

examinations, and alone determine the granting of degrees. The appointment of examiners outside the influence of local institutions is desirable, so as to secure confidence in the impartiality of the examination; examiners of experience in teaching the subjects in which they examine should be employed. Efficiency, as well as confidence, would further be secured by obtaining as presiding members of each board of studies examiners experienced in teaching in institutions in the older centres of education.

(4) That all colleges should be affiliated with the University, and should be directly represented on the University council, if necessary, larger representation being given to the larger institutions.

(5) That in any new Act of Incorporation or new charter provision should be made so as to leave the University free to expand, and to include new teaching bodies, as well as to develop in any direction in which the progress and prosperity of the country might in the future indicate.

AN ANTHROPOLOGIST AMONG THE TODAS.

DR. RIVERS has re-discovered the Todas. This curious little nation, long known to us as an isolated social abnormality, in which the dairy industry takes the place of religion and matrimonial safety is found in a plurality of—husbands, now appears to be both much more and much less than this. As a descriptive monograph in ethnology the book is a remarkable achievement, but it is, perhaps, most significant on account of its method. The social sciences are at a disadvantage in that they are not exact, as physical and mathematical sciences are

enough in its application to deserve the epithet original. To the superficial reader little trace of this laborious preliminary process may be revealed, but the work will justify itself by remaining unsurpassed. It struck me as interesting that the account is compiled in such a way as to show itself in the making, that it is an organism, revealing its own evolution.

The Todas are sufficiently isolated as to render the problem of their origin more or less insoluble. Dr. Rivers makes a very good case, of the cumulative sort, for their *provenance* from the Malabar races. There are some interesting clues leading us back to the Christianising of South India more than a thousand years ago.

In their social organisation, the new facts collected by Dr. Rivers make our knowledge of the Todas practically free from lacunæ. To the comparative student this very full and detailed account will serve, among other things, to connect the sociology of India with that of the rest of mankind. The polyandrous character of marriage, and the customs of *terersthi* and the like, deserve studying in these pages by anyone who takes an interest in the marriage problems of Western civilisation. The Toda view of morality in this sphere merits consideration, especially in connection with the altruistic emotions. Something similar has been recently observed by Messrs. Spencer and Gillen among the natives of Central Australia. Not least remarkable is the way in which their form of marriage seems actually to make for efficiency and—righteousness.

The chief regulations of the marriage system are in brief:—Prohibition of intermarriage between the two "castes" *Tartharol* and *Teivaliol*; exogamy among the clans which compose these "castes"; certain kinship prohibitions; polyandry, the typical form of marital association, the extra husbands being generally brothers of the husband proper; polygyny, now on the increase, either in the ordinary form, or two men having two wives in common; the transference of wives from one group of husbands to another, *terersthi*; a sort of concubinage, as between members of the two great "castes," *mokthoditi*.

We are supplied with a wealth of detail, practically new, in all the spheres of social life and religious practice. The economic sources of religion are more clearly laid bare in the full description of the dairy-religion of the Todas than would have ever appeared possible to the *a priori* speculator in anthropological theory. To quote Dr. Rivers:—"The sacred animals are attended by men especially set apart who form the Toda priesthood, and the milk of the sacred animals is churned in dairies which may be re-

garded as the Toda temples, and are so regarded by the people themselves. The ordinary operations of the dairy have become a religious ritual, and ceremonies of a religious character accompany nearly every important incident in the lives of the buffaloes." It would be a pity to attempt to skim the cream from the rich supply presented here; the reader will find it deeply interesting, and the student of religious origins will be well advised to ponder the whole subject. The best photographs in a well-illustrated book represent the operations of these milkmen, priests and

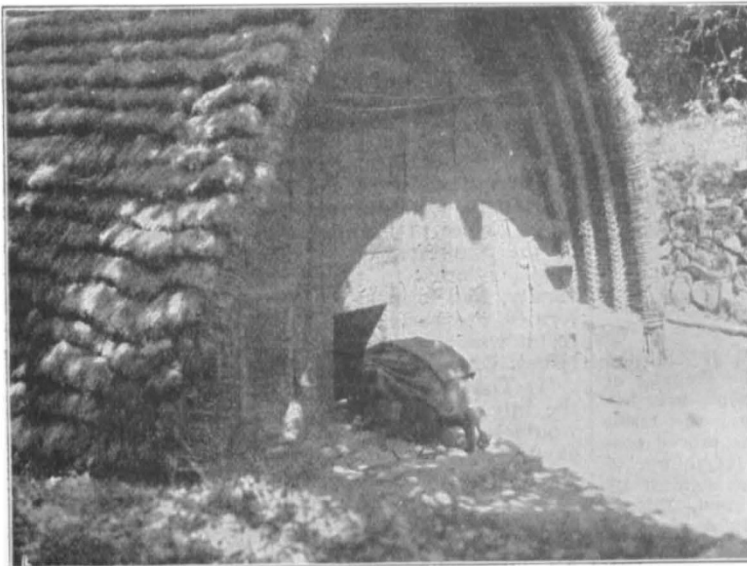


FIG. 1.—The "Palikartmohk" saluting the threshold of the dairy at Kiudr "Pavnersatiti." From "The Todas."

exact; but the present work is a proof that anthropology is attaining such exactness as the nature of the subject allows. This means a good deal, as anyone may see who compares the present monograph with the earlier accounts of the Todas. The testing of the evidence and the verification of fact have been carried out in the most pertinacious and patient manner, and the general method followed is new

1 "The Todas." By W. H. R. Rivers, Fellow of St. John's College, Cambridge. Pp. xviii+755; with illustrations and tables. (London: Macmillan and Co., Ltd., 1906.) Price 21s. net.

acolytes, the shrines and the divinity thereto attached. It is interesting to note that the people would talk about an important *ti* "in exactly the same kind of way that an Englishman talks about a benefice."

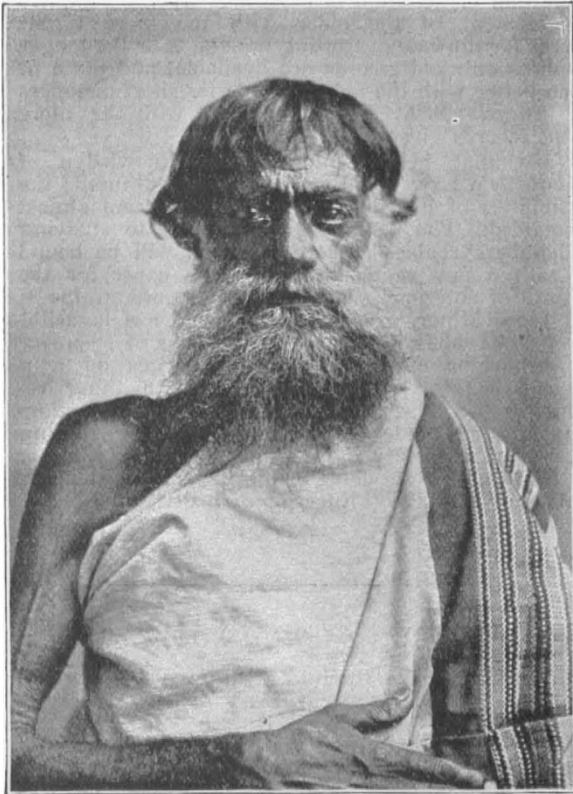


FIG. 2.—Toda man. From "The Todas."

The European cleric and the Toda *palol* thus meet after a journey commenced at what widely separated points. Thanks to Dr. Rivers's energy and care we have a complete and scientific account of one of the most significant phenomena in the history of that varied organism, religion.

The author is of opinion that the division of the people into *Teivaliol* and *Tariharol* is due to the coalescence of two tribes, coming to the hills at different times. There are marked dialectical differences between them. The Toda language as a whole is very difficult. The philologist will find it well worth study, and the data are both extensive and rendered more valuable in a way because the collector was himself ignorant of any other Dravidian tongue, and had therefore no expert prejudices. The secret and sacred languages are rather conspicuous in the life of the Todas.

The book—Dr. Rivers' first book, if I mistake not, in this subject—is a monument of industry and care, not without insight and the results of comparative study, and is an invaluable record of which Cambridge and the new anthropology may be proud.

A. E. CRAWLEY.

A LAW OF RECORD TIMES IN RACING.

A REMARKABLE article on "An Approximate Law of Fatigue in the Speeds of Racing Animals," by Mr. A. E. Kennelly, appears in the Proceedings of the American Academy (vol. xlii., p. 275) for December, 1906. We cannot help speculating as to the causes which led the author to choose such a

subject for investigation. To the man of science, even to the omnivorous statistician, the subject sounds so unpromising—one may almost say undignified or improper; the sort of subject with which no civil servant, no permanent official, should ever deal, even in secret. Once the investigation was commenced, it was naturally extended from one series of records to another; but what accident prompted the commencement? Mr. Kennelly is provokingly silent on the point. He opens, it is true, by telling us that "Olympia and Epsom Downs are known to fame by the races they have witnessed. Olympian races, recently revived, are of international interest. . . . A reduction of either of the records [for the 100 yards or the mile] by even one per cent. would be a matter of world-wide importance, and the hero of the new record would be famous among the inhabitants of the temperate zones." Yet we find it hard to believe that the investigation was undertaken simply as a definite matter of urgent public importance, even though the results, as it turns out, may have the gravest social consequences. They may lead to the advertising of mathematical tables and squared paper in the sporting press. They may even influence the teaching of mathematics in our public schools, our universities, and other haunts of ancient peace.

Put briefly and in its simplest possible form, the approximate law relating distances with record times which Mr. Kennelly has discovered is as follows:—For all pairs of distances in the same proportion the record times are in constant ratio, and this ratio is independent of the animal and of the mode of progression. The observed ratios fluctuate, as one might expect, but the fluctuation seems to be of a casual kind over a very wide range of distances, and the ratios for different animals or modes of progress show little more divergence than the ratios for the same animal and the same mode of progress. Thus, taking merely a few instances in the ratio 2:1, we have:—

HORSES TROTTING.

Distance (miles)	Time (seconds)	Ratio of times
1	118.5	—
2	257.0	2.16
4	598.0	2.33
5	750.75	—
10	1575.0	2.10
20	3505.0	2.22
Average ratio 2.202		

MEN SWIMMING.

Distance (yards)	Time (seconds)	Ratio of times
25	12.2	—
50	24.6	2.02
100	58.0	2.36
200	140.0	2.42
400	297.0	2.12
800	628.0	2.12
Average ratio 2.208		

The law has been tested and found to hold good for horses running, trotting, and pacing, and for men walking, running, rowing, swimming, and skating. It does not hold, on the other hand, for bicycling—a not unnatural result, when the importance of the machine as well as the rider is considered.¹

If T denote the record time and L the distance, the law may evidently be put in the form

$$T = A.L^a \dots \dots \dots (1)$$

¹ Cf. the work of M. Pouny (Paris Academy of Sciences, and NATURE, vol. liv., 1896), and R. E. Crompton (NATURE, vol. lxi., 1899).