

OBITUARIES

D. D. Kosambi

THE death of Professor D. D. Kosambi on June 29, 1966, at the age of fifty-nine removed a unique figure, not only from India but from all society.

Kosambi had a most unusual and comprehensive education, partly in the United States, at Harvard, where his father taught Indic studies. He acquired early an interest in mathematics, which was his main contribution to science, particularly in the field of statistics and stochastic theory. This put him in the front rank of practical mathematicians and his interest was then transferred to theoretical and nuclear physics and he worked on fundamental research at the Tata Institute in Bombay under the general direction of the late Homi Bhabha.

I am not qualified to comment on his mathematical work, especially as much of it is concerned with number theory and calculus of variation; but I had a great deal to do with him as a man of quite exceptional intelligence and charm, particularly in the work concerned with the Indian peace movement, and I learned something of his wide scope of interests. Although trained in the United States, he remained from the very beginning mainly concerned with Indian problems, including Indian economics, history and archaeology. It was a pleasure to travel with him in his own country because, for Kosambi, history was not only in the past but also in the present.

In the extremely unsatisfactory records of Indian history which he has denounced in his books, he finds the preservations of beliefs and customs in many tribes and castes. He finds, for example, not only the places of worship but also actual names, such as that of the goddess Lumbini presiding over the birth of the Buddha, which have been preserved practically unchanged for 1,500 years. I witnessed one of these survivals myself outside the National Chemical Laboratory near Poona. It was a newly established shrine with a crude figure smeared with red paint and an attendant ascetic who, for a consideration, would offer up a prayer so that the new arrival into the laboratory could be assured of a good post.

Kosambi's interests stretched further than the geography of India. I accompanied him to the National Museum in Copenhagen and he was able to tell the curator precisely what bones he would find at the bottom of a well because the Bronze Age Danes had the same horse sacrifice as the ancient Aryans of India.

Wherever he went he was able to trace out the early trade routes still in use in the age of steam and motor cars, and often transporting the same goods, including pots made with the slow and fast wheel, that had already been made in the Indus civilization in the second millennium B.C. For this he had also to perfect his knowledge of Indian languages and poetry. His father knew the whole of the 80,000 lines of the *Mahābhārata* by heart, and I remember Kosambi taking me to the Institute in Poona where a number of aged Indian scholars and their younger disciples were occupied in providing a comparative edition of that poem from numerous manuscripts on palm leaves and other fragile bases, reckoning that they had done a good day's work when they had completed one line!

Kosambi introduced a new method into historical scholarship, essentially by application of modern mathematics. Indians were not themselves historians: they left few documents and never gave dates. One thing the Indians of all periods did leave behind, however, were hoards of coins. These carry inscriptions which list kings or date markings, but they had been in circulation before the hoard was buried and had suffered varying degrees of wear before burying. By statistical study of the weights of the coins, Kosambi was able to establish the amount of time that had elapsed while they were in circulation and so set them in order to give some idea of their respective

ages. In this way he was able to date these coins, known as punch-marked coins, weighed pieces of silver of carefully standardized weight marked with various devices which connected them with a definite king, sometimes many with a single king such as the great Asoka of the Maurya dynasty. The persistence of a coin is one of the most remarkable of human characteristics. In his book, *The Culture and Civilisation of Ancient India in Historical Outline*, Kosambi shows a picture (No. 62) of a coin of a Greek king, Menander, in North India, 180-160 B.C., which he found in 1940 circulating in an open air market in Poona as an equivalent of half a rupee.

His great contributions to historical science have been his two books *Introduction to the Study of Indian History* (Popular Book Depot, Bombay, 1956) and *The Culture and Civilisation of Ancient India in Historical Outline* (Routledge and Kegan Paul, London, 1965). These provide a history of an entirely different character to anything seen before. As he himself says in his latter book:

"But what is history? If history means only the succession of outstanding megalomaniac names and imposing battles, Indian history would be difficult to write. If, however, it is more important to know whether a given people had the plough or not than to know the name of their king, then India has a history. For this work I shall adopt the following definition: *History is the presentation in chronological order of successive changes in the means and relations of production.* This definition has the advantage that history can be written as distinct from a series of historical episodes."

In his second book, Kosambi certainly bears out his definition. He shows a picture of a two-bullock plough of the same characteristic type with vertical handle and curved yoke-pole, taken from a relief of the Bodhisattva's First Meditation in the Buddhist caves at Junnar, as in use in A.D. 200 and still in use to the present day. They are, for all practical purposes, identical.

A great deal of Kosambi's book is taken up with the description of classical Indian political science. The *Arthasāstra* is a complete and almost Machiavellian description of how the great Indian state of Magadha (300-184 B.C.) was ruled and how the institutions of the complete police state could be adapted to the tenets of the purest Buddhism. He shows that the positive task of the Mauryan State consisted of opening up the territory of the Ganges Valley, including Bengal and even Assam, by clearing the tropical forests and assimilating, through institutions of Hindic religion, the local populations.

All this may seem very far away and long ago, but to Kosambi it was all in the present as well, illuminating the current difficulties of Indian agriculture and industry.

"When gunpowder had blown Arguna's bow and later feudalism off the map, the Indian intellectual still turned instinctively to the (Bhagavad-) *Gitā* to find some way of coping with patriotic needs in the new world of banks and shares, railroads, steamships, electricity, factories, and mills. . . . The *Gitā* is honoured oftener than read, and understood far less than it is recited. After such mixed ideas are displaced by clear-cut thinking based on a firm grasp of material reality, the work may still furnish some aesthetic pleasure for its power of expression and peculiar beauty."

J. D. BERNAL

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Observations were reported on the use of an intra-uterine device in the rhesus monkey by J. H. Marston *et al.*; and further papers described the effect of oral contraceptives and intrauterine contraceptive devices on endometrial blood vessels and vaginal smears (E. Grant; M. Jackson and R. Linn).

Abstracts of the papers presented at the annual meeting will be published in the October issue of the *Journal of Reproduction and Fertility*, the official organ of the Society.

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