

examined the chemical content of successive fractions of melt-water: up to eighty per cent of the pollutant content of a snow-pack may be released in the first thirty per cent of the melt-water, so increasing the threat to the sensitive larval stages of salmon and trout.

The effect of acid precipitation on terrestrial vegetation is less certain. Despite an intensive research programme, the SNSF project provides little support for earlier predictions of massive losses in timber production through leaching of nutrients from soils and direct effects on trees. Most experiments demonstrating adverse effects on soils and plant growth used artificial rain with unrealistically low pH levels. Indeed, in several cases stimulation of plant growth has been observed. The situation is complicated because acid precipitation can increase the availability of plant nutrients by providing inputs of sulphur and nitrogen from the atmosphere and releasing basic cations by weathering of minerals in the soil. It is rather unfortunate that this generally well balanced report implies that acid precipitation must be assumed to reduce tree growth, in the absence of proof to the

contrary.

The causal relationship between acid precipitation and the decline of fish stocks has been questioned by Rosenqvist (*Sci. Total Environ.* 10, 39; 1978), who drew attention to the impact of changes in catchment land use on the chemistry of aquatic systems. During the last one hundred years, many of the Norwegian upland farms, used for summer grazing, have been abandoned and in some cases replaced by conifer woods, which would be expected to accelerate natural soil acidification processes. The SNSF programme has found no consistent pattern which could explain lake acidification on the basis of land use changes. However, an investigation in central Scotland has shown a clear effect of afforestation in increasing stream acidity (Harrison and Morrison in *Ecological Impact of Acid Precipitation*, eds Drabl and Tollan, SNSF Project, 312; 1980). The report concedes that afforestation may enhance the acidification caused by precipitation. This remains an area of uncertainty and there is a clear need for a better understanding of the relative importance of different sources of

acidification at sites where fish stocks are under stress.

The eight-year SNSF project has clarified many aspects of the acid precipitation problem. The claims that reduction of fish stocks has been caused by acid precipitation have generally been substantiated, although questions remain concerning the contribution from changes in land use. In contrast, the long-term effect of acid precipitation on forest productivity is far from understood and intensive studies have failed to reveal any clear trends. The SNSF project has predicted that a reduction of at least seventy per cent in H^+ and SO_4^{2-} concentrations in precipitation is necessary to restore all lakes to their previous condition: this would involve international changes in energy policy which would encounter severe political obstacles. So far as action within Scandinavia is concerned, attempts to improve the water quality by the addition of lime, followed by restocking with fish, have achieved only limited success and a profitable course may be an extension of a preliminary SNSF programme for breeding strains of trout and salmon tolerant to acid conditions. (1)

100 years ago

"Anthropology: an Introduction to the Study of Man and Civilisation, by Edward B. Tylor, D.C.L., F.R.S. With Illustrations. (London: Macmillan and Co., 1881.)"

To those readers whose knowledge of ethnology or anthropology has been derived from a perusal of Prichard's "Natural History of Man," or the compilations of Wood, Brown, Peschel, or Brace, the present work will present a surprising amount of freshness and originality. They will in fact find themselves introduced to a new and very captivating science.



Andaman Islanders

The first chapter contains a brief sketch of what we learn from history, archaeology, and geology, as to man's antiquity and early condition; and in the next we are shown man's relation to the lower animals both in bodily structure and mental characteristics. The numerous remains now discovered of prehistoric man, and of his works, dating back to an undoubtedly vast antiquity, show us in no case any important deviation from the existing human type, nor any indication that his mental status was lower than (if so low as) that of many living races. At the same time the increasing rudeness of his implements as we go back, undoubtedly indicates that we have

made some approach towards the period when he first emerged from the purely brute state and became "a tool-using animal."

In the next chapter we have an excellent sketch of the chief races of man copiously illustrated by portraits, mostly from photographs and very characteristic. Among the best are those of the Andaman Islanders and the Dyaks, which we here reproduce.

The four chapters on Language, are exceedingly interesting and instructive, especially the account of the gesture language and the illustrations of how connected stories may be told to the deaf-and-dumb quite independently of any knowledge of alphabetical or even verbal signs. In treating of the origin of language Mr. Tylor doubts the sufficiency of the theory that emotional, imitative, and suggestive sounds were the basis on which all languages were founded, though he gives tolerably full illustrations of how roots thus obtained became modified in an infinite variety of ways to serve the growing needs of mankind in expressing their wants or their feelings. Putting aside all mere representations of animal sounds — as the *whinny* of the colt, the *mew* of the cat, or the *bleat* of the sheep — consider how clearly do such words as *slide*, *glide*, and *wave* imply slow and continuous motion, the movement of the lips while pronouncing the latter word being a perfect double undulation. How curiously do the tongue and palate seem to be pulled apart from each other while pronouncing the words *glue* or *sticky*. How marked is the contrast between the harsh consonants used to express *rough*, *rugged*, and *gritty*, as compared with the soft flow of sounds in *smooth*, *oily*, *even*, *polished*. Among the Malay races, for instance, in words for *large* we find a prevalence of broad sounds involving a wide opening of the mouth, as *busar*, *baké*, *bagut*, *lamu*, *elamo*, *ilahé*, *erámei*, *aiyuk*, *máina* — and for *small*, words that are pronounced quickly and with slight opening of the lips, as *kichil*, *chili*, *kidi*, *köi*, *roit*, *kemi*, *anan*, *kiiti*, *fek*, *didiki*, all taken from languages of the Malay Archipelago.

The five following chapters treat of the Arts of Life, a subject which Mr. Tylor has to a great extent made his own, and which he discusses in a very interesting manner. The



Dyaks

doctrine of development in the arts is however somewhat strained when it is implied that the modern gun is an outgrowth of the South American or Indian blow-tube; while the origin of bank notes, and the account of the rise and progress of mathematics are hardly anthropology.

The next two chapters discuss the ideas of savage man as to the spirit-world, and the origin and development of myths; while the final chapter gives an admirable sketch of man as a social being, and of the development of that complex organism, Society. This thoughtful chapter cannot be epitomised, but the reader will find in it much curious information as to the sources of many of the customs, laws, and observances of civilised life, which are shown to be often traceable among the lowest savages.

ALFRED R. WALLACE

From *Nature* 24, 14 July, 242, 1881.