

element in Indian population—a conclusion which we learn is going to be produced anew by the irksome labour in anthropometry in the last census. Sir William Turner and Sir W. H. Flower did pioneer work in Indian Craniometry and Osteology. For the sake of completeness mention may be made of the following:—Sullivan, for his work on “Andamanese Skulls”,¹³ Duckworth

¹³ *Anthropological Papers of Amer. Museum of Nat. History*, 1921, 23, Part IV, pp. 175—201.

“Note on the Skull of an Andaman Islander”, Zuckermann and Elliot Smith, “Researches on the Aditannallur Skulls”,¹⁴ Charles, “On Punjab Craniology”,¹⁵ and Tildesley, “Burmese Craniology”.¹⁶

¹⁴ *Bull. of the Madras Govt. Museum*, 1930.

¹⁵ *J. Anat. and Phys.*, 1907, 27.

¹⁶ *Biometrika*, 1921, 13, pp. 176—262.

The Agricultural Basis of Religion in India.*

THE religious beliefs and practices in India have received greater attention than any other branch of Indian Culture. The studies attempted so far have preceded either on a comparative or a philosophical basis. But in the study of the primitive and other forms of religion in India, it would appear that fruitful results may be obtained by approaching it from a different angle: namely, by a study of the influences of environment. It seems to me that an examination of the predisposing influences is bound to throw light on the religious practices and beliefs and enable us to interpret properly the anthropological data with accuracy.

I have taken for the theme of my paper “The Agricultural Basis of Religion”. Lest the title mislead the reader, I should explain that the circumstances under which agriculture is being carried on in India have exerted an influence on the religious practices of the agricultural castes. The fact that they are widespread and are followed by a large proportion of the people will be evident from the fact that India is essentially an agricultural country and this occupation affords employment to more than three-quarters of the population. As satisfaction of material wants is the chief aim of man, primitive or civilised, the influences which contribute to the success in his efforts also react on his mental outlook. Agricultural operations, whether in Northern or Southern India, are largely determined by the monsoon. The outbreak of the monsoon at the proper time ensures a successful agricultural season, overflowing granaries and provision of sufficient means to the people; whereas a failure of the monsoon spells economic disaster. As the monsoon is the outcome of the uncertain forces of nature, the agricultural castes find themselves absolutely at the mercy of these influences. It is, therefore, not unnatural that this should produce a spirit of fatalism. Again the fact that land is the chief thing that determines the material welfare of the people is the main reason why so much of ritual, magic and religion is associated with “Mother Earth”. The extent to which these two have influenced the religious beliefs, practices and attitude of a large proportion of the agricultural castes in India will be clear from a consideration of the agricultural calendar and ceremonies connected with this occupation.

The agricultural year in South India, especially in Malabar, Cochin and Travancore, begins with *Vishu* or *Chaitra Sankranti*, which is the astronomical New Year's Day on which “the hot

weather is supposed to terminate. The sight of the food-stuffs and silver or gold arranged in a bell-metal tray on the morning of the auspicious day is calculated to bring on prosperity during the ensuing year. It is also a day for ancestor worship and worship of the deities in the village temples for the blessings of prosperity. The village astrologer by his calculations announces the agricultural prospects of the year and forecasts the amount of rainfall at regular intervals, the names of the crops that are likely to thrive well, and the famines or epidemics that are likely to break out. Each member of the village consults the astrologer who by the examination of his horoscope predicts his good luck or otherwise during the ensuing year. The same prosperity or ill-luck is determined by the omens arising from the breaking of cocoanuts, and the direction of its rolling on the floor on the morning of the first day of the agricultural year.

The village astrologer next chooses a special day for ploughing and sowing. The seeds are taken in leafy cups, and placed in a basket, and are consecrated. The plough and other agricultural instruments and the oxen are worshipped. They are next taken out in procession to the field. The headman leads by starting to plough and the others follow. Sowing is regarded as a general crisis, a “Rite de passage”, and the chief assumes the risk of performing an act full of mystical danger and of uncertain outcome. It is thus a solemn act and is done with prayers to ancestors who are invoked for the prosperity of the crop. When the crops are grown up, the *Siddi-Devaru* is worshipped with offerings to avert insect pests. The fields and crops are placed under the protection of the village deity, after the offerings to the deities and after *Hasta Pongalu* during the *Hasta* rains.

When the crops are fully ripe, there is a special ceremony for bringing them to the family. The house is white-washed and decorated with drawings of rice flour mixed in water. The ground in front of the house is purified with cow-dung mixed with water, and decorated with seven kinds of leaves. The God *Ganesa* is propitiated and adored. The ears of corn are stuck to the wall with cow-dung. This is followed by a formal cooking of rice obtained from the newly cropped

*Summary of a paper by Rao Bahadur L. K. Ananthakrishna Iyer, read before the First International Congress of Anthropological and Ethnological Sciences, London, 1934.

paddy, which is a survival of the Vedic ceremony of Agrayana.

The ceremony next in importance is the worship of the agricultural implements on the Vijayadasami day, during the Dasara of South India. This corresponds to the Viswakarma day in Bengal. There are also special forms of worship before harvest. At the time of reaping the sickle God is worshipped. A handful of the crop is then cut and placed in the central part of the field, and near it five stones are placed. The sickles of all the reapers are collected and deposited in a row in front of these stones. They are all worshipped with the breaking of cocoanuts and the burning of incense. The ears of the corn are safely preserved at home and the grain obtained from them is mixed with the seed grain during the ensuing year. Before the grain is removed in carts or head-loads from the fields to the threshing floor, a coconut is broken and incense burned. When the threshing is done and the grain heaped together a similar offering is made to the *pillari*. It is also the universal custom that, before measuring, a small portion of grain is set apart

for distribution to the poor villagers who may chance to go there.

There is also a similar ceremony at the end of Magh or Makaram, when the crops have been harvested, the agricultural operations have come to an end, and Mother Earth is supposed to take some rest or remain in a state of incubation. At the beginning of this period, the agricultural castes of Malabar observe a festival in honour of Mother Earth which is like the Roman Februria supposed to take place at the same time. It is believed that on the last day of the festival all agricultural leases connected with the land are supposed to expire. In some of the villages of the Walluvanad Taluk of Malabar, special festivals are celebrated with straw models taken out in procession to the Bhagawati Temples.

After the harvest the farmers and others in the villages find their granaries full. It is during this part of the year that all the village festivals are celebrated in honour of the Gods as thanks offerings with prayers for similar harvests in the following year.

Research in Irrigation.

THE Fourth Annual Meeting of the Research Committee of the Central Board of Irrigation was held in Simla on the 19th and 20th July, 1934. Officers from the following Provinces were present:—Bombay, Sind, United Provinces, Punjab, Bengal, Madras and North-West Frontier. The Meeting of these Officers is of considerable value as it leads to the co-ordination of research work, the exchange of views with a consequent development of new lines of research, and affords an opportunity for the discussion of the particular problems with which each Officer has to deal.

The Agenda for the Meeting included: (i) a discussion of the research work carried out during the year in each Province, (ii) reports on the progress made on a number of investigations, and (iii) the consideration of investigations started during the previous year. As irrigation is of such great importance to the whole of India, a brief summary of the Proceedings may be of interest.

The reports on the work done showed the importance now attached to model experiments. In Bombay, models were used to determine methods for the exclusion of silt from canals and to determine the coefficient of discharge of the Sukkur Barrage Gates. The models studied in Sind had reference to the number and position of the vanes to give a suitable distribution of velocities over the normal section of the channel below flumed falls and regulators, to the coefficient of discharge of radial gates and to the determination of the modifications necessary to eliminate heavy action downstream of a syphon. The report of the Irrigation Research Institute, Lahore, showed that two types of experiments on models were being carried out. The first type dealt with the protection of the downstream glacis of weirs. A system of protection depending upon the throwing of the high velocity water to the surface has been evolved. This form of protection reduces scour to a minimum, and hence will reduce considerably the cost of maintenance of head-

works. The second type of work on models deals with the flow of water under works and the pressures involved. Some reference has already been made to this subject in this Journal (Vol. II, April 1934, No. 10). The recent developments are connected with the determination of the effect of an upstream sheet pile on the pressures on the work. The Central Board of Irrigation has now agreed that no major work should be constructed without first being studied in model form.

An important discussion took place on the seepage losses from canals, distributaries and water-courses. Observations made in the United Provinces showed that the major losses occurred in the water-courses and distributaries. The complementary subject of linings was also discussed. The conclusion reached was that lining was not a feasible method of dealing with the losses on large channels which had already been constructed, but that the lining of distributaries and minors was a practical proposition. As the greatest losses occur on these latter types of channels it was agreed that any scheme for lining would be best commenced from the minors.

Considerable attention has been devoted by the Research Officer, Sind, to the study of waterlogging and drainage. The Research Division has a most elaborate system for studying the variation of the level of the sub-soil water-table. The results reveal a rise of water-table in certain areas and indicate that measures will have to be taken at no distant date to control the rise. Before any irrigation scheme is contemplated in future, the example of Sind in this respect should be followed.

In the Punjab the effect of rainfall and irrigation on the water-table has been studied in the areas commanded by the Upper Chenab Canal and Upper Jhelum Canal. It has been shown that there is a high correlation between the movement of the water-table in these areas and the amount of monsoon rainfall. As a result the Government