

Erosion and Soil Conservation.*

GREAT BRITAIN is one of the few parts of the world where accelerated soil erosion is not of first class importance in land management. Elsewhere the uneven distribution of rainfall and the severity of sudden storms, falling on any land whose surface has been laid bare by the destruction of the natural plant cover, cause the surface soil to be washed away. If this goes on unchecked it is later followed by the formation of gullies which cut deep into the higher ground, and in time the natural level of the underground water-table is disturbed because of these newly dug channels draining the land to a deeper level. Blocks of land are thus left isolated by the spread of gullies, and these plateaux are in time reduced and cut away by the accelerated run-off from their own surfaces.

Erosion of this type is not confined to countries of heavy rainfall, in fact the damage is most severe when storms come at long intervals between periods of drought, because under such conditions nature can produce only a thin covering of plants, whereas with a better distributed rainfall the plant cover is denser and protects the soil more effectively. Herein lies the secret of the British Isles' immunity from serious erosion danger.

Because this problem is not of any great importance in their homeland, soil scientists and land workers trained in Britain have probably been slow to recognise the symptoms of this condition in other countries, but soil scientists and forestry officers in many of the colonies and dependencies of the Empire have been wrestling with soil erosion in various forms for many years past. They were inclined to treat them as purely local problems until they realised that workers in many other countries were confronted with very similar conditions. Since the formation by the Federal Government of a Soil Conservation Service in 1933, American experience has produced a large amount of written matter dealing with both wind and water erosion. This is ably summarised in the book under review in a space of 50 pages,

and the remaining 150 pages are devoted to shorter summaries for all the other countries for which reliable information was forthcoming. It is therefore of great value in bringing up-to-date our knowledge of countries such as South and East Africa, Australia, and Ceylon, about which Indian workers already have some information. It is even more useful in giving us a picture of the condition in other countries for which information is not so readily available, such as Russia, Italy, Turkey and China.

The summary for India is naturally the one which interests us most. In the space of 9 pages a very fair statement of the erosion problem, its prevalence in the various provinces, its disastrous consequences to the rural population, the painfully few attempts so far made to meet the situation, and the various proposals put forward by specialists who recommend more drastic action. For the benefit of many who are frightened at the heavy expenditure which they imagine is inevitable, the following is quoted :

"No remedy is likely to succeed without careful education and instruction of the Indian cultivators in better farming, particularly terracing, and in the care and feeding of cattle. Practical demonstration would involve very considerable financial assistance from governments. On the other hand, the proper control of grazing grounds, and the encouragement of sound fodder practices, leading eventually to the numerical limitation of cattle, can be developed and encouraged by a relatively small staff of officers with a practical farming knowledge and some gift for this form of publicity work. This has already been taken up in the Punjab and has cost Government little more than the pay of the officers so employed.... In many parts of India, indeed, the high cost of loans and the impossibility of getting any immediate economic return from reclaiming very poor and badly eroded land are seriously impeding soil conservation work. 'Self-help' projects on a community basis in the villages appear to be the most hopeful solution for farm lands.... Constructive work, however, can only be done on a self-help basis of free labour, because Government cannot afford to undertake it."

The question of suitable legal action is also touched upon: "Control in the less accessible areas is difficult owing to the

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Government's aversion to interfere with hill tribes occupying the main catchment areas. Some catchments are in native States, under a varying intensity of political control In view of the damage done to some estates by silt deposition from others, it is felt that a strong case could be made for the legal enforcement of erosion control in the interest of the whole community The desirability of some form of legal control, particularly in catchment areas which are of vital importance to the whole community, is

illustrated by the conditions in the Uhl valley (Kangra District, Punjab), the 150 square mile catchment of a large hydro-electric project."

This very cheap but well-produced book is an essential for all those connected with any form of land use, be it live-stock, farm crops, or plantations, and should be in the hands of all who pride themselves on taking a broad interest in their country's welfare.

R. MACLAGAN GORRIE.

ASTRONOMICAL NOTES.

Planets during August 1938.—Venus will continue to be conspicuously visible in the western sky in the early part of the night. On August 28, the planet will be very close to the Moon and on August 31 it will approach the bright star Spica (α Viriginis mag. 1.2) to an angular distance of only half a degree. Mercury also can be seen as an evening star for a part of the month, before it reaches inferior conjunction with the sun on August 28. Mars rises only a little before the sun and will still be too close to it to be easily visible.

The two major planets Jupiter and Saturn will be in favourable positions for observation during the month. The former will be in opposition to the Sun on August 21 and is practically visible throughout the night. Saturn, after passing one of the stationary points of its orbit on August 1, will move in a retrograde direction in the constellation Pisces. The ring ellipse can be seen considerably widened, the major and minor axes being 43" and 8" respectively. Uranus is visible in the early hours of the morning near the meridian; it is situated in the constellation Aries about three degrees to the south-west of the fourth magnitude star δ Arietis. The occultation of ψ Viriginis (magnitude 4.9) by the Moon on

August 28 will be visible in India; the age of the Moon being only 4 days at the time, the phenomenon can be observed even without optical aid.

Gale's Comet.—The ephemeris computed for the comet indicated that the object would be getting brighter after its discovery on May 1; but contrary to expectation, subsequent observations show that the comet has become distinctly fainter, on May 9 the estimated brightness was of mag. 11 and by May 31 it had declined to mag. 13. Its period is found to be 11 years and 4 days.

A Star Cluster in Sculptoris.—In *Harvard Bulletin*, No. 908, Dr. H. Shapley gives a description of a peculiar star cluster that was photographed at the Boyden station of the Harvard Observatory. The cluster is about half a degree in diameter, of the globular type without central condensation, and is situated about 2° south of σ Sculptoris, a fifth magnitude star. From a detailed study of counts of stars in the region as well as other available data, the object appears to be a supercluster of somewhat remarkable characteristics. The dimensions are comparable to those of the galaxy and the cluster probably represents a stellar system of a new type in intergalactic space.

T. P. B.

The Austrian "Anschluss" and Science in India.

THE recent change in sovereignty in Austria has necessitated the immediate emigration of a substantial number of prominent scientists, which include two Nobel Laureates, Professors Hess and Lœwi. These migrations afford an opportunity for other countries, endowed with vision and foresight, to extend their hospitality to these men and enrich the country's scientific talent by "transfusion of new blood". England, with its high traditions

for intellectual freedom, has always been the first to take advantage of such situations and we know that the best of the Jewish scientists who had to leave Germany 5 years ago were quickly absorbed by Britain. America too has been equally generous and farsighted; but India at that time lost a great opportunity. Now that a similar situation has arisen, it is suggested that India should take advantage of it.

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