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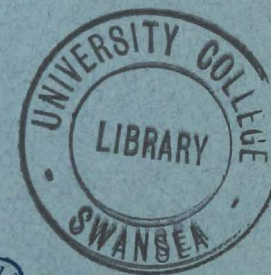
RESEARCH IN GEOGRAPHY

*Inaugural Lecture of the
Professor of Geography
delivered at the College
on February 3, 1955*

by

PROFESSOR W. G. V. BALCHIN

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UNIVERSITY COLLEGE OF SWANSEA

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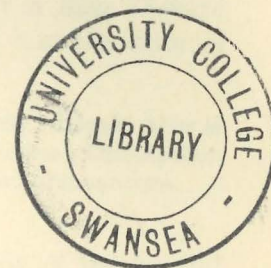
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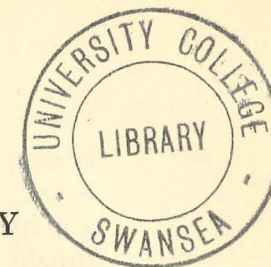
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RESEARCH IN GEOGRAPHY

IT is a happy custom in an inaugural lecture to pay a tribute to one's predecessor. As the first Professor of Geography in the University College of Swansea, however, this opening gambit is denied me: but although I have no retiring professor to eulogize I would like to use this opportunity of acknowledging the great amount of foundation work which I find has already been done by my colleagues in preparation for the new Department of Geography. I am aware that many have assisted by wise decision and careful counsel, but I would like to mention especially the names of Professor Duncan Leitch and Mr. John Oliver.

On turning to the status of geography in the universities I encounter a further problem, although one which I welcome since it is directly related to the present success and standing of the subject. Geography is now a well-established university discipline, built on a good foundation generally well laid at school. Interest in the subject is widespread, and I doubt if any other university subject can show such an expansion in so short a period. Much less than a century ago Lewis Carroll in *Alice Through the Looking Glass* gave us an insight into the state of the subject at the time:

'It's something very like learning geography,' thought Alice as she stood on tip toes in hopes of being able to see a little further. 'Principal rivers . . . there are none. . . . Principal mountains. . . . I'm the only one . . .'

Here we have a very clear indication of the general mid-nineteenth-century attitude to geography, despite the great advances which had been made in the realms of exploration and discovery, and in the field of physical

geography: and despite, too, the work of Humboldt and Ritter on the Continent, and of Mary Somerville and the activities of the Royal Geographical Society in Great Britain. The subject was practically non-existent in the universities: no Professor of Geography existed at either Oxford or Cambridge, and chairs which had been established at University College, London, and King's College, London, had lapsed.

But in 1884 the Royal Geographical Society sponsored the now famous inquiry of (Sir) John Scott Keltie into the teaching of geography in Great Britain, America, and western Europe. Keltie's report was issued in 1886 and led directly to the creation of readerships in geography at both Oxford and Cambridge. At Oxford the post was filled by (Sir) Halford J. Mackinder, who in 1887 began a distinguished career terminated only by his death in 1947.

If progress was at first slow, the trend was at least consistent and the natural expansion was further accelerated by the two world wars which revealed the need both for a greater knowledge of geography and for more geographically trained specialists. The development over the half century is striking. No less than 28 chairs of geography now exist and some 175 lecturers and assistant lecturers in geography are to be found in the universities of the United Kingdom. The subject is indeed well established, and it is pleasing to record that the greater part of this consolidation and expansion has taken place in the last decade. However, this produces my second problem in that it renders the choice of a topic for yet another inaugural lecture a little difficult, as the content of geography and its place in the university have been intensively and extensively discussed in earlier discourses.

Despite the inevitable differences of opinion an increasing consensus regards geography as primarily con-

cerned with spatial relationships—'the science that describes the Earth's surface with particular reference to the differentiation and relationship of areas'¹—and the approach may be either the totality of phenomena within a given region, i.e. regional geography; or the more intensive study of selected aspects, which gives us the range of subjects such as geomorphology, historical geography, economic geography, &c. The specialist aspects are to regional geography as the warp is to the woof in the composite weave which constitutes geography. There is an increasing awareness also that whatever the approach it must rest upon the trinity of fieldwork, library work, and laboratory work—'Boots, Books, and Benches'. Some element of all three must enter into any true and worthwhile piece of geographical work, although the exact proportion of each will vary according to the nature of the task in hand.

But if this is the position to which half a century of increasingly active discussion has brought us, what of the future? Geography as a university discipline offers ways and means of contributing by active research to the never-ending pursuit of truth and knowledge. Our older critics, perhaps themselves brought up on some of the earlier capes and bays geography, reveal only too often that they are not aware of the range of research possibilities that geography at the university level offers. Even the undergraduate fresh from school only occasionally perceives the potentialities of the subject. Bearing this in mind, and in view of the plethora of inaugural lectures to which I have already referred, I hope therefore that it will appear logical rather than presumptuous of me to offer some remarks on this occasion on research opportunities in geography.

¹ Geographical Glossary Committee. Section E. British Association for the Advancement of Science.

Considering the parts before the whole our attention is inevitably focused in the first instance upon geomorphology. This has quite properly been regarded as the borderline study between geology and geography, concerning itself with the evolution of the land forms upon which the diverse activities of this globe are based. The pioneer efforts of men such as Hutton, Playfair, Jukes, and Topley in the British Isles paved the way for the bolder deductions of landscape evolution which Powell, Dutton, Gilbert, and Davies could make with their knowledge and experience of the American south-west. By the turn of the century the main principles were beginning to emerge and gradually the concept has grown of a cycle of erosion in which normal, arid, glacial, or marine processes have individually or collectively been the main agents of landscape formation. The detailed application of many of these ideas to particular localities, however, has yet to be made. In this country active work is in progress and, although much remains to be done, we are rapidly approaching the possibility of a unified account of the geomorphology of the British Isles supported by a systematic cover of morphological maps.

This work is not only of fundamental importance to the geographer: it may also have direct applications of vital significance to the life of the community. Geomorphic features are valuable in locating those mineral deposits which can give rise to definite topographic forms. The recent fabulous find of 500 million tons of iron ore at Cerro Bolivar in Venezuela (1) was located morphologically. The correct recognition of erosion surfaces through denudation chronology also helps to locate minerals related to weathering residues such as bauxite, manganese, nickel, residual iron ores, &c. The bauxite discovered in Haiti in 1943 was predicted to exist precisely where it was found by the application of geo-

morphological principles (2). Nearer at hand Professor S. W. Wooldridge has shown that a knowledge of erosion surfaces is essential to a proper understanding of the soils of south-east England (3). The geomorphologist will undoubtedly contribute much to the soil survey of the United Kingdom now in progress.

In other spheres, too, geomorphological information can be vital: the ability to recognize the existence of pre-glacial valleys, ancient karst topographies, or fault basins which are now buried by later sediments becomes important in the evaluation of water-yielding possibilities. The present-day prosperity of Arizona, in the south-western United States, is directly related to the prediction by the geomorphologist Kirk Bryan of the existence of ample ground water supplies several hundred feet below the sun-scorched bolson plains (4). In a related but somewhat different vein there is in England, Scotland, and especially in Wales an urgent need for serious attention to be given to the problem of flood control and water conservation: any investigation of which calls for much preliminary geomorphological knowledge (5).

These are all problems related to the broader picture of landscape form and evolution: but detailed attention must also be paid in future to the processes responsible for their formation. The foundation studies of W. M. Davis and his predecessors were inevitably descriptive, qualitative, and generalized. We are now passing to a higher order of investigation where the approach is quantitative and experimental; and the pioneer inquiries of, for example, Dobbie and Wolf into flooding (6), Bagnold into the physics of blown sand (7), Perutz and Seligman into the crystallography of glacier structure (8), and Lewis into glacier motion (9) point the way for future attempts to formulate more fundamental laws of behaviour in the processes of erosion by water, wind, and ice.

Other notable problems in which we seek further information include the concept of grade in a river, originally proposed by Gilbert and Davis but more recently shown to be defective by Linton and Kesseli (10). The growth and development of slopes, where the qualitative views of W. M. Davis and Walter Penck are frequently in direct antithesis, also excites our interest and invites further quantitative studies along the lines of the inquiry by Savigear in South Wales (11). Problems of slope formation are closely related also to the relatively unexplored field of mass movement—landslides, avalanches, permafrost, solifluction, rock and soil creep, &c., which although admirably described by Sharpe (12) have yet to be subjected to the detailed comprehensive quantitative approach which Ward attempted so successfully with the rotational shear slips affecting coastal cliffs and river and railway embankments (13).

In the realm of shore processes notable advances both in the field and in the laboratory have been made by members of the Cambridge School of Geography under Professor J. A. Steers (14), but we still need to know more about the movement of material on and offshore along much of our coast. Research work at present in progress on the movement of silt in the Thames indicates that completely new techniques employing radioactive tracer materials may provide us with some of the answers we seek. The exact nature of wave attack also excites our curiosity, and active work on this problem is in progress both in academic circles and at the National Institute of Oceanography.

These apparently academic topics have a much wider application and are in fact fundamental to some of the problems that beset us today. The East coast storm of January 1953 revealed only too well how modern coastal engineering depends on an appreciation of shoreline pro-

cesses and development; experience in the United States and Africa has shown how mitigation of soil erosion involves a control of the geomorphic processes of sheet-wash erosion, gulleying, and mass wasting in relation to slope and permeability; almost everywhere highway and railway construction and many aspects of civil engineering are greatly concerned with the stability of slopes and soil mechanics; whilst the construction of dams and bridges involves a recognition of the régime of rivers and their behaviour in times of flood.

The daily newspapers consistently reveal the progress we have yet to make in adapting our existence to these natural processes. When we have learnt and applied our knowledge, then no longer will our good farm earth be carried off on the wings of the wind, nor houses and bridges be swept away by unruly rivers, roads and railways torn up by landslides, marsh pastures submerged beneath predatory waves, nor the coast littered with wrecked sea walls.

The new Department of Geography at Swansea is uniquely situated to assist in the elucidation of many of these problems. I doubt if any other university centre has such a wide variety of terrain so close at hand: the Gower peninsula forms a natural field laboratory illustrating a wide range of normal and coastal processes of erosion and accretion, whilst the immediate hinterland is rich in normal and glaciological material. Swansea is in fact an excellent centre upon which research work of this kind can be based.

Closely allied to geomorphology is climatology, the border subject between geography and meteorology. The meteorologist is concerned with the physical processes taking place in the atmosphere, a shallow ocean of gases held to the surface of the earth by the force of gravity.

The intense radiation to which this shallow layer is subjected from the sun, plus the presence of water vapour, produces short-lived large amplitude variations of temperature, humidity, wind, cloud cover, and rainfall which form the basis of the phenomena which we know as weather. If the earth were the size of a major planet and possessed a deep atmosphere, these variations might not exist. Unfortunately this is not so and we must continue to endure our wind and rain, snow and frost, heat and cold; but if occasionally unpleasant, their study, which constitutes the field of meteorology, is full of fascination and interest. Here the research approach is mainly mathematical and physical and is focused upon the central problem of forecasting.

But the day-to-day irregularities are departures from a mean condition of the atmosphere which can be detected over large areas through periods of time. This average condition depends upon a number of stable and enduring factors such as the distribution of land and sea, and the regular motion of the earth around the sun. It gives us regular diurnal and seasonal variations and largely determines the climate. Whilst the meteorologist is preoccupied in his struggles, with varying degrees of success, to understand the weather, the geographer more properly turns his attention to the spatial relationships of climate. Scientific accuracy can only be given to this type of study by the interpretation of quantitative observations. So far as the large-scale or macro-climatological regions are concerned the instrumental readings of the last century have provided us with the essential data for the fundamental climatological studies of Köppen, Thornthwaite, De Martonne, and Miller. But we still need to know more about conditions in the Arctic, Antarctic, South America, Asia, and the Pacific; and this information when it becomes available will doubtless

involve a revision of existing ideas. We might instance in this connexion the intensive study of the Trade Winds recently carried out by Professor P. R. Crowe which has revealed wholly unsuspected aspects of their behaviour, strength, and precipitation effectiveness (15). Some interesting studies by Gregory into rainfall fluctuations and intensity also show the need for a reassessment of existing information in the light of new ideas (16). The climatologist must also keep alert to the possible implications and repercussions of new concepts in meteorology such as were provided two or three decades ago by air mass movement, frontal disturbances, and atmospheric turbulence, and currently by new discoveries such as high-altitude jet streams, blocking highs and cosmic radiation.

It is, however, in the sphere of micro-climatology that attention is most likely to be directed in the immediate future. This field of investigation really has two aspects: on the one hand there is the true micro-climate of the plant and soil, which is of such great interest to the botanist and ecologist, and of which we have but limited knowledge as it occurs literally beneath the notice of the Stevenson screen. On the other hand there are local variations of climate which exist over short distances owing to the operation of a variety of factors. Minor relief, urban influences, aspect, water, soils, snow cover, and vegetation can all produce marked local differences of climate which may be of utmost significance to human activities. These variations partly explain seasonal fluctuations in fruit and vegetable supplies: the incidence of late spring frost for example is critically important to fruit, hops, and other crops. This incidence is closely related to frost pockets produced by katabatic air drainage in areas of diverse relief. In urban areas, too, we have only recently realized the nature and extent of actual and possible modifications of local climate: but we are made

painfully aware of them when, as in London in December 1952, the deaths of some four thousand people are accelerated as a result of atmospheric pollution combining with a prolonged valley inversion of temperature. Problems of city fogs, atmospheric pollution, inversions of temperature, &c., still need much more investigation (17).

Beyond the pressing problems, too, there is a wide field of investigation open to the geographer, owing to the marginal character of the climate in these islands. Professor Gordon Manley has already shown how slight differences of altitude, aspect, site, and soil may have considerable effects (18). Professor L. Dudley Stamp in the Land Utilization Survey county reports draws attention to many local variations of climate which yet await quantitative measurement. Agriculture and land use might benefit greatly by such studies, for it is often the climatic extremes and accidents rather than the climatic means which act as controlling agents. Swansea once again occupies a very favourable position for pilot studies in all these aspects, for all the important factors likely to produce differences are locally present.

Although over vast areas of the earth's surface physical factors hold sway, there are many parts where the hand of man has to a large extent produced the landscape. By way of illustration let us think for a few moments of Cornwall. Here the intelligent traveller will not only be aware of the bleak moors of the granite bosses and the sun-drenched rocky coves of an indented coastline, but he will also notice the small irregular inclosures of Celtic origin, the long narrow fields of Anglo-Saxon creation, the intricate pattern of deep narrow lanes handed down from medieval days, the dispersed settlement dating from prehistoric times and the nucleated groups of recent origin, the minute medieval fishing ports and the

twentieth-century tourist towns, the grey sadness of the abandoned tin-mining areas and the sparkling activity of the china clay districts. All this, and more, has been added by man to the natural landscape; and these cultural aspects no less than the physical are in a continual state of change. No landscape is static, and even as we study what it has become it is in process of becoming something different. All this is grist to the mill for the historical geographer, who works in the border-land between history and geography.

These two subjects are in many ways closely related, for the historian, concerned mainly with the past, finds, as J. R. Green so clearly realized (19), that geography can largely help in the explanation of past events. Conversely the geographer, concerned with the transient present, inevitably looks back into history for the solution to many problems. Whilst geographers are generally acutely conscious of the historical factor—Sir Halford J. Mackinder very early noted that 'The Geography of Britain is in fact the intricate product of a continuous history, geological and human'—not all historians have shown themselves aware of the importance of the geographical factor. J. R. Green (19), George Adam Smith (20), and G. M. Trevelyan (21) in the British Isles, and Michelet in France, are notable exceptions.

The growth of geography in the last half-century has not only shown its importance in history but has also revealed the existence of a true borderland subject of historical geography in which the data is historical but the method geographical. The worker in this field has two primary tasks both of which present an immense range of research possibilities. In the first instance he can attempt the reconstruction of the geography of a particular area at a particular time, describing as it were a static still from the ever-changing dynamic picture. Macaulay

(22), G. M. Trevelyan (21), and J. H. Clapham (23) all realized the need for this basic data and in part attempted reconstructions; but the first serious attempt was not made until the composite volume dealing with the *Historical Geography of England before A.D. 1800* appeared in 1936 under the editorship of Professor H. C. Darby (24). This was an attempt to provide successive geographical cross-sections over fairly broad periods. If the material permits, the time element may be narrowed and a more detailed picture of the geography at a particular instant reconstructed. This is now being attempted for England in the mid-eleventh century by Professor Darby and his co-workers on the basis of the Domesday Survey—a document which historians have examined and re-examined time and time again without realizing its potentialities. Some notable contributions by the Ordnance Survey have also recently been made on these lines with the production of period maps.

This approach is clearly applicable to any period at any place if suitable historical material is available, and the historical geographer in carrying out this work not only provides a foundation for both the historian and geographer but also sheds light on the world around us. There are considerable untapped resources in Wales where this technique can be applied, notably in the writings of Giraldus Cambrensis, Morris, Edward Llwyd, and in the surveys of the Board of Agriculture.

The second main task of the historical geographer is concerned with the historical evolution of the present-day cultural landscape. We can rarely decipher how things came to be what they are without recourse to the historic document, but conversely the latter is often unintelligible without supporting field work. The unique approach of the historical geographer here is to regard the cultural landscape itself much as F. W. Maitland

regarded the topographical map—i.e. as a palimpsest in which the writings of different ages partially obscure one another. But in his attempt to provide an explanatory account of the present landscape the historical geographer is very conscious that unlike the palimpsest the cultural landscape has been influenced by the parchment upon which it is inscribed. The facts of geography have guided and at times controlled the making of the human landscape.

Recent research work in this field indicates a whole new range of interesting possibilities, and efforts to explain and account for the existing scene have revealed unsuspected aspects of our history such as the disappearance of at least 1,500 villages from the English countryside in the last millennium (25). We now perceive that the hedgerows, lanes, and villages together with their differing patterns on the map have a unique story to tell; and it is pleasing to record that efforts to fill this gap in our knowledge are now being made by both historians and geographers. Dr. W. G. Hoskins, Reader in Economic History at Oxford, will shortly publish an introductory volume on the history of the English landscape (26), and this will be followed by county volumes the first two of which, dealing with Cornwall (27) and Lancashire (28), have been prepared by geographers. This is, however, but a beginning for England, and the rest of the British Isles remains as yet untouched.

We next turn to another specialist branch of geography which largely arises because society is rarely organized on a purely subsistence basis. This is economic geography, which mainly concerns itself with production and trade in their manifold aspects. As in other border studies, whilst the method is geographical the concepts and material derive much from the sister subject: in this case economics.

Few states, societies, or regions now remain independent, most are interdependent and organized on commercial rather than subsistence lines. Economic factors, expressed mainly through monetary concepts, play a large part in the geography of production and trade: the study of their interaction forms a field in which much still remains to be ploughed, for we are only now beginning to move away from the pre-Gotz static commercial geographies with their lists of useful but unexplained and unrelated data. Although it is now generally realized that the approach must be causal and cognizance taken of the dynamic nature of the material, there is a great need for experimentation in the presentation of the data. Methods of maintaining this in an up-to-date condition combined with speed of publication are urgently needed, or there is a danger of the subject becoming economic history rather than economic geography. Practitioners might well look into the methods adopted by the International Air Transport Association which recently published statistics for 1954 *before* the end of December 1954!

Up-to-date studies and appraisals might also not unreasonably look ahead and attempt a certain amount of extrapolation, thereby increasing their usefulness. The recognition of trends can often be of great value, for in the realm of economic activity the present is always ahead of printed statistics; and it may take months and sometimes years before these can be collected and fully analysed. The economic geographer, too, has important contributions to make in the very practical study of the location of industry, and the notable work by Professor Wilfred Smith (29) points the way to future activities. Here again research possibilities crowd forward: for it seems that, thanks to our colleagues in physics and chemistry, we are on the brink of a further fundamental economic reorganization in many societies. This mid-

twentieth-century revolution may soon prove to be more rapid and to have more repercussions than any previous major advance. We have yet to assess the effect of a whole range of synthetic foods and clothes upon traditional methods, we begin to see the economic power of giant firms and combines rivalling that of small states, we do not yet know whether the world pressure of population will be matched by new biological foods from the lands and oceans, we await with some anxiety the possible effects of the application of atomic energy and how far the repercussions of political factors will be important—all these and more will largely determine the economic pattern of the days to come. An awareness of the present helps us to cope with the rapidly approaching future, and the economic geographer, by his researches, holds a watching brief and can give us that awareness. And at the same time, as O. E. Baker pointed out, he helps the economist, whose head is often in the clouds, to keep his feet on the ground. The microcosm of South Wales has probably experienced more than its fair share of dynamic economic change in the present century, and the trend continues. There is ample scope here in Swansea for an extension of the studies begun by (Dr.) D. Trevor Williams before the Second World War (30).

We have outlined the more important branches of our subject such as geomorphology, climatology, historical geography, and economic geography where the geographer can make significant contributions, but we must not overlook because of the limited time now available the need also for a close acquaintance with cartography (upon which all of these so greatly depend) together with bordering studies in the realm of biogeography, oceanography, and political geography. In all of these border-zone subjects the approach and method are essentially

scientific and analytical and as such follow the pattern which tends to dominate some school and a great deal of university work. Whether we like it or not it does seem in most subjects to be the most successful method where the objective is fundamental research. There are dangers, however, in over-specialization of which others have spoken, and efforts are being made in many universities to meet this problem. Here, however, geography occupies a unique position since it has something more to offer than a narrow analytical specialism in one of its branches: for the heart and core of the subject, which we call regional geography, depends on synthesis, on the integration of parts of the analytical elements into a composite whole. Here we see geography functioning as a bridge between the sciences and the humanities, linking the various parts and forming a subject with a wide breadth of view.

When we subdivide an area on the basis of any one branch of geography such as geomorphology, climatology, &c., we obtain regions which are equivalent to the biologist's species, and various examples of the same species may be found in different places. But in regional geography we are seeking a differentiation based on all these branches simultaneously and we take note of any patterns or groupings which transcend those of the parts. An area often possesses an ethos or unity of some kind despite a multitude of constituent diversities. It is then unique and individual rather than a member of a species. The late General Smuts had this in mind when he wrote in his introduction to Professor Bews's *Human Ecology*:

The World is not a chaos (nor) a chance selection of items and fragments. It is a closely interwoven system of patterns . . . our most painstaking efforts at understanding the world disclose certain dominant features in it—rhythm, regularity, inter-

connexions and linkings up, an interplay of active relationship which is creative of structures, forms, patterns.

It is the regional geographer's task to seek out and describe such phenomena. To illustrate we need only think of the diversity that forms the unity of Wales, or on a larger scale the United States. Cultural, religious, and political ideas may produce unities such as Northern Ireland, Eire, Pakistan, or Liberia. But although political groupings spring to mind as somewhat obvious manifestations there are other more subtle regional unities: the old-established English parish is often a good example of the unity of a diversity of physical terrains, and I wonder how many of my audience tonight have ever thought of South Wales as an extension of the lowland zone of Britain? Again, cities and seaports tend to impose a pattern on the countryside around them and we have only recently come to realize the importance of urban spheres of influence. Industrial needs and political necessity have helped to produce the somewhat obvious geographic grouping of the iron and steel and coal resources of western Europe, as in the Schuman plan. Strategic and other considerations have led to organizations such as the Office for European Economic Co-operation and the North Atlantic Treaty Organization. The list is long, for the permutations and combinations of each area of land with every other area of land are inexhaustible.

Here, then, we have a subject in which the approach is the reverse of specialization, synthesis in place of analysis, an art in place of a science, and one in which the practitioner needs the vision of a Mackinder or a de Martonne to achieve outstanding success. Regional Geography, then, is a challenge to the whole community of geographers, since from it concepts and knowledge may emerge which no other discipline can produce. With the world as his parish the geographer's potentialities are indeed great,

and among numerous research topics that cry out for attention are world problems of population, power, planning, land use, trade, and international communications which all need studying in their global geographical context. The recently published study of *World Population and Resources* by W. S. and E. S. Woytinsky (31) exemplifies this kind of approach.

In contrast to this global vision detailed attention can with advantage be directed to small specific problem areas in our own country, and here the geographer can go farther than mere appraisal of principles; he can also apply his knowledge in co-operation with the planner. Notable examples include the work of Professor S. W. Wooldridge and S. H. Beaver in the allocation of sand and gravel resources (32) and of Professor Beaver, too, on derelict land in the Midlands (33). There are also Professor G. H. J. Daysh's contributions to regional planning in north-east England (34), whilst an interesting example where the integrated approach of the geographer foreshadowed the results of arbitration by the Minister of Housing and Local Government is seen in the paper by Miss Alice Coleman on landscape and planning in relation to the cement industry of Thames-side (35). Further work of this nature will pave the way towards a new regional geography of our own country which is constructive as well as purely descriptive. The importance of field work in all of these studies is critical. One needs to live in and partake of the life of a region to gain an insight into its character and problems.

By now the pattern of the ideal geographer can be seen emerging. The cultivation of this awareness of the altogetherness of things—the *Zusammenhang* of the German geographers—involves an appreciation of the whole and the interworking of the various parts. This implies for the geographer a reasonably detailed knowledge of each

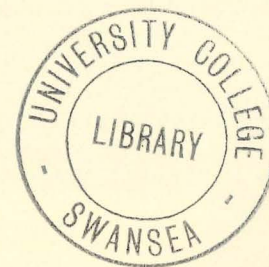
of the divisions of systematic analytical geography and in one branch at least he should be capable of meeting colleagues from other disciplines on their own ground. Or as Professor Wooldridge has so admirably expressed this, the 'properly equipped regional man must be as it were "bachelor" of all the main contributory approaches and can profitably afford to be "master" of one' (36). The more our paragon knows about each of the branches the better the ultimate synthesis and the greater his chances of detecting a correlation, seeing a link, or formulating a concept quite outside the cognizance of the specialist. We can further say with assurance that whatever his interest, the future is bright with exciting possibilities for the keen geographer. The labours of two generations of pioneers have clarified our objectives, and the next step forward is the more vigorous application of our philosophy to the problems that surround us.

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