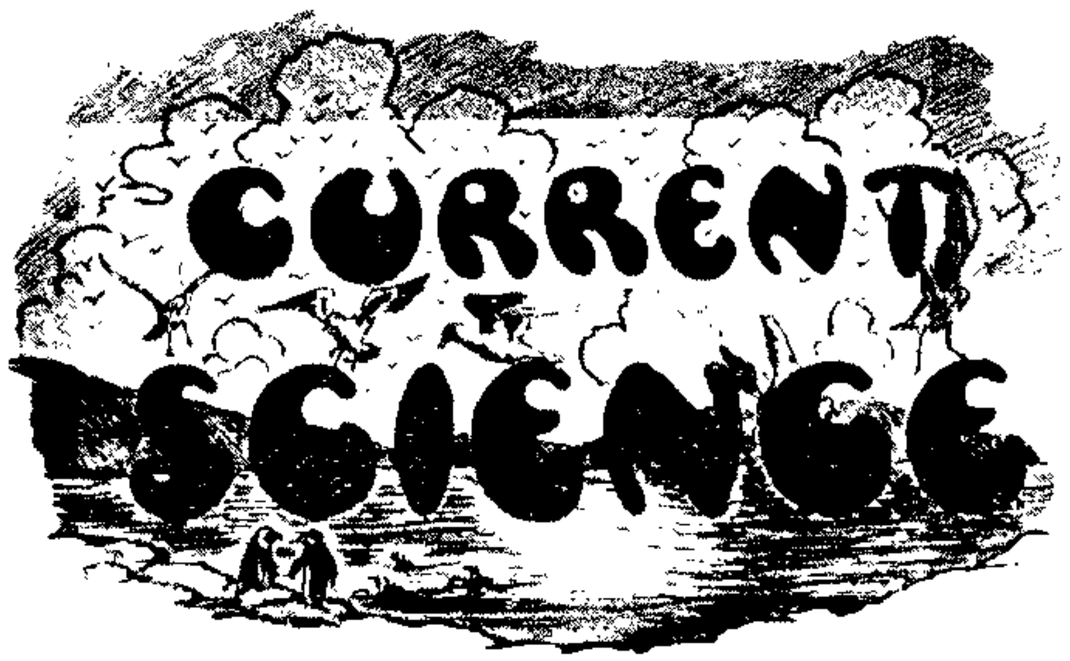

Vol. I] SEPTEMBER 1932 [No. 3

CONTENTS

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Science and Statesmanship.

IT may be presumed that the chief outcome of the political conferences which have already taken place and those about to be undertaken soon, will be the conferment of a large measure of autonomy on the provincial governments. The problem of utilization of this newly acquired freedom for the greatest benefit of India should now engage the closest attention of all the practical statesmen who have taken part in the deliberations of the Round Table Conferences. Few will dispute the truth of the statement that the noblest exercise of freedom is service to humanity, and perhaps the best equipment for this task is a general diffusion of scientific temper among the people and a severe discipline of Truth on the part of the statesmen. "Men little think how immorally they act in rashly meddling with what they do not understand. Their delusive good intention is no sort of excuse for their presumption. Those who truly mean well must be fearful of acting ill." These words o Burke ought to be engraved on the hearts of the politicians who wish to enter the portals of the new Indian legislatures and those of the statesmen who will control and direct the affairs of the State. If in 1914 they had been taken to heart or even remembered by politicians, it is reasonable to suppose that the world would not have witnessed the appalling catastrophies nor been subjected to a long train of apparently incurable economic miseries.

A mechanized mind and a vague apprehension of the power of science for saving and destroying human life do not constitute the type of mental equipment for dealing with the fortunes and the precious human lives of a whole country. Science was not given to man to be prostituted for destructive purposes and its high ideal was envisaged in the impassioned sentiments expressed by Sir C. V. Raman in the concluding portion of his Dacca Convocation address. He said, "the true justification of science lay in its success in opening out a new vision of the Universe, in giving us an insight into the origin and development of human life, and in fact, in its enabling man to perceive himself in his proper relation to the Universe he lived in. The progress of the human race would depend on the success attained in applying the methods of science to the study and control of human activities

in all their varieties. Science was opening out new vistas of thought, was creating a new religion and a new philosophy which would replace beliefs which were not founded on demonstrable truth but were merely vestiges of man's animal ancestry." In the Introduction to his *Democracy and Liberty*, Lecky says that, "the whole great field of modern scientific discovery seemed out of the range of even such a scholar and statesman as Gladstone" and Gregory records an interesting interview between this eminent politician and Faraday who, when in the midst of explaining an important discovery of his, was superciliously interrupted by the remark, "But, after all, what use is it?" administered an appropriate rebuke, "Why, sir, there is every probability that you will soon be able to tax it." It is true that no scheme of government can be concived in which taxation of human activities can be dispensed with as a superfluity, but it is in the method of its application that the higher visions of statesmen are called into exercise. We are only labouring the most obvious thing when we state that the best part of the revenues must be devoted to the promotion and extension of those activities from which they are derived, to the contribution of the moral and material progress, to the elevation of the racial standards and to the creation of a new and better world. If these objects were to come within the province of practical politics, they are not likely to be achieved by minds imbued with a mild spirit of diplomatic curiosity, a hopeful outlook that things will somehow right themselves in the end, a moderate egotism and an extraordinary capacity for making interminable speeches. The last is a fatal gift which Froude has rightly characterized as, "the harlot of the arts". Our new legislatures should not be permitted to become a paradise of half-baked politicians or a sporting ground of mechanized statesmen.

The constitutional reforms about to be introduced into Indian legislature, will, we think, have to be worked on the basis that politics though inexact is still a science, for, "The material of politics is human nature, its motives honourable and base, its appetite for power and for service, its passions, its prejudices, its memories and aspirations." Very many harsh things have been said, to our mind most unjustifiably, about politicians and politics and their services to the country are apt to be forgotten the moment the causes which called for their exertions, cease to exist. Mr. Baldwin in his Rectorial Address to the University of Edinburgh quotes from that eminent historian and divine, Dr. Figgis, the following passage :—

"In regard to truth, the more one reads of man's notions, about the meaning and method of civil society, the more often is one inclined in despair to say that truth has little to do with politics as it has with politicians."

But by far the hardest thing ever said of the politician is the following, "To the low types which the human race has produced from Cain down to Tartuffe, the age of Democracy has added a new one—the politician." This evil reputation, which few politicians merit, is almost entirely due to the fact that truthfulness prevails less in politics than in the world of science and force is resorted to by the politician for sefety of the State which may involve the suspension of the accepted code of morals, and finally the policy of administration is not based on any fixed laws or principles of science, but permitted to alter in accordance with the creeds of the party in power. When a policy has to be defended, the politician relies more on his persuasive powers of oratory than on his capacity to prove its validity. It is just here that the politician and the scientist part company; but if the scientist were made a statesman, would he adopt politics of the kind where, "a lower standard of habitual truthfulness is alleged to prevail than in the world of science"? Possibly he may introduce the methods of science into statecraft and after all the difference cannot be too wide to keep them separate, with prejudice at any rate to the latter.

One of the hardest problems which the reformed constitution will have to deal with and provide a satisfactory solution for, is the labour question which in India, as elsewhere, is intimately bound up with the country's economic condition and the nature and extent of unemployment among the community. Labour is essentially a scientific problem, almost as exact as any of the physical sciences and unemployment is the result of an unscientific handling of the growth of civil society, the occupations of its members and the correlation of both with the produce of the land. It is obvious that the task of settling labour in anything approaching satisfaction and permanence may seem almost impossible for the reason that human society is a growing organism whose needs

are governed by a complex set of factors. In the investigation of this problem alone, possibly an expert knowledge of more than half a dozen sciences will have to be impressed. An expert knowledge, unassisted by a trained imagination is practically of little importance even in purely administrative functions and in them as well as in carrying on high matters of diplomacy and politics, what the statesmen need are the insight, inspiration and visions which the discipline of science confers. Such a statesman will realise that the preservation of the State is just as much his concern as its enrichment and observe that in economic conflicts and international jealousies the chances of amicable and permanent settlements will be jeopardized if the ardour of patriotism were permitted to outstrip the appreciation of natural laws. We can cajole nature, and even conquer her, but cannot abuse her with impunity. It is in the teachings of science, both physical and biological, that the statesmen will have to find inspiration and infer lessons for their profession of politics and the services of expert scientists, instead of being confined to the laboratory and lecture rooms, should be associated in ever-increasing measure with all the branches of political and administrative functions. Inactivity is comparatively innocuous, but activity without insight must be a destructive force in any calling and is fraught with incalculable danger, especially in politics. The fate and fortune of millions of people cannot eternally be treated as a game of chance in which probability of success is determined by the wealth of rhetoric; but politics, by assuming the definite character of a distinctive branch of a biological science, should pass into the custody of scientist statesman.

The application of the methods of science to the administrative problems which are primarily concerned with the life and affairs of restricted geographical areas, must eventually contribute to the general progress of the people as a whole. Certain departments of the public service such as education, agriculture, medicine, engineering and forestry, are scientific in their needs and purposes, and only men who have actually lived these sciences can visualize the power and possibilities which they hold for making human life richer, happier and fuller. The administrator in charge of these and allied departments needs all the resources and knowledge which an intensive scientific training has imparted to him and his interest in the scientific problems must lead him to organise and supervise research laboratories. Moreover a scientist who has himself engaged in the investigation of special problems in research laboratories would, in certain respects, make a more competent administrator of these special departments in which his expert knowledge and his powers of organization would be of inestimable value in controlling and directing their affairs satisfactorily and efficiently. It is not in the scientific departments alone that men with wide scientific experience of teaching and research are required, but in almost every conceivable branch of administration there is need of the application of scientific methods in the treatment of general and special problems which have anything to do with the management of human activities on any scale. It is true that men and their affairs cannot be dealt with as chemical substances in the laboratories and the test-tube and mortar may not be the instruments of administration or of the transaction of high political matters. Though the means of investigations may differ, the form of procedure must be scientific, consisting of observation, analysis, verification and deduction of general laws. But this is not our position. The whole government machinery must breathe a scientific spirit, and administrators must possess an attitude of mind which seeks to justify not by faith in creeds and undemonstrable theories but by verification of evidence. Statesmen have fallen into the common mistake of classifying things and thoughts as scientific and political, but the position of the man of science is that there are no scientific subjects and scientific thoughts implying topics and ideas about scientific matters but, "the subject of science is the human universe" embracing not only the facts and phenomena of this universe, but "everything that is or has been or may be related to man". The qualities therefore that go to make the scientific mind are precisely the attributes that go to make the statesman's mind, for the "nature of both must be one which vibrates in unison with that of which it is in search".

The main concern of statesmen must be the orderly progress of the human race and it is possible of attainment only by imparting to the men and affairs of the government a scientific outlook, attitude

and method. Progress, if it is to be real and permanent, must spring from the hearts of the people and the function of statesmen must be to provide the means of stimulating and directing it for the greatest common good. In the reformed administration of the country, where it is proposed to introduce adult franchise, we really wonder whether the education of the people has been of such a character as to enable the general electorate to make the right selection, to weigh between two opposing political issues, or to formulate clearly their public duties and obligations. The primary want of the people which is a condition precedent to their general progress is a wider diffusion of scientific education which would also include a knowledge of those branches of learning, leading to a practical appreciation of an enlightened and well-ordered social and political life, the observance of the laws of public health and principle of hygiene, the inculcation of the deeper meaning and purpose of humanity and the ideals of the higher values of individual and corporate life. In order to secure the attainment of these objects in any measure, the reform of education, the revision of medical ethics and alteration of the complexion of administration should form the immediate consideration of the reformed government. It seems to us that what political philosophy has not succeeded in achieving for mankind, science may yet fulfil.

Unemployment in India.

WE have received a copy of the booklet by Sir M. Visvesvaraya, K.C.I.E., LL.D., on "*Unemployment in India*," which formed the subject of a public address delivered in Bangalore on the 8th September. The address commences with a critical examination of the present economic situation in India, and contains an analysis of the causes which have led to the unemployment among the general masses of the people and among the educated community. It will be remembered that the Government of India in their circular, after having enumerated the causes which have contributed to the serious state of unemployment on an extensive scale, practically gave up the case as being far too complex to admit an easy or immediate solution. A public pronouncement, setting forth suggestions of practical remedies for relieving the tension of the situation, by a distinguished and resposible citizen, with wide administrative experience and knowledge of practical affairs of men and things, must possess, at the present moment, more than ordinary interest. Our main object in announcing the publication of this important booklet is to focus the attention of the public in general, and of the authorities and men of science in particular, on what may commonly be called the burning topic of the day. We intend to return to this in the next issue of *Current Science* when we expect to be able to deal with the subject from standpoints other than those already examined by us in the editorial for the August Number.

Waterfalls as Habitats of Animals.*

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IN an earlier paper (1) the animals of the bed of a rapid flowing, shallow, rocky stream were divided into two "sub-associations" and each of these was again divided into three "strata". Further work on the ecology of the torrential streams has made it clear that the habitats should be classified into still finer divisions in order to realize the full significance of animal adaptations, *e.g.*, the correlation of an animal organization with its habitat. So long as the varying gradations in

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A short account of waterfalls as habitats of animals is given by Pearse in *Animal Ecology*, p. 194, New York, 1926.