

Book Reviews

Science and Human Values. J. Bronowski. Julian Messner, Inc., New York, 1956. 94 pp. \$3.

Novels, histories, music, and paintings make it a pleasure for a worker in science to follow the humanities. Rarely are the human values of science presented with equal mastery and charm. Let the reader who believes in those values give a copy of this 94-page book to his nonspecialist friend. His gift will be gratefully acknowledged, and not only for the beautiful pictures, of which three come from William Blake and two from Leonardo da Vinci. Bronowski carries us far away from all the familiar talk of science and faster planes, cheaper electricity, and more creature comforts—talk all right as far as it goes, but so dismaying because it says no more. With rich allusions to science, literature, art, and human experience, Bronowski urges that science, if it can transmit its spirit to the world, will contribute even more to mankind than it can by all its discoveries.

Bronowski leads up to his central thesis step by step in the three sections of this book: (i) "The Creative Mind," (ii) "The Habit of Truth," (iii) "The Sense of Human Dignity." The factors making for creativity have been more fully treated in other places but perhaps nowhere with a broader range of allusion. His mention of Coleridge recalls the advice of Arthur D. Little to an industrialist wanting advice on how to set up a forward-looking research laboratory: "Read John Livingstone Lowe's *The Road to Xanadu*!"

How shall one assess the book? First, it states in a clear way the much needed message that science is an activity in which every human being can engage, not a cult practised by a sacred priesthood. Second, Bronowski makes a strong case for one simple thesis: To have a forward-moving human community in these days, general participation in the search for truth is a spiritual necessity. May he be widely read! He says we have not too much science today but too little: "the scientific spirit is more human than the machinery of governments. We have not let either the tolerance or the empiricism of science enter the parochial rules by which we still try to prescribe

the behavior of nations." Finally, one can agree wholeheartedly with Bronowski that the search for truth is a necessity without accepting the implication that it is also sufficient by itself to achieve the world we want. Here the science-minded citizen will want to add some comments of his own. The culture of Greece was necessary for its greatness but not sufficient for its survival. The search for truth can flourish in a society strong enough to protect freedom, but to protect that freedom it is not enough only to search for the truth. The prime requirement is the survival of the free world. Rather than see it fall with its centuries-old heritage, more precious than any individual life, many would choose to join with dear friends, as others have in past ages, to give up their own lives. About self-sacrifice, kindness, courage, and nobility, about how the highest human virtues were won for our race by millenia of struggle for survival, Bronowski says nothing. Nothing does he tell of the revolutionary and inspiring truths about man's origin and destiny to be read from the work of Darwin and his successors. How can one discuss science and human values without facing up to human evolution? But let Bronowski not be condemned for what he overlooks but praised for what he brings us: poetic insight into one aspect of evolution in this quotation from William Blake: "to be an Error & to be Cast out is a part of God's design." The reader of this charming book has much on which to meditate.

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The Life, Work and Times of Charles Turner Thackrah, Surgeon and Apothecary of Leeds (1795-1833). A. Meiklejohn. Livingstone, Edinburgh, Scotland, 1957 (distributed by Williams & Wilkins, Baltimore, Md.). 238 pp. \$6.

The industrial revolution in England brought forward a number of able investigators on the many phases of occupational hazards, and none more able than Charles Thackrah of Leeds. Bernardino

Ramazzini (1633-1714), with his *De morbis artificum diatriba* (Modena, 1700), became the father of industrial medicine, and many followed his lead with individual contributions to the subject, but it remained for Thackrah to extend primitive clinical observations into a comprehensive conception of industrial health based upon prevention and thus to become the founder of industrial hygiene. Charles Thackrah's views were first published in 1831 and became influential in initiating factory reforms.

The volume under review is a facsimile of the second edition (1832) of Charles Thackrah's principal work (the short title of which is *The Effects of Arts, Trades, and Professions*), supported by an excellent and informative biographical essay on Thackrah. Thackrah's principal publication has become rare. It "claims our attention not for its knowledge but for its wisdom." The author has made this wisdom readily available to all students of industrial medicine and hygiene who care to dip into this fountain.

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The Mango. S. R. Gangolly, Ranjit Singh, S. L. Katyal, and Daljit Singh. Indian Council of Agricultural Research, New Delhi, India, 1957. xiii + 530 pp. Illus. \$12.

The mango is by far the most important fruit crop of India; approximately 1.5 million acres were in cultivation in 1955. It is estimated that there may be a thousand varieties, although the nomenclature is badly confused and the same mango is often known by different names in different regions. This book is devoted chiefly to eliminating some of this confusion by descriptions of 210 of the more important varieties; with each there is a very adequate color plate and a careful morphological description of the tree, leaves, inflorescence, fruit, stone, and quality of fruit. Actually, the descriptions of tree and leaf would not be very reliable guides in themselves for identification of variety, but the descriptions of fruit are very complete and distinct, and each morphological term used is carefully pictured. Most of the Indian varieties have green or yellow skins or a slight peach-colored blush. Only a few of the more than 200 varieties pictured have the attractive red blush considered essential in the United States for good marketability. The descriptions of variety, while of great usefulness in India, would be of only academic interest in most other mango-growing areas, since few of the Indian varieties are grown