



SATURDAY, SEPTEMBER 17, 1932

## CONTENTS

	PAGE
Science in Social Problems . . . . .	413
The Alps and the Alps. By H. H. R. . . . .	415
Creative Man. By Prof. F. S. Marvin . . . . .	416
Quantitative Pharmacology . . . . .	417
Telegraphy and Television . . . . .	418
Short Reviews . . . . .	419
Some Aspects of Applied Geophysics. By Prof. A. O. Rankine, O.B.E. . . . .	421
The Adequacy of Human Diets . . . . .	425
Obituary :	
Prof. Fran Jesenko . . . . .	426
Mr. Herbert Knapman. By E. H. N. . . . .	426
Dr. J. Stuart Thomson. By S. J. H. . . . .	427
News and Views . . . . .	427
Letters to the Editor :	
The Late Geological History of British Somaliland.—Dr. W. A. Macfadyen . . . . .	433
Molecular Weights of the Blood Pigments of <i>Arenicola</i> and of <i>Lumbricus</i> .—Prof. The Svedberg and Inga-Britta Eriksson . . . . .	434
The Limiting Mobilities of some Monovalent Ions and the Dissociation Constant of Acetic Acid at 25°.—Dr. A. I. Vogel and G. H. Jeffery . . . . .	435
Structure of Polished Solids.—Dr. L. Hamburger . . . . .	435
Mechanism of the Action of X-Rays on Living Tissues.—V. Everett Kinsey . . . . .	436
Radiographs of Insects.—Dr. Hugo Fricke and Irwin Sizer . . . . .	436
Petroleum Bacteria and the Nutrition of <i>Psilopa petrolei</i> .—Dr. W. H. Thorpe . . . . .	437
Diffraction of Electrons in Mercury Vapour.—Dr. F. L. Arnot . . . . .	438
Sir Richard Threlfall and the Automatic Microtome.—Sir Sidney F. Harmer, K.B.E., F.R.S. . . . .	438
Research Items . . . . .	439
Astronomical Topics . . . . .	441
Greenland Hydroids . . . . .	442
Megalithic Monuments of Brittany . . . . .	442
British Phenology . . . . .	443
Scientific Aid in Agriculture. By F. L. E. . . . .	444
Annual Exhibition of the Royal Photographic Society . . . . .	444
University and Educational Intelligence . . . . .	445
Calendar of Geographical Exploration . . . . .	445
Societies and Academies . . . . .	446
Forthcoming Events . . . . .	448
Official Publications Received . . . . .	448

*Editorial and Publishing Offices :*

MACMILLAN & CO., LTD.

ST. MARTIN'S STREET, LONDON, W.C.2

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Telephone Number: City 1266

No. 3281, VOL. 130]

## Science in Social Problems

IT has continually been urged in these columns that an organised endeavour should be made to link up scientific knowledge with appropriate action in social, economic, and national affairs. Sir Alfred Ewing's presidential address to the British Association at York indicated the extent to which scientific workers are now concerned with the social consequences of their discoveries. At the present moment the disorganisation in the world's economic and distribution system, with the resultant widespread industrial depression and unemployment which has resulted from the advent of power production, is perhaps uppermost in our minds. The dangers which threaten civilisation through its failure to make a rightful use of the enormously increased productive powers with which mechanical science has endowed it, are by no means the only threat which the gap between scientific advance and moral or ethical development offers. The fourteen years which have passed since the War have, as yet, brought no check to the prostitution of scientific effort to destructive purposes. Far more destructive weapons are now available, and a repetition of the calamity of 1914 may well threaten the extinction of civilisation. As yet, however, neither scientific workers nor any other section of the community has succeeded in calling any real halt in armaments, or in inducing the Governments of the world to base their policies upon the obvious fact that the renunciation of war as an instrument of national policy is a fundamental condition of the security of civilisation.

These are major matters, but equally in lesser issues is it true that the enjoyment of the benefits of applied science involves the renunciation of deeply embedded habits and prejudices. The same forces which can minister so abundantly to our resources, our pleasures, our health, our enjoyment of life, can become a most serious public danger in the hands of careless, indifferent, or selfish individuals. The possibilities of the abuse of power increase with its magnitude in the same proportion as the possibilities of its beneficial use, but while use is dependent on knowledge, abuse is as possible in the hands of the ignorant and thoughtless as it is in those of the deliberately selfish or morally perverse.

The realisation of these conditions, coupled with the backward condition of the so-called social sciences, has already led many scientific workers and others to sound a warning note. Sir Alfred

Ewing's assertion that man was ethically unprepared for the great bounty of the engineer, that in the slow evolution of morals he was still unfit for the tremendous responsibility it entailed, and that the command of Nature had been put into his hands before he knew how to command himself, found support at the British Association meetings in the subsequent address of Prof. Miles Walker to the Engineering Section.

Prof. Miles Walker referred to the way in which vested interests blocked the way to improvement, and unintelligent control and stupid prejudice preserved the old evils, refusing to be convinced, long after science had shown the way to make things better for the people. The persistence of atmospheric pollution, mainly through domestic smoke, with the attendant loss of sunshine, and waste in dirt, health, and valuable by-products, the waste of heat and power, the paralysing influence of the middleman on the grid system—these are familiar examples of the way in which prejudice and selfishness react against the general welfare and prevent the utilisation of the benefits of applied science. Prof. Miles Walker proceeded, however, to emphasise the contribution which the engineer and man of science could make in economic and social matters, also towards the amelioration of the lot of mankind. Asserting that knowledge must form an essential qualification for executive office in the modern State, and was indeed the only sound basis for action, he suggested that in a small self-supporting State under the control of men of science it might thus be possible within a few years to demonstrate the high standard of life obtainable by modern organisation and modern methods. But as Sir Josiah Stamp remarked in a discussion in the Section of Agriculture dealing with the distribution and marketing of agricultural products, we need the moral rectitude of a Joseph, as well as his economic prudence, in planning under the conditions of to-day.

The direct outcome of the presidential address to the Engineering Section was a resolution passed by the Section expressing its conviction that the present world depression indicates that the machinery of government and finance is inadequate to deal with the vastly increased productive capacity of peoples brought about by the application of science, and the further opinion that the present economic position of Great Britain calls for far wider co-operation between the scientific community and the Government. The resolution urged the Government to invite the leading scientific institutions and societies to appoint in confer-

ence representatives to co-operate with the Government to formulate plans for dealing with the present problems facing the country.

The desire of the promoters of the resolution, however, to gain the assent of the whole of the British Association was disappointed, as when the resolution came before the Committee of Recommendations, it was turned down by a large majority. The resolution will accordingly not be passed on to the Council of the Association for adoption, although of course the Council could itself take independent action if it wished, without any suggestion from the Committee of Recommendations. It is perhaps not surprising to find that representatives of science present at the York meeting are not actively interested in the social consequences of scientific progress. Science is so specialised to-day that workers in any one branch of science are liable to have their attention so concentrated upon their own particular subjects that they see little of the field around them, and are unconcerned in its general activities or problems. The representation at the British Association meetings is still largely academic, and it may be hoped that, as the industrial element in the attendance increases, the interest in the social consequences of scientific discoveries may grow stronger.

Since the British Association has failed to take action, it is possible that the British Science Guild, which was founded in 1905 "to promote the application of scientific method and results to social problems and public affairs", may be induced to make some definite proposals for bringing scientific work and thought to bear upon social problems. At least some effort might be made to secure wider support for the task the Guild has undertaken of compiling a volume which will indicate the value of the contributions science has already made to our national progress, and the potentialities of science in the evolution of a better order of society.

Apart from Prof. MacDougall's eloquent appeal in Manchester last year for research into the social sciences, and the discussions at the centenary meeting of the British Association, there have not been wanting other similar proposals. Some time ago, Dr. G. E. G. Catlin, professor of politics in Cornell University, outlined a scheme for the formation of a social science research council in Great Britain, covering all social fields of scientific study and scientific fields of primary social relevance. The council would not only act as a clearing-house of information on scientific work in social sciences, and provide a means of obtaining competent repre-

sentatives of the social sciences on other national bodies, but would also act as a controlling organisation to which the Government could turn to sponsor independent and impartial research into social and economic problems. It was not proposed that the council should directly undertake research, or even become a mechanism for co-operative research, although the supervision of specific pieces by *ad hoc* committees might come within its scope. It was rather suggested that the council would provide a source of disinterested expert advice on social matters, which is indispensable in national planning, but is not satisfied by the Economic Advisory Councils hitherto appointed.

If it is disappointing to find that the British Association itself was unwilling to take up the suggestions made at the York meeting, it is at least encouraging that the responsibility of the man of science in these matters has been publicly admitted before such a representative gathering. It is to be hoped that the suggestions may be crystallised by some other organisation into concrete and practical proposals which can be put before the scientific community as well as the community in general. When this has been done, the disposition of the ordinary citizen at the present moment to reflect that the application of the dispassionate temper of science to the difficulties of the hour might facilitate their settlement, should encourage the scientific worker to shoulder his responsibilities of leadership, of his capacity for which discussions at the recent British Association meetings on such matters as water supply, water pollution, the planning of markets, and the prevention of disease in animals furnished copious evidence.

### The Alps and the Alpids

(1) *Diskordanz und Orogenese der Gebirge am Mittelmeer*. Von Prof. Dr. Wilfried von Seidlitz. Pp. xxiv + 651 + 14 Tafeln. 72 gold marks.

(2) *Das alpine Europa und sein Rahmen: ein geologisches Gestaltungsbild*. Von L. Kober. Pp. iv + 310 + 3 Tafeln. 20 gold marks.

(Berlin: Gebrüder Borntraeger, 1931.)

**T**HESE two works are both by geologists who have spent many years of field work studying the tectonics of the most recently folded belt of the earth's crust. They are concerned with the same subject and, whilst they are completely different in style and at first sight not much alike in conclusions, they have one feature in common. This is that the tectonics of the Alps are not the normal Alpid tectonics. The Alps are a special and

unique portion of the great Tertiary fold-belt of the Alpids. West Alpine geologists, fascinated by the spectacular nappe-displacements of their own mountains, have over-emphasised, quite naturally the importance of similar structures in the remainder of the Alpid chains. The authors of these volumes are, as it were, seeking for a new point of view from which the Western Alps will appear in their proper perspective. They show that the history of the Alpids is more than a history of young folded chains, since the reaction of tectonic islands of old folded masses, thrust-tectonics of marginal regions, fracturing, torsion movements between earth-blocks, their rising and sinking, and the associated seismic and volcanic phenomena, are all of fundamental importance in the architecture of the mountain zones. Termier's shout of 1904, "Rien n'est en place, il n'y a que des nappes", appears with respect to its second half to be a somewhat premature expression of enthusiasm.

(1) The first part of von Seidlitz's book is concerned with general matters affecting the origin of the present Mediterranean region. Morphology, palaeogeography, and igneous geology are considered. The importance of median masses (*Zwischengebirge*), as a sort of tectonic islands, and their contrasts to central massifs are examined. Old tectonic kernels, relics of pre-Mediterranean orogeny, have acted as obstacles in the path of the younger folding. The divisions of the orogenic belt are developed, whilst the great importance of fractures and torsional phenomena is emphasised. The correlation of seismic and volcanic happenings with tectonic events, dealt with in detail in the first part, is stressed throughout the book, and is illustrated by many of Sieberg's seismic maps.

In the second part there are given detailed tectonic analyses of the different Mediterranean regions. This part concludes with a discussion of the many syntheses of the Mediterranean Alpids—those of Suess, Termier, Kober, Staub, Stille, and Jenny—after which von Seidlitz develops a synthesis of his own. This depends chiefly upon the recognition of main and subordinate geosynclines and of two orders of median masses.

In the third part of the book an account is provided of the whole Mediterranean orogeny. Nine tectonic zones make up the complete belt. In the centre run the folds of the main geosyncline—Sierra Nevada-Corsica-Alps-East Dinarids-Taurids; this is flanked on either side by the inner median masses, followed outwards by the folds of the subordinate geosynclines, these by the outer median masses, and finally the folds of Jura type next the