

(1) The following reflections are occasioned by J. G. Crowther, *Social Relations of Science* (Macmillan & Co.), 1941, xxxii + 665 pp., i6s. net. (Henceforth referred to as *S.R.S.*)

(2) *See Science at the Crossroads* (Kniga), 1931. Hessen's article on Newton is considered by Professor Bernal "as the starting point for England of a new evaluation of the history of science" (*Social Functions of Science*, 1939, p. 406).

(3) These ideas were first made popular by Professor L. Hogben, himself not a Marxist, in *Science for the Citizen* (1938), from which a characteristic quotation is discussed below (pp. 452-3). This book had an enormous success. Another statement, even more effective among scientists, was that by J. D. Bernal in *The Social Functions of Science*; in his chapter on Pure Science (pp. 95-98) he ridicules the ideal of Pure Science as mere snobbism. J. G. Crowther in *S.R.S.*, p. 522, calls the disinterested pursuit of truth "a little cold, mean and selfish " compared with problems of practical use.

(4) *S.R.S.*, p. 352, condemns " three centuries piling up discoveries in regions of research artificially isolated from the general body of knowledge of social affairs."

(5) J. D. Bernal, *Social Functions of Science*, p. 404, says scientists should support Popular Front. Crowther, *S.R.S.*, p. 332, urges scientists to struggle for the rise to power of a "progressive class" and get the change over quickly.

(6) " Inquisition is beneficial to science when it protects a rising class " (p. 333). " The danger or value of an Inquisition depends on whether it is used on behalf of a reactionary or a progressive governing class " (p. 331).

(7) *S.R.S.* p. 557

(8) *S.R.S.*, p. xxix : " Hitler's view is extremely dangerous because in relation to the present situation it contains more truth than the conventional idealistic view."

(9) Thus Bracton says: " For that is an absolute villeinage from which an uncertain and indeterminate service is rendered, where it cannot be known in the evening what service is to be rendered in the morning, that is where a person is bound to do whatever is enjoined to him."

(10) W. Koehler, *Gestalt Psychology*, New York, 1929.

(11) The multiplicity of formal concepts for the same personality within a legal and political system has been critically mentioned by P. Valery, *La Politique de l'Esprit, Notre souverain bien*, Manchester University Press, 1941.

(12) Lord Wensleydale, quoted by Professor J. H. Morgan in *Enc. Britannica*, 14th Edn. Art. Common Law.

(13) I prefer here the term " scientific technology " to that of " applied science ", so as to exclude for the moment the problems offered by practical branches, like medicine, education, economics, where scientific principles are applied directly to man or human society.

(14) *S.R.S.*, pp. 66-67.

(15) *S.R.S.*, p. 125, Platonism the carrier of anti-scientific snobbery in Roman times ; p. 279, it becomes the philosophy of the ruling bankers of the Renaissance ; p. 578, it is the first sketch of the philosophy of modern Fascism.

(16) *S.R.S.*, p. 116, the Romans were too rich to advance science ; p. 160, so were the Moslems ; p. 592, the French people after 1918 were also too rich ; p. 552, Russian Academy before the Soviet Revolution misguided by wealth. On the other hand (p. 208), great wealth was helpful

to Roger Bacon's scientific work; and also (p. 358) to Guericke's : and (p. 369) to Boyle's, and - in general - the status of a gentleman of leisure was the economic condition for scientific excellence throughout the Middle Ages (p. 239) and in 16th and 17th Century England (p. 384). On the other hand, medieval Society was too poor for the advancement of science (p. 222), while the Roman slaves were just prosperous enough for its pursuit (p. 113).

(17) *S.R.S.*, p. 453.

(18) *Science for the Citizen*, p. 737.

(19) The urgent need of wireless transmission arose, according to Professor Hogben, from a burning desire to save the cost of telegraphic cables. The actual state of affairs can be assessed as follows. Owing to various technical difficulties, wireless transmission has never superseded cable telegraphy. On the land the use of cable remains uncontested and the competition between wireless and cable for overseas telegraphy is yet undecided. This fact, far from moving all scientific speculations of our time, remains unmentioned even by the author of *Science for the Citizen* who takes such particular interest in the problem.

The real importance of wireless transmission (apart from its more recent application to broadcasting) has obviously been in the field of navigation—the supposed loss of interest in which is thought (by Mr. Crowther) to have turned Maxwell's mind from astronomy to electric waves. Actually, to-day, this country depends for its very life on navigation; and this dependence arose precisely in the decades after the repeal of the Com Laws in Maxwell's time. Thus a flippant critic might suggest that the theory of social determinism has proved right after all—only that Maxwell's response was not to the decline, but rather to the sudden increase in the national significance of navigation.

(20) *S.R.S.*, p. 188.

(21) *S.R.S.*, p. 248.

(23) *S.R.S.*, p. xxvii.