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The valley of the Nile.

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energetic operations of the British Cotton-Growing Association have produced eminently satisfactory results. The work they have done has been of a most praiseworthy character, but after all what has been accomplished is extremely small compared to what is actually required, if the great cotton industry of Britain is to be saved.

We require three and a quarter millions of bales of raw cotton, each of 500 lbs. weight, every year to keep pace with the present demand of our spindles. During eight years the combined efforts of the Cotton-Growing Association and the Government authorities in the various colonies have only succeeded in producing 116,700 bales of 400 lbs. weight each, which it will be seen is only one-thirty-fourth of what is required each season.

Something has been done, progress has been made, and the British Cotton-Growing Association may be congratulated upon the good work they have accomplished. Much more, however, is needed, and if the problem is to be satisfactorily solved, all those interested will need to do their part, to do it at once, and with energy and persistence.

It has often been said in north of England circles that geography in Lancashire is spelt c-o-t-t-o-n; this may be so, but if it is, I would remark that so far it has only been interpreted as meaning the export of manufactured cotton. If, however, the industry is to be saved, it is necessary that not only Lancashire, but the whole country should realise that a wider interpretation is required, and that in this sense geography must also mean the importation of raw cotton.

So far, Lancashire and Britain generally have been asleep with regard to this great problem. For eight years the pioneers of the Empire cotton-growing movement have been appealing for half a million of money, and even as this is written, the sum is not complete. The money could, and should, have been subscribed within a few months at most. What is half a million of money in comparison with the salvation of an industry worth to the country over £100,000,000 per annum?

It is questionable if the expenditure of £500,000 is anything like enough to establish the industry of cotton-growing within the Empire, or whether a sum of £5,000,000 is not more like the figure required. Whatever the necessary amount may be, however, it should be forthcoming, and will have to be found. An increased supply of raw cotton is an imperative necessity, and it must be obtained, or the staple industry of Lancashire will decline and decay, even if it does not ultimately entirely disappear.

THE VALLEY OF THE NILE.¹

By Captain H. G. LYONS, D.Sc., F.R.S.

In the course of the twelve years which have elapsed since the Dervish Army was defeated and dispersed at Omdurman our knowledge of the

¹ Abstract of a lecture delivered before the Society in Edinburgh on March 23, 1911.

upper part of the Nile Basin has been rapidly increasing. Exploration has given place to detailed investigation, and the urgent necessity for increasing the supply of water in Egypt during the summer, together with the increasing requirements of the Sudan itself, make the study of the hydrography of the Upper Nile one of the first problems for solution.

The vast extent of the Nile Basin, the varied conditions existing in different parts, from the almost continuous rainfall of the tropical forests to the rainless deserts of Nubia, the different parts played by the tributaries, and the many peoples dwelling within it, would need a series of lectures to deal with them adequately. I propose to select three regions, each of a special character, and differing greatly from one another, which may illustrate special types of those included in the Nile Basin.

First, however, the basin as a whole must be briefly alluded to. Extending from lat. 4° S. to the Mediterranean Sea, its principal features are the equatorial plateau arising to 4000 or 5000 feet above sea-level, and the tableland of Abyssinia which reaches 6000-8000 feet, on which many peaks greatly exceed these heights. It is from these two elevated regions that the great tributaries of the Nile, the Bahr-el-Jebel and the Sobat, the Blue Nile and the Atbara flow. The rest of the basin is comparatively low and receives a very scanty rainfall, contributing but little to the main stream. On the equatorial plateau rain falls heavily in the spring months, and as the summer advances the zone of rainfall moves northwards over the southern plains of the Sudan, providing Abyssinia with its rainy season of June to September from the southerly and south-westerly monsoon currents of moist air. Thus the magnitude of the annual flood in the Blue Nile is directly controlled by the excess or defect of the monsoon of Africa. On the abundance of rainfall depends the Nile flood on which the fertility of Egypt and the cultivation of the plains of the Sudan south of Berber depend. The equatorial plateau supplies a considerable volume of water, but much that flows down northern slopes floods the lower plains and is in time evaporated; only that which reaches the Bahr-el-Jebel is in any way an effective addition to the Nile supply. This river descends rapidly from the level of the Albert Lake until Gondokoro is reached, after which it flows in a shallow valley through the plains, just as do the southern tributaries of the Bahr-el-Ghazal after they have passed the slope of the ridge which here forms the divide between the Nile and Congo. The lower valleys of all these rivers are inundated by their own flood waters, by the local rains, and by the Sobat river rising in flood, so that a vast development of marsh vegetation occurs, mainly restricted to the valleys and deltas of the different rivers. The storms of the rainy season drive masses of this vegetation from the lagoons into the main channel, where it may accumulate at a sharp bend or in a narrow reach until it forms an obstruction (sadd) which prevents all navigation. The lower reaches are most liable to this, and constant watchfulness has to be exercised during the rains to remove such obstructions before they become too large and compact. The flooding of these marshy valleys and the consequent evaporation from them results in a loss of more

than half the supply in the most favourable season, so that the main channel of the Bahr-el-Zaraf is now being improved and regulated in order to pass a larger proportion of water to Egypt in the summer months and supplement that which is stored in the reservoir at Aswan.

To the north of Khartum we enter upon a very different region, practically rainless, a vast desert through which the Nile maintains a scanty strip of vegetation on either bank. The slope is here greater than in the White Nile, and for short distances in the rapids may be considerable. These rapids, or cataracts as they are less correctly termed, greatly hinder navigation except in time of flood at many points between Khartum and Aswan, so that the caravan routes of the desert and the railways are employed to pass round them. Formed of masses of hard crystalline rocks these cataracts, together with the reaches of comparatively low slope up-stream of them, are naturally adapted for the construction of reservoirs, and all those between Khartum and Aswan were carefully surveyed and studied before it was decided to increase the height of the dam at the first cataract. The scanty belt of cultivable soil along the river bank has always supported a small and scattered race, the Nubians or Berberins, and the recent systematic survey, archaeological as well as topographical, of the reach, which will be submerged by the Aswan Reservoir when complete, has brought to light much that is of interest concerning the early history of this race, and the varying influence of Egypt and the Sudan upon Nubia throughout its history.

To the north of Aswan the Nile enters the fertile valley of Egypt where it has laid down those level plains of alluvium on which a dense population of eleven millions dwell. Doubtless before the dawn of the historic period this portion of the valley was much in the same condition as that of the Bahr-el-Jebel to-day, with which in length and breadth it generally corresponds. Lagoons and a belt of marshes extended along the edge of the desert, and cultivation was then limited to the higher land nearer the river banks. Gradually as centuries passed by the cultivable area extended until by the twelfth or fourteenth century B.C. we no longer hear of the nobles of Egypt hunting, fishing, and snaring birds in these marshes along the valley margins, and such features were restricted to the northern delta. Continued deposition of silt by the waters of the annual flood built up the flood plains of the valley and the delta, and added annually a thin layer of silt on which the seed was scattered in November to produce an abundant harvest which was gathered in April and May, after which the land, except on the river banks, lay fallow till after the waters of the inundation had drained off in October and November. But modern conditions of increasing population and intensive cultivation have caused a great modification of what may be called the natural irrigation system of the country. To-day the delta and the valley as far south as Assiut have most of their lands under perennial irrigation, in which the land is no longer inundated by the summer flood, but water is supplied to it by canals throughout the year, allowing a continuous rotation of crops and especially admitting the cultivation of cotton, which, sown in March and picked in October, is

to-day the most valuable crop of the country. Rapid development of the irrigation system during recent years has enabled the area sown to be greatly increased, but with such intensive cultivation many minor factors which were formerly of small account must now be seriously investigated in order to guard as far as possible against diminished yield or deterioration of quality. The subject is now having close attention, but it is not a question of tracing a general cause for a less satisfactory crop but rather of recognising that many factors are at work, some in one place, some in another, and of determining in each area which are those of especial influence and importance.

THE HIGHWAYS AND HOMES OF JAPAN.¹

A REVIEWER should never write in superlatives. Yet it is difficult to refrain from this exaggerated form of praise after reading Lady Lawson's really fascinating book. It is nigh on twenty years since the present reviewer saw Fuji San disappear below the horizon, and nearly thirty since he first set foot in the island kingdom of the East. Lady Lawson visited the Japanese (not merely Japan, observe) after the great war with Russia. Nevertheless, how comparatively little in these decades of so-called "tremendous advance" have the subjects of the Son of Heaven altered their customs and their habits of life. The highways and homes of Japan, as depicted by Lady Lawson, are just the highways and homes of last century. Every page brings back clearly to the memory the scenes witnessed during the eighties, when as yet the Powers of Christendom refused to admit Japan as an equal among the nations. In all the fundamentals which make a stable national life Japan was just as efficient then as now; only she had not shown that she could handle guns and ironclads and could manœuvre large masses of troops as efficiently as the most feared or the most envied of the Powers of the West. The leaders of Japan have during the last half century reorganised their army and their navy and their whole system of education; steam and electricity have opened up communications and brought the furthest limits of the empire into closest touch; imports from Europe and America have modified certain superficial aspects of life, especially in the great cities; students have forsaken the Chinese classics for the science and philosophy which are more in harmony with the spirit of the age; but, if we may judge from the pages of Lady Lawson's book, the real home life of the Japanese has altered in nothing essential during these years of storm and stress.

This truth is borne in upon us by the numerous illustrations which adorn the book, and which are reproduced almost entirely from Lady Lawson's own photographs. Here we have children playing games and being tubbed, maidens gracefully dressed exchanging "good morning," pilgrims and students *en route* along the dusty road, the blind *amma*

¹ *Highways and Homes of Japan*. By Lady Lawson. London: T. Fisher Unwin, 1910. Price 12s. 6d. net.