William Ellis School, N.W., illustrates essential particulars. The whole planning of the room is designed for effectiveness in teaching. The master's desk, containing drawers for lantern slides, etc., is not placed in front of the class, but at the side. The lantern is placed on this desk, while the screen is in a box fixed to the ceiling in such a position as to be seen quite easily by everyone in the room. A slate slab and a sink are provided for modelling and other purposes, and near these is a glass-fronted case for the exhibition of models or other work either complete or being made. An interesting feature of the room is the observation bench, beneath which are storage cupboards, which are also to be found under the slab and sink. The window under which this bench is fixed faces due south, so that very many exercises can be worked without leaving the room. The sketch-plan shows an observation balcony which can be reached by means of a door near the bench. The long wall facing the class has been utilised for the display of maps which are hung on racks drawn up and down by means of cords over pulleys. One table, containing shelves and cup-

[1] A number of rooms are described and illustrated in the *Geog. Teacher*, Autumn 1912.

boards, has been fitted with a plate-glass top under which are four electric lights. This, of course, is for tracing purposes. The desks are flat-topped and are provided with drawers large enough to take an ordnance map. A cupboard, for the exhibition of geological specimens, has been included. There is a small set of drawers large enough to store ordnance maps and tracing paper, and another which will take larger maps, such as Bartholomew's ½ inch to the mile and large geological maps. The wall-maps are hung in a cupboard, and this is probably the best way of storing. Other fixtures included in the room are shown on the sketch-plan. The photographs show corners of the room, and the various fittings will be readily identified by a glance at the sketch-plan, note being taken of the fact that the positions of the two sets of drawers have been changed.[1]

TEXT-BOOKS

The most important text-book is the atlas.[2] Every scholar should possess one. It is the magic

[1] L. Brooks, *Geog. Teacher*, Spring 1914.

[2] The British Association Report, 1915, on *Atlas and Wall-Maps for School Use* makes the following recommendation:

SENIOR SCHOOL ATLAS

" All world-maps should be on the same projection. As few scales should be employed as possible. All the continents

carpet conveying him under the teacher's guidance to the utmost limits of the world. A Junior School Atlas should contain :

i. Two or three world-maps showing, in a simple and bold way, relief, ocean currents and drifts, winds and rainfall, and vegetation zones.

ii. A physical map of each continent.

iii. Physical and political maps of England and Wales, Scotland and Ireland.

iv. A large-scale map of the local region, if possible.

A Senior School Atlas should contain :

i. World-maps showing relief, population, ocean currents, seasonal temperatures, winds, and rainfall.

should be shown on the same scale (1 : 40,000,000), except that Europe might be on scale 1 : 20,000,000. For larger-scale maps simple multiples of this scale are recommended. In maps of climate, the annual distributions are less useful for teaching than the seasonal, and it would be a great gain if the summer and winter conditions were represented on maps of the North and South Hemispheres. Maps representing the distribution of population have high value ; geological and vegetation maps should be included if possible, but are not essential. Historical and economic maps belong to special atlases or to text-books and should be excluded from the School Atlas. It will be enough to indicate the busier regions, industrial and agricultural, if these do not emerge sufficiently clearly from the population map." See report for list of suggested maps and the modifications for a Junior School Atlas.

ii. Physical and political maps of each continent together with maps showing the seasonal climate and vegetation on a smaller scale.

iii. Maps of the most important regions of the world on scales ranging from 1 : 5,000,000 to 1 : 20,000,000.

iv. The British Isles—bathy-orographical, geological, and climatic—and the physical and political maps of England and Wales, Scotland, and Ireland.

Of ordinary text-books little need be said. They are at best but compilations, for few authors have visited all the lands which they describe. A teacher is wise to use to the full observations made in his own travels and illustrations culled from the writings of authorities. Text-books need therefore to be selected with caution and should never displace the actual lessons of the teacher.

A library of good books and atlases is an asset of supreme importance. The selection must be determined largely by the character of the work and the interests of the teacher. The bibliography appended (p. 190) is little more than a first suggestion of books to be considered.

We conclude, then, that geography teaching to be wholesome and effective, needs adequate apparatus, especially of maps and pictures. These need not be expensive, for most teaching diagrams and views will have to be made or selected to meet the special requirements of the scheme.

Full use, too, must be made of good extracts from the narratives of travellers. In every way and by every possible means the scholars must be made to travel and gather sound impressions of the regions of the world.

CHAPTER VIII

HIGHER EDUCATION

"I BELIEVE," wrote Dr. H. R. Mill in 1901, "that geography will be found to afford an important clue to the solution of every problem affecting the mutual relations of land and people, enlightening the course of history, anticipating the trend of political movements, indicating the direction of sound industrial and commercial development." But he adds that if geography is to give a clear and definite answer, it must be studied as it has never yet been studied in this country. It must become the object of intense, whole-hearted, and original study by men who are willing to devote, not their leisure, but their whole time to the work.[1]

Since the above pronouncement, provision has been made for the study of geography in our national scheme of higher education. In the schools, geography has its place in the advanced courses and may be offered along with history or a science—or both—for the Higher School

[1] H. R. Mill in *Scot. Geog. Mag.*, October 1901.

Certificate. Almost all the Universities now offer special degree courses in the subject.

Upon the foundation laid before matriculation or the school certificate examination may be built instruction of supreme importance to all, but especially to those whose future career will bring them directly into touch with problems arising from the present adjustment of social and economic life to location and physical environments—administrators, social workers, missionaries and merchants.

The " advanced course," as it is called, stands intermediate between the normal school and the university. It crowns the work of the former and introduces the latter.

" To the school teacher geography is a means of education ; it is one of the tools he uses in his work of training his pupils to fill their future place as citizens of their country and of the world. He must use it because of the importance of a knowledge of geographical facts and relations to the intelligent citizen ; and he may so use it as to make it a valuable means of developing and guiding the sympathies and the mental powers of the children and to give them the basis of a well-balanced outlook on the world. . . . The university takes all knowledge for its province, and is continually seeking to extend human knowledge in all its branches and to attain a truer expression and interpretation of existing knowledge. Its study of geography is directed towards

these ends. It also uses geography as a means of culture, in so far as it is continuing and expanding the work of producing citizens by a liberal education. . . . These differences lead to the conclusion that the school should not attempt, in any branch of geography, to deal with any but assured knowledge. Matters on which our knowledge is still too imperfect to permit of definite and assured statements, as, for instance, the exact cause of the monsoons, are not suitable for treatment in school. Such a problem is one for discussion in the University. The school should not concern itself with mere hypotheses or speculations in geography. The amount of assured fact and accepted explanatory theory which is available is more than sufficient to occupy all the time that can be allotted to the subject and to form a vehicle for all the training of mind and emotions that is possible at this stage. . . . The chief direct aim of school geography is to give the pupils an accurate general knowledge of the distribution and characteristic features of the countries of the world, with more detail for those facts which are regarded as more important. It must take the whole earth as its topic. . . . In some cases the causes of certain facts must be omitted. It is not possible to give an explanation of the planetary winds which is at once simple and accurate. The same is true of the distribution of land and water, of high and low land, of the races of men and of other important series of facts. Hence these should be regarded in school geography as initial facts of observation. The investigation of such matters is work for the university stage. And so is the definite study of the more

specialised divisions of geography, such as cartography, geomorphology, economic, racial, and historical geography. So far as these come into the school syllabus they should come in as incidentals, where they are needed to complete or illustrate the direct work of the course." [1]

From this, two features in higher education are obvious. Firstly, the " advanced course " bridges two types of geographical study and should partake of the nature of both. Secondly, specialisation and diversity of treatment become increasingly possible and desirable, according to the special interests or facilities of the school or university.

One thing should be clearly understood. If work up to intermediate standard is done in the schools, the universities may reasonably expect that the pupils have had some training in independent work. In botany, physics, or chemistry it is assumed that scholars have used scientific apparatus and performed some experiments. May we not reasonably expect pupils of this age to have made some experiments in pure or applied geography ; to have investigated the geography of some village or part of a town, to have studied certain land forms in their origin and the utilisation of their associated rocks and soils, and to

[1] C. B. Fawcett, " School and University Geography " in *Geography in Education.*

have traced by old maps, views, and survivals in buildings, roads and place-names, the evolution of the centre of the city or other suitable place. Their laboratory note-books should reveal the construction of diagrams, charts, and graphs based on official documents and statistics to elucidate certain geographical features. The map-measurer, planimeter, and pantograph should be familiar pieces of apparatus.

The characteristics of official maps in common use issued by Britain and the principal foreign countries should be known by their usage in connection with the studies of those countries. Schools must not only have adequate equipment, but it is essential that the scholars themselves shall know how to make geographical observations and correctly record them. They may even be required to bring an O.S. map up to date. It may be that the 25-inch map being used for an original study of some village or section of the town is out of date. The scholar should be able to bring the map up to date with a sufficient degree of accuracy to serve the needs of his own inquiry.

It is not possible nor is it desirable to make suggestions for geography in Advanced Courses and less still for the Universities. It is essential for each institution to select those branches of the subject for which it is best equipped. What

follows, therefore, must be regarded merely as a statement of certain experiments in advanced studies in geography with which the author has been directly concerned. The following is the general scheme of the advanced course in geography approved by the Board of Education for the Leyton County School under Article 43 of the 1918 Regulations for Secondary Schools :

I. The Physical Basis of Geography (i.e. the geology and physical laws necessary for the correct appreciation of geographical phenomena), with special reference to the British Isles.

II. Regional Study of the World, with special reference to economic geography. (This includes the handling of Colonial and Overseas Trade Reports, commercial reports and statistics.)

III. Detailed Study of—

(*a*) Land of the Five Seas (i.e. Mesopotamia, Syria, and Asia Minor) ;

(*b*) France ;

(*c*) United States of America with adjacent Canada.

IV. The Influence of Geography on History and Politics, with special reference to (*a*) Europe, (*b*) Britain and the British Empire. (Outline course only).

V. The direct study of the local region in conjunction with the studies in history and botany.

Provision also made for an excursion each year (approx. 10 days) to study some other region in the field.

As the result of experience, this scheme would now be slightly modified but the general principles for such an advanced study may be set out as follows :

COURSES IN PURE GEOGRAPHY :

i. The World as a whole ;
ii. Two or three selected major regions ;
iii. The " home " region.

COURSES IN APPLIED GEOGRAPHY :

One or more of the following according to the special circumstances of the school :

i. History of Geographical Discovery ;
ii. Historical Geography ;
iii. The Physical Bases of Geography [1] ;
iv. The Geography of plant and animal distributions.

The world as a whole can well be studied in more detail and with more understanding than was possible during the four-year course. The relevant physical phenomena (it may be structure, relief, climate, or natural vegetation) can be more fully appreciated, the limitations of their influence

[1] This is so fundamental in pure geography that if not taken as a special course it would have to be substantially incorporated in the studies of pure geography.

realised, and the extent of man's utilisation of them better understood. The emphasis of the study may vary considerably from the principles of Brunhes in *Human Geography* to those of Bowman in *The New World.*

In the selected major regions areas of contrasted adjustment should be chosen. The following are suggestions with one or two appropriate books for general reading[1]:

(i) Lands of ancient civilisations feeling the impact of modern economic enterprise.

(*a*) China: F. H. King, *Farmers of Forty Centuries*; Leong and Tao, *Village and Town Life in China.*

(*b*) India: Ronaldshay, *India: a Bird's-eye View.*

(*c*) "The Lands of the Five Seas" (i.e. Arabia, Syria, Iraq, and Asia Minor): Doughty, *Wanderings in Arabia* (abridged edition); Huntington, *Palestine and its Transformation*; Hogarth, *The Penetration of Arabia* and *The Nearer East.*

(ii) Lands of backward peoples under European development.

Tropical Africa: Lugard, *The Dual Mandate*; Norman Leys, *Kenya.*

[1] They do not include reference and text-books.

(iii) Lands developed comparatively recently under the conditions of modern times :

(*a*) Canada and U.S.A. : Colby, *Source Book for the Economic Geography of North America.*

(*b*) Australia and New Zealand.

(*c*) Argentine : P. Dennis, *The Argentine Republic.*

(iv) Lands of continuous development in which internal economy and external contacts offer a wide circle of study.[1]

(*a*) France : E. de Martonne, *Les Régions géographiques de la France.* Vidal de la Blache, *Tableau de la géographie de la France.*

(*b*) Central Europe.

The home region or a district within easy reach should be studied in considerable detail and by personal investigation. The results of the study should be assembled on maps. Indeed, all the three types of regional studies should be accompanied by cartographical studies of an order comparable with the detail given to their study.

In applied geography the great danger is to overlook the geographical import of the study. Comment has already been made on the applica-

[1] The British Isles must form part of every scheme.

tion to history.[1] In geomorphology the scientific study of land form and scenery must be definitely localised. Desert conditions must not be discussed in the abstract, but with reference to definite regions : the Sahara with its oases and north-south routes ; the deserts of Central Asia in relation to relief and the age-long east-west travel routes. Fold mountains require to be discussed in association with certain effects of geographical significance : the Pennines and the separation of the east and west coal-fields ; the Alps and the great longitudinal valley, the plain of the Po and the transverse passes radiating from Italy ; the Himalayas with the Siwalik and similar foothills and the Ganges plain.

Biological studies, in so far as they are geographical, should include the physical bases of natural vegetation in the several regions and the economic use to which they are or may be put. Likewise in cartography, it is not surveying or mathematics which is of prime importance. The determination of relative reliability of maps is the aim rather than the actual construction of a reliable map. What are the limitations and the character of maps based on triangulation with plane-table survey or traverses, on reliable traverses or on approximate traverses and compass sketches ? The mathematics of a sphere is less

[1] *Vide* p. 129.

important than a survey of the map projections in general use and the problems which each of these seeks to solve.

Lastly, scholars should be encouraged to read widely standard geographical literature. The " impressions " of foreign countries must, in the majority of cases, be derived from the works of travellers who are in the front rank both for the accuracy of their observations and the lucidity and style of their narrative. Such literature would include : Mary Kingsley, *Travels in West Africa* ; Curzon, *Problems of the Far East* ; Bates, *A Naturalist on the Amazons* ; Dufferin, *Letters from High Latitudes* ; Abbé Huc, *Through Tartary and Thibet* ; Bryce, *Impressions of South Africa.*

A library of good travel literature is essential.

Advanced courses in great measure hang together with degree courses in the Universities. The geographical movement spread upwards until it inevitably affected the higher seats of learning, and the last decade has seen honours schools established in many British Universities and geography departments in all. Their influence is now spreading downwards to the schools, to the mutual advantage of both classes of institution. If specialisation is desirable in advanced courses, it is much more so in universities. Research can only be followed, as a rule, in a

very limited field, and it is well for the several universities to offer diversity of facilities for geographical training. In the University of Manchester the degree courses in geography are essentially regional in character, progressing from large regions studied in outline only to smaller regions studied in increasing detail.

Certain local considerations determine in a measure the details of the courses. An honours degree course in any subject normally extends over three years, with the preliminary examination at the end of the second year (Part I) and the final examination at the end of the third year (Part II). During the first two years the general principles and important applications of the special subject are studied on a foundation of general education through related studies. The third year follows a more intensive study and carries investigation to the threshold of research. These principles have been followed in geography, while advantage has been taken of the important Mills Collection of maps and literature illustrative of the History of Geographical Discovery. The School is fortunate also in the facilities offered by the Manchester Geographical Society and the co-operation in local studies of the Manchester Town Planning Committee.

In outline, the courses of study are as follows :

First Year : The intermediate courses in

(i) Geomorphology (2 hours, and 3 hours laboratory).

(ii) Meteorology and oceanography (1 hour).

(iii) General and regional world geography (2 hours, and 3 hours laboratory).

(iv) A field study of the local region.

Second Year :

(i) The study of selected major regions :[1]

(*a*) The Industrial Lands of the North Atlantic (2 hours).

(*b*) Tropical Africa.

(*c*) South Africa.

(*b*) and (*c*) run consecutively 3 hours per week, one of which is a seminar).

(ii) Modern History with a short course on American History.

(iii) Laboratory practice (3 hours).

Laboratory work consists of exercises in the use and interpretation of maps, weather charts, graphs, etc. Instrumental work is tested not by the attainment of accuracy of use in the field, but in the knowledge of the reliability of documents constructed by their aid. Panorama drawing, field sketching, and block diagrams form important

[1] These are determined by the experience of the staff, the object being to select only those regions of which the lecturers have some personal knowledge. For this reason also, the department specialises in its facilities for the study of Africa.

features of the work. Map projections are not studied as spherical mathematics but those in common use are discussed from the standpoint of their character and usefulness for the maps drawn upon them.

The set books are Mackinder, *Britain and the British Seas*; Colby, *Source Book for North America*; Lugard, *The Dual Mandate*; Bryce, *Impressions of South Africa*; Evans, *Black and White in South East Africa*. The subsidiary subjects during these two years are political economy and two foreign languages.

Third Year :

(i) The Study of France (3 hours). Text-books: E. de Martonne, *Les Régions géographiques de la France*; Vidal de la Blache, *Tableau de la géographie de la France*.

This is a detailed study based on the great French regional monographs.[1]

(ii) The History of Geographical Discovery and Cartography (1 hour).[2]

(iii) World Problems in their Geographic Setting—a seminar class.

It will thus be seen that the study of France

[1] The full scheme provides for a visit to France once in two years for the Easter Vacation, to alternate with the inter-University visit to some region in Britain.

[2] This course actually begins in the Second Year, so that really it extends over two years.

with the extensive literature available permits intensive investigation on a regional basis. The History of Geographical Discovery indicates lines of contact in historical and geographical investigation, whilst the seminar on World Problems enables geographical studies to be brought into relation with the great world movements now in progress. Special attention is directed to such regions as the Far East and South America not covered in the second year.

The defect of this Course from the research point of view is that France is studied from books, not in the field. The British Isles would have been selected but that advanced geographical literature is not yet available.[1] To remedy in a measure this defect, each student is required in the third year to pursue a small field study either of an urban area or a rural area with a number of village settlements.

Thus far the results of the Honours School have been encouraging and many graduates have taken up regional investigations in various parts of Britain for the Master's degree.

[1] With the steadily increasing output of geographical literature on the British Isles it may soon be possible to substitute the British Isles for France and to include an extended field excursion for the direct study of some region other than South-east Lancashire.

CHAPTER IX

CITIZENSHIP

"LET travellers cross seas and deserts merely to measure the height of a mountain, to describe the cataract of a river, . . . but what advantage can accrue to a philosopher from such accounts, who is desirous of understanding the human heart, who seeks to know the men of every country, who desires to discover those differences which result from climate, religion, education, prejudice, and partiality ? . . . Confucius observes that it is the duty of the learned to unite society more closely and to persuade men to become citizens of the world." [1]

Since Goldsmith wrote, the applications of modern science in industry and communications have united societies and peoples in at least an economic bond with consequent effects on interrelationship in politics and social well-being.

The knots which bind nations together cannot now be cut, even if we would. The task before humanity is to know and understand each other. In this respect, the present far exceeds the past, for bygone animosities should not becloud the

[1] Oliver Goldsmith, *The Citizen of the World.*

necessities of to-day. To the truly educational value of geography there may thus be added its usefulness as a contribution towards the understanding of the peoples of the world. In pure geography, the physical and external influences operating on the life of a people come before us. It is in this respect the sociology of locality. In applied studies such as economic geography, the development and utilisation of regions are considered, having regard not only to the economic advantages but to the consequent result on life within the region. These considerations in themselves are of first importance, but they have still greater applications. We have considered as a working definition for schools that geography is the study of the adjustment of human groups to their physical environment. In the past, this has been unconscious or at best empirical. To-day, man is everywhere becoming conscious of the defects of the existing adjustment and is finding the problem of geographical readjustment more insistent even than that of economic enterprise.

Both necessity and law have thrust upon us geographic tasks of the first importance. The Town Planning Act of 1919 made possible the reshaping of existing towns and the determination of the lines of future growth. Thirty-seven joint committees have now been formed, including altogether more than 500 authorities covering an

area of some six million acres. The regions affected differ considerably in area. The Manchester and District region has an area of more than one thousand square miles, and includes about a hundred local authorities ; the Worthing district consists of three councils and about fifteen thousand acres. The object of these committees is to lay down in general the lines of road development, housing schemes, and localisation of industries. These somewhat Procrustean methods of shaping the geographical future of our towns and countryside are advocated on two main grounds. Some urge the increased industrial efficiency of the region, in which case, road building and the settlement of industrial sites are paramount. Others give precedence to the preservation of historical associations and of scenic beauty, as illustrated by Prof. Abercrombie's work on the future development of East Kent. That the haphazard growth of our centres of population should no longer continue is eminently desirable ; that pushful industry should no longer, like a flood, swallow up all other regional functions is equally desirable. But who is sufficient for these tasks of regional reorganisation ? In the light of present developments, should we now approve or disapprove of the purchase of Trafford Park, Manchester, as a public recreation ground ? Once the new coal-

pits of the Sherwood district are raising their maximum output, are we able and do we desire to overcome the enormous attraction the new coalfield will exert on innumerable industries with their regional associations? Few administrative authorities wish to strangle the goose that lays the golden egg.

One danger of this rapid development of regional planning is the lack of knowledge of how the present adjustment has come to be. No doubt economic or administrative pressure can be sufficiently exerted to compel a certain town plan, but if undue pressure is exerted on what would be its normal growth, there will be a tendency towards restricted growth, possibly deformity and decline. To predict the lines of future urban development is asking much of the prophetic powers of man. His only guide is a clear understanding of the growth of places which offer parallels to that of his own.

This study has been strangely neglected, and the geography of a place has too often been confounded with its economics or the history of its people. We are not yet in a position to assess the physical factors continuously emphasising the nodality of Manchester-Salford, and the civic factors which make for the urban independence of the surrounding textile towns. Yet this assessment must be made before the question

of federation can be reasonably approached. Economically there would appear to be every reason for the amalgamation of Manchester and Salford. Actually, the citizens of the twin cities are separated by more than the width of the Irwell. Trafford Park, with more than a hundred different industrial undertakings and more than twenty-five thousand workpeople, is such an integral part of the Manchester-Salford industrial centre that it would seem an anomaly for it to remain within the two areas of the urban district of Stretford and the rural division of Davyhulme. But what should be the boundary determinants of a single municipal authority, and what weight should be given in particular to historical precedents, to economic necessity, and to physical conformity and advantage ?

The latter, or site factor, makes the primary appeal to the student of geography. Liverpool has not been able to hold the cotton textile industry at the port. In spite of the serious handicap of haulage of raw materials eastwards and manufactured goods westwards across thirty miles of difficult country, cotton has been attracted to the upper Mersey basin within the Pennine and Rossendale gritstone moors. But while Liverpool has failed to accomplish this economic enterprise, Manchester has improved on the handiwork of nature by converting the unnavigable

Mersey-Irwell River into a navigable ship canal. It is this estimate of man's control over the site of his economic activities which makes town planning for future generations so difficult.

The first great task is to find exactly the lines of historical adjustment. This can best be done by making a base map on a scale of not less than 6 inches to the mile, showing as far as possible the general physiographical conditions underlying present distributions. This map should show ground forms by selected contours of reasonably close interval, and surface deposits, especially such as gravels and clays. The plotting of population distribution at various periods is equally important and much more difficult. The similar plotting of the different classes of houses and residences, of factories and industries, indicates in conjunction with the site and population the lines of historical adjustment. It is essential that these lines, however much they may be deflected, shall be continued unbroken in all schemes of town-planning of existing and old-established human settlements.

"Utopia lies in the city around us; and it must be planned and realised, here or nowhere, by us as its citizens—each a citizen of both the actual and the ideal city seen increasingly as one." [1]

[1] Geddes, *Cities in Evolution.*

Could we but start anew, what changes we would make! The opportunity is here. Almost for the first time in our history we can plan a town before a sod is cut. The development of the concealed coalfield east of the Pennines and of the coalfield in East Kent has given an opportunity for a deliberate and conscious adjustment to be made. New towns such as New Ollerton and Aylesham are bold experiments in geography. The ultimate results will be interesting.

A civic problem in geography of a regional order is furnished in South Wales. Its very abnormality emphasises the necessity of investigating and understanding normal conditions everywhere. The argument which follows is not that of a geographer but of the Commission of Inquiry into Industrial Unrest.[1] The introductory section reviews some of the chief industries in Wales and their distribution with some explanation of their "localisation." Then follows the section on "Physical and Geographical Conditions; their Influence on the Industries of South Wales and on Social Conditions." The extracts need no comment.

"Mining is certainly the key industry of South Wales. There, to use a colloquialism, 'Coal is King.' The public have been slow to realise the full significance

[1] Commission of Inquiry into Industrial Unrest, No. 7 Division [Cd. 8668], 1917. 6*d*.

of this fact; they are far from adequately realising it even yet; but the miners themselves are fully conscious of the supreme position which their industry occupies. So, too, of course, are the coal-owners. Both are well informed as to their position, and both are well organised. The need, and the duty of acquiring a better insight into the economic and social conditions of the industry, are therefore paramount, both for the Government in its corporate capacity and for all who recognise the social obligations of citizenship. We would be travelling outside the limits of our inquiry if we attempted any full analysis of these conditions in our present Report; we can only deal, and that all too briefly, with such aspects as concern the subject-matter of our inquiry. To that, however, we desire to add an expression of our strong conviction as to the necessity of an exhaustive investigation at an early date into the social and economic conditions prevailing in the South Wales Coalfield.

"A fundamental fact as to this industry in South Wales is that the life of the workers engaged in it is conditioned at every point, and in every form of activity, by the physical and geographical conditions of the district itself. The physical configuration of the coal-field is markedly different from that of any other coal area in Great Britain, and is a factor that profoundly affects and largely conditions the social life of the inhabitants.

"All the other British coalfields have fairly level or gently undulating surfaces. In South Wales, the coal-field used to be spoken of as the 'hills,' the earlier

development having been on the higher land of the outcrop—but of more recent years 'the valleys' is the commonly accepted synonym. Scooped out by impetuous streams which start from the central mountain range of Brecknockshire, or one of its southern spurs, those valleys are for the most part extremely narrow, with inconveniently steep sides, some of them indeed being so narrow at some points that there is scarcely space enough on the level for main road and railway in addition to the river itself. Nevertheless, it is into these valleys, shut in on either side by high mountains, that the mining population is crowded, and it is in this same narrow space, and often right in the midst of the dwelling-houses, that the surface works of the collieries and any by-product plants have also of necessity been placed.

"With the dwellings and other buildings ranged in streets that run along the length of the valleys in monotonous terraces, instead of approximately radiating from a common centre as would be possible on fairly level sites, the civic and corporate life of the community has suffered owing to the absence of 'town centres' and of any conveniently centralised institutions. For instance, dignified municipal buildings are extremely rare; not a single municipally maintained public library is to be found in the central Glamorgan block of the coalfield—it is only on the sea-board and in the older towns of Merthyr, Aberdare, and Pontypridd that any exist. There are, it is true, many working men's institutes, most of them with collections of books, attached to different collieries; there are also

many clubs, but we believe not a single trade-union or co-operative hall for large gatherings and with offices for various labour organisations. Finally, the Rhondda has an abundance of cinemas and music-halls, but not a single theatre. Owing to this absence of municipal centres and centralised institutions, the development of the civic spirit and the sense of social solidarity—what we may in short call the community sense—is seriously retarded.

" There is no part of the United Kingdom, with a population at all comparable in numbers with that of the South Wales Coalfield, where the surface is so broken up by deep and narrow valleys. No part, therefore, stands in greater need of having its building development scientifically studied and properly planned. Excepting the area drained by the Ogmore and its tributaries, all the valleys in East Glamorgan and West Monmouthshire run in a south-easterly direction, whilst those in West Glamorgan and East Carmarthenshire take a south-westerly course, but as both sides of each valley are usually built upon, the right hand (or south-western) slopes throughout the former area have an approximately north-eastern aspect for their houses, while the left-hand (or south-eastern) slopes throughout the latter front north-west.

" In several of the valleys (e.g. the two Rhonddas and that of the Cynon and its tributaries and Rhymney) most of the houses have been built on the less sunny side, often, indeed, in positions where it is impossible for any sunshine to penetrate the houses. A serious burden is thus thrown on the community owing to ill-

health, and consequent reduction of efficiency, including the greater predisposition to fatigue, resulting from living in such sunless houses and in dark back rooms giving on to the excavated portions of so many hill-sites. Of recent years the houses in the valleys and on the lower slopes are still further overshadowed by the huge coal-tips which are being piled on the breasts and upper slopes, and which, besides making the landscape hideous, will in time endanger the very lives of those dwelling in the valleys below. The cost of building is also much enhanced by the expense of excavating sites on the slopes and of road construction generally. Subsidence owing to mining operations prejudicially affects the habitable conditions of the houses owing to the injury to the gas, water, and sewerage systems. It also adds greatly to the cost of repairs and reduces the 'life' of all buildings, while much heavier rates are necessitated owing to the damage, by subsidence, heavy floods, and occasional landslides, to the sewers and other mains, and to the roads, tram-lines, and public buildings generally. The subsidence in the Rhondda Valley has been ascertained by the Ordnance Survey Department to have amounted in some localities to 8 feet during the twelve years from 1898 to 1910.

"Land of a suitable kind, available for garden and allotments, is extremely limited. This enhances the cost of living, and is of course a factor in the wage rate; it also largely deprives the miner of a profitable and healthy open-air recreation which would react beneficially upon his temperament and his relations

with nature generally. Similarly there is a great scarcity of recreation-grounds for adults and of open-air playgrounds (other than asphalted ones) for children, a state of things which is serious in its effects from the moral, social, and public health point of view.

" Such physical considerations as we have mentioned and the kind of development which they have imposed upon the district account for the fact that the level of wages in the South Wales Coalfield is necessarily higher on the whole than that of any other British coalfield. The geographical position of South Wales also makes it more isolated from the large centres of population than any of the English coalfields, so that the supply of labour from the adjacent counties, and from towns like Bristol, is quite insufficient from the colliery proprietor's point of view.

" The high quality of the coal produced—especially the steam and anthracite coal—and the virtual monopoly which these coals enjoy, have created such a demand for them as has proved a sufficient inducement for the continual sinking of new pits, but, in order to attract the necessary labour, good price-lists have to be offered, and this in turn has levelled up the rates paid at the older collieries. If the coal had not been so valuable, the development would have proceeded more slowly, limited by the supply of labour which would have been available at a lower rate.

" The development of the coalfield has therefore been very rapid, the population of Glamorgan having increased from 171,188 in 1841 to 511,433 in 1881 and 1,120,910 in 1911. During the last intercensal period,

the number of coal and shale mine workers increased by 53·8 per cent. in Monmouthshire, 40 per cent. in Glamorgan, 69·6 per cent. in Carmarthenshire, and 55·9 per cent. in Breconshire.

"The higher cost of living in the valleys, and the inadequate housing accommodation, are also primarily dependent on the physical conditions.

"To give greater concreteness to our general description of the coalfield in its geographical aspects we append some extracts from the report for 1914 of the Medical Officer of Health of the Rhondda Urban District Council.

"'The district (that is, the Rhondda Urban District) as a whole consists of two narrow, tortuous valleys, which gradually approach each other, in their course southwards and join at Porth, and thence the single valley so formed runs a short course before merging into the upper end of Pontypridd Urban District at Trehafod. The two valleys are so arranged that they resemble an irregularly shaped Y. The stem of the Y is formed by the portion of the district extending from Trehafod to Porth, and is over a mile long. The limbs of unequal length are formed by the Rhondda Fawr Valley, which is about 9½ miles long and by the Rhondda Fach Valley, which is of a length barely 6½ miles. Both the valleys at their upper extremities end blindly or form a cul-de-sac; their lateral boundaries are formed by steep hills which vary in height from about 560 feet on either side of Trehafod to 1,340 feet on the north-east side of Mardy and 1,742 feet on the south-west of Treherbert. The Rhondda Fawr

and the Rhondda Fach Valleys are separated by a steep ridge—Cefn Rhondda—which rises from a point 600 feet just above Porth to an elevation of 1,692 feet near the upper extremity of the district. The Rhondda River—formed at Porth by the junction of the Rhondda Fach and the Rhondda Fawr Rivers—is 240 feet above the sea-level at the lowest point in the district, at Trehafod, while the Rhondda Fawr River attains an elevation of 720 feet at Blaen Rhondda, and the Rhondda Fach River the still greater elevation of 920 feet at Mardy. The highest point in the district is Carn Molsau, which is 1,950 feet high, and is situated at the upper end.

" ' The valleys are very narrow, and allow in many places only sufficient space for river, road, and railway. Although the district is a large one, the area actually built upon is comparatively small, for the most suitable and convenient building ground is situated in more or less close proximity to the river. Here and there, however, as at Treorchy and Ton, the valleys open out a little, and it is mainly at these expansions that considerable numbers of houses have been erected. Leading out of the main valleys are a few side valleys, of which Cwmparc, Clydach Vale, and Cymmer are the most important.'

" Excluding metropolitan areas (London and Middlesex), the County of Glamorgan has, next to Lancashire, the greatest density of population of any county in England and Wales, notwithstanding its extensive agricultural areas in Gower and the Vale of Glamorgan and its central mountain range. In 1911 it had 1,383

persons in the square mile, compared with 2,554 in Lancashire, and 618 for the whole of England and Wales. In the Rhondda Urban District, taken as a whole, the number was 4,480, while in Mid-Rhondda it was as high as 6,400 persons within the square mile. It is noteworthy that the districts which have suffered most from labour disputes of recent years are those where the population is most congested. Thus the prolonged strike of the 'Cambrian Combine' miners in 1910–11 was in the Tonypandy District. Disputes have been frequent also in the Porth District."

"The conviction that Capital and Labour are necessarily hostile, a conviction engendered by conflict on industrial matters, has been accentuated by the fact that the social conditions of the working classes are of an unsatisfactory character. This fact was brought out by numerous witnesses both on the employers' side and the men's side, and there can be no doubt that, although not always expressed, the workers feel deeply discontented with their housing accommodation and with their unwholesome and unattractive environment generally. The towns and villages are ugly and overcrowded; houses are scarce and rents are increasing, and the surroundings are insanitary and depressing. The scenery is disfigured by unsightly refuse-tips, the atmosphere polluted by coal-dust and smoke, and the rivers spoilt by liquid refuse from works and factories. Facilities for education and recreation are inadequate and opportunities for the wise use of leisure are few. The influence of the social factors on the creation of

industrial unrest cannot easily be measured, but that their influence is great is undeniable."

Geography, like charity, may well begin at home. The heritage of the British people has, however, placed upon them greater and more far-reaching civic duties and obligations. Even excluding the self-governing and sister Dominions, the widespread British possessions of India and the colonies have a total area of 5,790,000 square miles and a population of 380,000,000 (India : area, 1,805,332 square miles ; pop. 319,000,000.) The people are at all stages of civilisation living in all parts of the world. The first great lesson of administration has been painfully but surely forced upon us, namely, to administer these regions with a knowledge of the customs and traditions of the people.[1]

"Good knowledge of native custom is apt to be better than the best intentions without knowledge. However kind or keen an administrative officer may be, his justice and mercy are likely to go for nearly nought if he is unacquainted with native social prejudices. A pitfall awaits every well-intentioned step, and every stumble he takes is a loss of Government dignity."

[1] A recent illustration of this may be read in Colonial Reports, 1921, No. 1142 : Ashanti. See also E. W. Smith, *The Golden Stool.* (Holborn Pub. Ho.)

The advancement of anthropology means better equipment for the administration of backward peoples as they march onward to higher aspects of civilisation and culture. But such inquiry should be accompanied by its complement—geography, which has been called "the sociology of locality." Though one of the oldest of the sciences (it developed with the Greeks in their inquiry into the conditions of life in other lands), it passed almost into oblivion in the first onrush of our modern economic life. Slowly through the last half-century it has emerged, once more attempting to solve those questions of humanity which arise through changes in the exploitation or development of the natural resources—agricultural or mineral—of the earth. For one man interested in the social anthropology of the African, there are many who are still more interested in the regional development of Africa. If a solution of the many difficulties is to be found, it must be by considering Africa and the African together. The extreme views, of course, are those advanced by people who see these two separately. One realises the enormous potential wealth of Tropical Africa and considers that all means should be adopted for its immediate development, providing the African is not degraded thereby; another considers the slow moral and intellectual development of the African of first

importance, and would make economic progress fall into line therewith. In the world of fact, of course, there is the dual problem of social and economic development progressing simultaneously and clashing in their progress.

We are now realising through the labours of many able anthropologists how African life had become adjusted and stabilised to the physical environment, resting in many cases on the two foundations of communal land holding and the bond of kinship. Custom had hardened into law and social forms became stabilised.

The new era opened, not when slaves became a marketable commodity, but when the land assumed great value under the scientific knowledge and enterprise of the European. To take one instance which is now classical: the natural conditions of the Gold Coast favour the cultivation of cocoa; an enterprising and patient Government encouraged native cultivation and a wide market was ready to receive the ever-increasing output, even though of somewhat inferior quality. Yet success in this direction is breeding social discontent because the two social foundations are being shattered in the readjustment of native life to native soil. The extension of plantations and the intensive cultivation of native food-stuffs are slowly but surely cracking the common law of communal holding

of land and the rootlets of private ownership are appearing in the cracks.

Furthermore, increased output has necessitated public utilities on a large scale—railways, motor roads, harbour works, and so on. To meet these demands, labour has had to be recruited from widely separated tribes. Thus the bond of kinship is being strained to breaking-point, and a new bond, that of the craft or trade, is slowly taking form. The climax of change is reached in the development of a wage-earner, a worker hitherto unknown.

Here, then, is a readjustment of life and labour taking place in a generation. In Europe the change spread over centuries and even then was sufficiently sudden to be revolutionary. The change cannot be avoided nor retarded, but the dangers may be mitigated. Were Africa alone the subject of these tremendous changes, the world might weather the storm; but Europe has touched the whole world, and with her touch new forces have been set in operation. She merely wished to ransack the treasure-house of Nature, but she found in almost every place a keeper of the house, either ignorant of the riches or using them in his own way. The least danger has been where the keeper has withdrawn before the white man; the greatest danger lies in those places where either he insists on

entering with the European, or the European can only direct the keeper in the search for treasure.

The geographical conception of the Greeks is coming back to us in a new and scientific form, viz. the study of the *genius loci*, the living region born of man and nature.

At present one must be content with the most meagre of available geographical information. The methods indicated in an earlier chapter from the British Isles have not yet been applied in any great degree to lands beyond the seas. We have seen that a regional conception of the Lincoln Heights can only be derived from the study of each of the component settlements ; that similar studies in, say, the Vale of Pewsey and the South Down country enable comparisons to be made and principles evolved. The demands of educated citizens for comparable information of lands under our administration will result in extended geographical research. All agree that the natural resources of every land must be utilised to the full in the interests of humanity. Most will agree that this utilisation must be obtained, not by the exploitation of the land and its inhabitants, but by sympathetic assistance in a readjustment whereby the world shall be enriched through the social upbuilding of the inhabitants.

"The running of a tropical colony is, of all tests, the most searching as to the development of the nation that attempts it. To see helpless people and not oppress them, to see great wealth and not confiscate it, to have absolute power and not abuse it, to raise the natives instead of sinking yourself, these are the supreme trials of a nation's spirit." (Sir A. Conan Doyle.)

It is right that Britain should leave the sister Dominions of the British Commonwealth of Nations to work out their own salvation. But it is our duty, as it should be our pleasure, to watch with discernment the struggle of a handful of our race bringing the great resources of vast areas of the world into the realm of habitability and economic usefulness.

In the world beyond the limits of the British Empire we may feel less responsibility, but we cannot have less interest. World development is being accompanied by conflicting interests over wider areas than the mere frontier zones of individual States. Countries nominally independent, as China; or under the administration of European Powers, as in most of Africa, are feeling the effects of world development. And the change in the regional life is not measured merely by the change in economic values. There is a profound change in the people themselves. The

old order changes, giving place to new. A new orientation and a new outlook are being rapidly developed. The population under the external stimulus from Europe or America is adjusting its life and labour anew to the physiographic conditions and possibilities of the region. The African, the Egyptian, the Chinese, and a thousand other "questions" arising with world development have a regional basis and demand the urgent and careful investigation of the new science of geography.

If as the result of geographical study scholars take an intelligent interest in the countries and regions of the world, the inclusion of geography in the school curriculum will be amply justified. Indeed geography in education is more important now than ever. Never before was it so necessary that our future citizens should view the world as a whole, that they should see that various lands and peoples have different contributions to make, and that all must act and react on each other with ever-increasing force. We do not wish to handle in the class-room political problems as such, but we seek to give the pupils such a training in the geographer's characteristic mode of thought that as citizens they will be better able to find more satisfactory solutions. To no people is a sound knowledge of geography more important than to the British with their far-flung Empire and

world-wide interests. Many of the home and international problems can be solved only by those who have had some geographical training, but that training must rest on a real foundation, solid and true.

BIBLIOGRAPHY

THE aim is to give what may be called a minimum bibliography for a working library. Text-books are not given. Books on cartography, travel, and discovery have also been omitted.

The Geographical Association, 11 Marine Terrace, Aberystwyth, issues a "Short List of Books, Atlases, and Apparatus," useful in the teaching of Geography (1919; 6*d.*, plus 1*d.* postage).

It should be noted that valuable sources of geographical information exist often obtainable free or at small cost.

MAGAZINES

Geography (formerly *Geographical Teacher*). Three issues per annum. (Free to members of Geographical Association.[1]) Extremely useful to all teachers of geography, not only for the suggestions in teaching, but for its notes on current geographical literature.

Geographical Journal. Monthly. Valuable for higher work in geography—exploration and scientific research.

[1] The Geographical Association has an excellent lending library of books and slides available for members at an additional cost of 5*s.*

Geographical Review. An American quarterly publication with very important articles generally on a regional basis.

National Geographic Magazine. Published by Nat. Geog. Soc., Hubbard Memorial Hall, Washington, D.C., U.S.A., monthly. The finest magazine for geographic pictures. $3.50 a year.

Government Publications

H.M. Stationery Office, Adastral House, Kingsway, London, W.C.2. The Government issue free a monthly circular of publications. There are many publications of great value to the geographer, e.g. :

Annual.

Colonial Reports.

Overseas Trade Reports on various countries.

Occasional Reports, e.g. :

Report on East Africa.

Report on West Africa.

C.A. 9070. Report on Textile Trades.

C.A. 8668. Report on Industrial Unrest (Wales).

Survey of Overseas Markets.

Meteorology :—The Government issue a number of useful little books on Meteorology, suitable for school use, e.g. :

The Weather Map.

Meteorology, by Pick.

Maps.—Issued from Ordnance Survey Office, Southampton. There are special rates for educational purposes.

Important memoirs are issued with the sheets of the Geological Survey.

A recent publication (9*d.*) on "The Work of the Ordnance Survey" explains the production of the O.S. map.

Pictures. An excellent series issued by the Empire Marketing Board.

Public Authorities

Many public authorities issue gratis important publications, e.g.:

L.N.E. Railway: *Tyne Ports*, *Tees Ports*, *Humber Ports.*

Port of London Authority: *The Port of London.*

City of Gloucester: *The Port of Gloucester.*

Manchester Ship Canal Co.

Trafford Park Estates Co.

Newspapers

In addition to the daily information in newspapers, many issue supplements of great value: e.g. *Times* supplements on Industrial Wales, Poland, South America, West Africa, Mozambique, etc.; *Manchester Guardian* Reconstruction Numbers, and, in the weekly Commercial Supplement, a series of industrial surveys of the towns of Britain.

Year-books

Many countries and many trades issue important year-books and directories, e.g. Canada, South Africa, Nigeria, etc.

In addition, the following are invaluable:

Statesman's Year Book (Macmillan).

Whitaker's Almanack (full edition).

Atlases

Geological Atlas of Great Britain and Ireland (Stanford).

Shepherd, *Historical Atlas.* (Univ. of Lond. Press.)

Ramsay Muir, *New Historical Atlas for Students.* (Philip.)

Smith, *Historical Atlas of the Holy Land.* (Hodder & Stoughton.)

The Advanced Atlas of Physical and Political Geography. (O.U.P.)

The Senior School Atlas. (Philip.)

The Times Atlas, Selfridge Ed., 30*s*. A bargain in atlases.

Agricultural Atlas of England and Wales. (Ordnance Survey.) A very useful atlas showing the distribution of farmland, stock, and crops in relation to relief, structure, and rainfall.

The World—General

Bowman, *The New World.* (Harrap.) A geographical treatment of all the important post-war problems.

Fairgrieve, *Geography and World Power.* (Univ. of London Press.) Most suggestive on the influences of physical conditions on history.

Kendrew, *Climate of the Continents.* (O.U.P.) Extremely valuable on world-climate.

Chisholm, *Handbook of Commercial Geography.* (Longmans & Co.) Indispensable reference book.

Newbigin, *Animal Geography.* (O.U.P.)

Hardy, *Introduction to Plant Geography.* (O.U.P.)

Andrews, *A Text-book of Geography.* (Arnold.) Contains much useful data.

The Senior and Modern School Atlases (Secondary); *The County Council and Shilling Atlases* (Elementary). Philip.

Jones, *Geography by Discovery.* (Sidgwick & Jackson.) A useful little book using geographical discovery in geography.

Mill, *Realm of Nature.* (Murray.) A useful book on physical geography.

Unstead, *World Geography and World Problems.* (Sidgwick & Jackson.)

Mill (edited by), *The International Geography.* (Macmillan.) Useful because of the physical basis of the several studies.

Dickson, *Climate and Weather.* (Home Univ. Lib.)

Brunhes (trans. by Bowman), *Human Geography.* (Harrap.) An epoch-making book.

Vidal de la Blache, *Human Geography* (English trans.). (Constable.)

Unstead, *General and Regional Geography.* Philip.

Peattie, *College Geography.* Ginn & Co. Contains extensive bibliography on most aspects of geography.

Gregory, *The Making of the Earth.* (Home Univ. Library.)

Murray, *The Ocean.* (Home Univ. Library.)

Newbigin, *Modern Geography.* (Home Univ. Library.)

Lyde, *Man and His Markets.* (Macmillan.)

Newbigin, *Tillers of the Ground.* (Macmillan.)

Newbigin, *Man and His Conquest of Nature.* (Black.) These three last named books are small suggestive works suitable for the pupils.

MacFarlane, *Economic Geography.* (Pitman.) A useful geography.

Huntington and Cushing, *Principles of Human Geography*. (J. Wiley & Sons.) A useful summary of life in varying physical environments.

The British Empire

Oxford Survey of the British Empire (6 vols.). (O.U.P.) A compendium of information on all regional data by specialists in the various subjects.

Lucas, *Historical Geography of British Colonies* (7 vols.). (O.U.P.). Contains extremely valuable material for historical geography.

Sargent, *Seaways of the Empire*. (Black.) A useful study in trade and trade routes.

Unstead, *The British Empire and its Problems*. (Sidgwick & Jackson.)

Knowles, *The Economic Development of the British Overseas Empire*. (Routledge.)

Demangeon, *The British Empire*.

The British Isles

Ormsby, *London on the Thames*. (Sifton Praed.) An excellent book for schools on the site of London.

Rodwell Jones, *North England*. (Routledge.)

Bygott, *Eastern England*. (Routledge.)

Cundall and Landman, *Wales*. (Routledge.)
A series of useful studies in economic geography.

Howarth, *Geography of Ireland*. (O.U.P.)

Unstead, *The British Isles of To-day*. (Sidgwick & Jackson.)

Mackinder, *Britain and the British Seas*. (O.U.P.) Indispensable.

Ireland: Industrial and Agricultural. (Department of Agric. and Tech. Instruction.)

W. Fitzgerald, *The Historical Geography of Early Ireland.* (Philip & Son.)

Demangeon, *Iles Britanniques.* An extremely valuable work.

Gibson, *Coal in Great Britain.* (Arnold.) A valuable book.

Cleveland-Stevens, *English Railways and their Developments.* (Routledge.)

Avebury, *The Scenery of England.* (Macmillan.)

Geikie, *The Scenery of Scotland.* (Macmillan.)

Cole, *Ireland the Outpost.* (Oxford.) A masterly little work.

Salter, *Rainfall of British Isles.* (Univ. of Lond. Press.) A valuable digest of British climate.

British Rainfall Atlas.

EUROPE

Mackinder, *The Rhine.* (Chatto & Windus.) A suggestive work in historical geography.

Newbigin, *Frequented Ways.* (Constable.) A scholarly travel book.

Unstead, *Europe of To-day.* (Sidgwick & Jackson.)

Dominian, *Frontiers of Language and Nationality in Europe.* (American Geographical Society.) Extremely useful.

Lyde, *The Continent of Europe.* (Macmillan.) A mine of information.

Fleure, *Human Geography in Western Europe.* (Williams & Norgate.)

Fleure, *The Peoples of Europe.* (O.U.P.) A useful school book.

Fleure, *The Treaty Settlement in Europe.* (O.U.P.) A little book containing much material.

Newbigin, *Balkan Problems.* (Constable.) A standard book.

Clapp, *The Navigable Rhine.* (Houghton Mifflin Co., Boston, U.S.A.)

AFRICA

Lucas, *The Partition of Africa.* (O.U.P.) A series of lectures to teachers.

Johnston, *The Colonisation of Africa.* (C.U.P.) A useful summary of the penetration of Africa by alien peoples from earliest times.

The South and East Africa Year-book and Guide. (Union-Castle Mail Steamship Co.) Very useful.

Bryce, *Impressions of South Africa.* (Macmillan.) A classic.

Shantz and Marbut, *Vegetation and Soils of Africa.* (American Geographical Society.)

Dudgeon, *Agricultural and Forest Products of British West Africa.* (Murray.)

McPhee, *The Economic Revolution in British West Africa.* (Routledge.)

Lugard, *The Dual Mandate.* A standard work on the problems of tropical development.

Enock, *The Tropics.* (Grant Richards.) A thoughtful study on the development of the Tropics.

Knox, *The Climate of Africa.* (C.U.P.)

Asia

Leong and Tao, *Village and Town Life in China.* (Allen & Unwin.) A useful study by two Chinese students.

Hogarth, *The Nearer East.* (O.U.P.) A standard work.

King, *Farmers of Forty Centuries.* (J. Cape.) A remarkable work on the agricultural basis of Chinese life.

Smith, *Historical Geography of the Holy Land.* (Hodder & Stoughton.) A classic.

India. A series of provincial geographies—Punjab, Bengal, etc. (C.U.P.) A useful series of school books.

Ronaldshay, *India, A Bird's-eye View.* The book of an administrator with the perception of a geographer.

Huntington, *Palestine and its Transformation.* (Constable.) A study in changing environment.

Huntington, *Pulse of Asia.* (Constable.) An important contribution to the study of climatic control of history.

Smith, *Geographical Study of Coal and Iron in China.* (Hodder & Stoughton.)

Simkins, *Agricultural Geography of the Deccan Plateau of India.* (Philip & Son.)

North America

Colby, *Source Book for the Economic Geography of North America.* (Univ. of Chicago Press.) An excellent compilation from various authors.

Jones and Bryan, *North America.* (Methuen.) A series of useful studies, of which the economic chapters are very valuable.

Bowman, *Forest Physiography*. (Wiley & Sons.) A standard work on U.S.A. in applied geography.

Semple, *American History and its Geographic Conditions*. (Constable.) A suggestive work.

Turner, *The Frontier in American History*. An important work in historical geography.

Brigham, *The United States of America. Studies in Physical, Regional, Industrial and Human Geography*. (University of London Press.)

Central and South America

Dennis, *The Argentine Republic*. (Fisher Unwin.) A standard work.

Handbooks on South America. Pitman's issue a series on the countries of Central and South America.

Whitbeck, *Economic Geography of South America*. (McGraw-Hill Book Co., 6 and 8 Bouverie Street, London, E.C.4.) A useful book on the whole continent.

Shanahan, *South America—Economic and Regional*. (Methuen.)

Australasia

Taylor, *Australia*. (O.U.P.) An extremely valuable little book.

Taylor, *Australian Meteorology*. (O.U.P.)

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