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ART. XII.—*On the Agricultural, Manufacturing, and Commercial Resources of India.* By WILLIAM BALSTON, Esq.

[*Read 6th April, 1861.*]

IN accepting the invitation of a friend to read you a paper on the agricultural, manufacturing, and commercial resources of India, I wish to explain that during my short residence there of seven years—for seven years is but a short time for learning much of that country—my attention was devoted almost exclusively to this subject, and as I carried out with me a practical knowledge of public works, their adaptation to particular purposes, their forms and cost, and their utility in developing the resources of a country, I feel some confidence in my ability to speak to the purpose of these coarse and material yet important affairs—important, because they affect not merely the physical comforts and enjoyments of a people, but also their moral and intellectual condition; the material prosperity of a man providing him not merely with food, clothing, and shelter, but also leisure, and its necessary adjuncts, for the promotion of his mental and social enjoyments. I have, therefore, accepted the invitation of my friend, not willingly alone, but gladly, partly from my having devoted much time to these affairs, but more especially as my strongest passion on any public question is the desire to promote the welfare of the people of India, particularly that of the predial classes, of whose simplicity of character, truthfulness, and honesty I have received the most favourable impressions.

It was in the year 1849, when public attention had been directed to the subject of introducing railways into India by Sir Macdonald Stevenson and the late Mr. John Chapman, that I went out. I had carefully noted all they had said on the subject, and being impressed at the time with the popular, but very erroneous, idea that India was an extremely productive country, I started with the belief that the making a railway from the sea-board to the interior would cause a great movement of traffic, as full and free as the flow from a newly-tapped barrel, and increase largely the wealth of the country. So confident was I of this, that I felt almost inclined to smile

at the doubts, expressed by Mr. Bright and others, that railways could not be successful in a commercial point of view, on account of the poverty of the country. Experience, however, soon taught me that they knew more of India than I did, and that the barrel to be tapped was not a full but an almost empty one, or, to speak literally, that India is not an extremely productive country, but altogether the reverse; not by any means a garden, but a semi-annual desert, yielding a much smaller return for the labour employed in cultivation than almost any other quarter of the globe, the most palpable proof of which being the fact that the labour of an able-bodied and industrious labourer is worth only 3*d.* per day. This affords a just measure or criterion by which to judge the relative productiveness of the soil of India and that of the valley of the Mississippi. In the latter, labour is worth a dollar per man per day, or sixteen times its value in the former. To illustrate the extreme poverty of India I will give you some statistics of the produce and exports of the East, comparing them with the West. For the purpose of being more clearly understood, I will confine myself as much as possible to that part of India which is drained by the Indus, and show its relative produce with that of the Cotton States of America. The argument which I am about to use applies with equal, or nearly equal, force to the whole of India. First, then, we will compare the exports of agricultural produce from Kurrachee, which is the seaport of the Indus, with that of the nine Cotton-growing States of America—viz., Georgia, North and South Carolina, Virginia, Florida, Alabama, Louisiana, and Texas. The last official returns show an export from Kurrachee amounting to 377,875*l.*¹, from a population of 21,084,673², of whom about two-thirds are returned as cultivators³, which gives an export of 4½*d.* per head of population, and 6¾*d.* per head of cultivating population per annum. According to the American Census now published, the population in the Cotton States is 7,656,164⁴, including 3,175,880 slaves. In the absence of returns, I assume that the exports of sugar, rice, tobacco, and other slave-grown products from these to other states and to foreign countries amounted to twenty per cent. of the produce of cotton, which was 4,675,000⁵ bales of 447 lbs.⁶ each, at 11*c.* per lb., giving a money

¹ 1858-9.

² Parliamentary Return, July 25th, 1857.

³ N. W. Provinces 65 per cent.; Madras Presidency 63½ per cent.; Bengal and Bombay not shown.

⁴ American Almanack, 1860.

⁵ Cotton Supply Reporter, December 1st, 1860.

⁶ Mann's Cotton Trade of Great Britain, pp. 9, 114.

value of 47,889,531*l.* The addition of twenty per cent. to this, makes a total of 57,467,337*l.* This, taking slave as the only labouring population, gives an export of 18*l.* per head of cultivators against 6 $\frac{3}{4}$ *d.* per head of the free labourers of the East. Although this calculation rests to some extent on assumption, it is a sufficient approximation to the truth to show all that I wish to show: viz., that India is not a productive, but an extremely unproductive country.

As a proof that this argument applies with almost equal force to the whole, as to a particular part, of the country, I need only name the fact that the exports from the whole of India (1858) amounted to only 4*s.* 6*d.*¹ per head of cultivating population, or less than one-eightieth part that of the Slave States. If the exports of India were as much per capita of the whole population as those of the Slave Cotton States, the amount would be—not 27,000,000*l.*, as at present,—but 1,351,000,000*l.* It may be said that the African slave is superior as a labourer to the Hindoo. I know sufficient of both to be able to deny that. Under the stimulus of a liberal remuneration, that is, two to three annas² per diem, the cultivator of India, especially of the north-west of India, does quite as much work as it is possible for any negro to do under the influence of the whip. If we glance from these general deductions to the particular produce of the individual labourer, we find the discrepancy equally striking. I have here a pamphlet on cotton cultivation written by a practical planter of Mississippi,³ and published by the Cotton Supply Association. According to his statements the annual produce of a single labourer, with the usual assistance from cattle, is five bales of cotton and six acres of corn, which is worth 60*l.*, on the uplands; and ten bales of cotton and three acres of corn, worth 100*l.*, in the lowlands; which gives an average produce of 80*l.* per man per annum. Compare this with the produce of the most fertile cotton-producing district of India, viz., Goozerat,⁴ a province on the sea-board, where the value of the crop is not depreciated by the want of cheap conveyance to a seaport. According to the testimony of the late Mr. Mackay, the author of *Western India*, which is quite in accordance with my own personal

¹ Total exports, 1858,—27,453,692*l.*, from the Official Returns of the India House.

² 1 anna = 1 $\frac{1}{4}$ *d.*

³ The cultivation of Orleans staple cotton as practised in the Mississippi cotton-growing region.—Cotton Supply Association.

⁴ It is stated by some that Bérar is the best cotton producing district in India; th's assertion, however, is not supported by the published prices current, which quote the Oomrawutty cotton as the lowest quality, except one, in the market; inferiority of staple being sure proof of scantiness of crop.

knowledge, the ordinary holding of a family of five persons is fifteen acres, producing 12*l.* 11*s.* 3*d.*¹ worth of cotton, supposing the whole of the land to be occupied with cotton, or 2*l.* 10*s.* 3*d.* per head of cultivators, of which about one-half is paid to the Government as land-tax, the remainder, viz. 1*l.* 5*s.* 1½*d.*, being the scanty remuneration for the cattle as well as the manual labour employed. Since I was in Goozerat, in the spring of 1850, the value of cotton has risen fully twenty-five per cent, and as the land-tax would remain unchanged, the return for labour would be increased fifty per cent., that, is to 1*l.* 17*s.* 8*d.* per head of population per annum, cattle power included. Compared with that of America what a miserable pittance it is! Whilst the average produce of cotton in Goozerat would be at present prices 21*s.* per acre, on the great cotton-field of the Deccan, in Scinde, and the more remote districts, it is only about one-half this amount. The crop is, generally, more scanty than in Goozerat, and the value is much reduced by the cost of carriage to the place of shipment. In Scinde the produce is officially returned at 50*lbs.* per acre, which is, in my opinion, above the actual produce, and the value is not more than 2*d.* per *lb.*, or 8*s.* 4*d.* per acre, at present prices. Sugar-cane, too, which in other countries produce 25 cwt. of sugar of a certain fixed quality per acre of land, in India yields 4 cwt.² only, and at a greater cost of labour than elsewhere; because in India the greater portion of the labour employed is wasted in lifting water. The exotic cane, which is as large as a man's wrist, requires much more watering than the Chenée or native plant, which is little larger than a finger. The difficulty and expense of obtaining a large supply of water prevents its cultivation. By whatever standard it is tested, whether the amount of exports, the value or the produce of labour, or the acreage yield of the soil, for a civilized country teeming with an industrious population, India is singularly unproductive.

After a year's acquaintance with the country it was this that riveted my attention; and how to make the labour of 180,000,000 of people as productive in India as in other countries, appeared to me a grand, and, at the same time, an extremely simple problem to solve. To apply a remedy, it is necessary to understand the disease and its cause or causes. Without discussing any of the political reasons assigned as obstructions to a higher and more successful cultivation, I will confine myself to the more immediate, and obvious, viz.: the natural obstacles, if any, in the climate and the soil.

¹ Western India, p. 120.

² Report of the Sugar and Coffee Committee, 1842, Mr. Leonard Wray and Mr. A. Crooke.

Taking, then, the least productive province in India, viz., Scinde, a province which yields but 8s. 4d. worth of cotton per acre, and the whole revenue of which amounts to only about one-half of the expenses of Government¹, let us inquire if there is anything in the temperature or the soil to prevent the production of good crops. On this subject I am glad to be able to quote the best authorities, viz. : Colonels A. B. Rathborne, H. B. Turner, and William Pottinger.

Col. Rathborne, late Collector and Magistrate of Hyderabad, in Scinde, in a letter with which he favoured me last November, writes :—

“ There can be no doubt that the natural fertility of Scinde is fully equal to that of Egypt ; indeed, as far as I could judge (and I passed nearly two years in Egypt), the soil is in both identical. Both are in almost the same latitude ; both have about the same climate ; both produce the same plants and trees, quadrupeds,⁶ birds, and fishes. The geological formation in both is the same ; the features in each resembling those of the other in a manner almost ludicrous. There is a petrified forest, for instance, a few miles from Cairo ; there is a similar stratum of petrified trees and plants at the same distance from Hyderabad. The meyt, or washing earth, dug up near Hyderabad, has its corresponding feature in the washing earth, of precisely the same description, near the capital of Egypt. The limestone hills, in the neighbourhood of Hyderabad, are of exactly the same character as the corresponding hills near Cairo. The baubul is the principal wood in Scinde ; it is the same in Egypt. Any one who has seen the mouths of the Nile, may be said to have seen those of the Indus ; whilst the rocky formation about Alexandria presents precisely the same geological appearance as that around Kurrachee. In both, I may add, cotton is, I believe, indigenous. The present cotton of commerce in Egypt is, as you are no doubt aware, of recent introduction, and is chiefly of the sea island species, owing its extended cultivation to the fostering care of Mahomed Ali. It is impossible to suppose that the same plant, with the same care bestowed upon it, would not produce equal crops in our own province.

“ In my report on the Hyderabad Collectorate, in 1847, I stated as follows :—‘ Land that has long lain fallow, will, if of good quality, yield a return of a kunwale per beegah.’ There are, as nearly as possible, 27½ bushels to the kunwale, and two of the old Scinde beegahs are about a thirteenth less than an English acre—consequently the produce is within a fraction of 60 bushels per acre.

¹ Report on Indian Territories, Dec. 2nd, 1852,—Sir G. R. Clerk.

“Under a proper system of irrigation, it is needless to say, that all the land in Scinde that now bears bajree and jowree (the common food of the people), might be made capable of producing sugar crops.”

Colonel William Pottinger, who was in Scinde with the late Sir Henry Pottinger previous to the conquest, thus speaks of the natural fertility of the province :—

“On the eastern bank of the Indus, and its branch the Pungaree, the whole extent of country, from the ocean to the most northern part of Scinde, produces extraordinary crops by irrigation. The wheat crops in Scinde are the finest I have ever seen, and surpass even those of Egypt, which country I have travelled over in my visit to Thebes and Upper Egypt.”

The crops principally produced by irrigation are the common cereals, bajree, and jowree.

Colonel H. B. Turner, the Government Engineer in Scinde, who has for several years past taken an annual tour through the cultivated districts, in his evidence given before the Colonization and Settlement (India) Committee, says :—

“Wheat and barley grow extremely well. There are a number of grains more particularly indigenous, such as bajree and jowree, the latter surpassing anything I have seen elsewhere.”

In Egypt the irrigated land yields from 5*l.* to 20*l.* per acre of cotton,¹ 25 cwt. per acre of marketable sugar, and 9*l.* to 12*l.* per acre of wheat (50 to 60 bushels); the non-irrigated inundated land producing 25 to 30 bushels per acre. (*Vide* Sir John Bowring's Report, 1840.) The cost of lifting the water for a full crop of cotton and sugar amounts to from 3*l.* to 10*l.* per acre, exclusive of the cost of wells and lifting machines. In Egypt, as in Scinde, their production depends entirely on irrigation. If the soil of Scinde is as latently fertile as that of Egypt—which nobody doubts—it follows that a sufficient supply of water, free from the cost of lifting, would be worth from 3*l.* to² 10*l.* per acre and upwards to the cultivator of cotton and sugar. The present produce of Scinde is, as before stated, only 8*s.* 4*d.* per acre of cotton, and 1*l.* 2*s.* of all crops. The cultivation of wheat is too limited to affect the general average, because, as stated by Colonel Rathborne, “it is a Spring crop, which has to be brought to maturity when the river is at the lowest, and artificial irrigation is

¹ 495*lbs.* at 6*d.* = 12*l.* 7*s.* 6*d.* “A fair average production, with proper attention to cultivation and irrigation.”—Sir J. Bowring's Report.

² *Idem.*

almost, if not quite, impossible ; consequently it can be grown only on land so situated as to be thoroughly saturated during the inundation ;” of which kind of land the quantity is very small.

The evidence of the authorities I have now given you—and it would be easy to advance equally conclusive proof of the latent fertility of the soil throughout the peninsula—entirely confirms my long-established conviction, that it is not the soil or climate of India ; that it is not the want of skill on the part of the cultivator, or the want of roads ; it is not the want of lawyers trained in modes of procedure, or the want of land in fee simple ; I say it is none of these wants which prevents the production of good crops of cotton and sugar, but the long-continued drought,¹ and the absence of any efficient artificial supply of the required moisture. The ordinary effects of this scourge might be witnessed at any time between the months of September and June ; but to see its extreme evils you should go now to the North-Western Provinces, where, in consequence of an extra month’s drought, Her Majesty’s subjects are perishing of starvation by hundreds a day, and this, too, within sight of the great rivers of India.²

¹ “The general complaint in India, however, is, that crops are destroyed by cessive drought at unseasonable times,”—p. 224. “Irrigation would make the cultivation of cotton easy and independent of dry seasons,”—p. 227. “It is doubtful whether the climate in general is ever suitable to the successful culture of American cotton without the aid of such artificial irrigation as may be supplied by a canal,”—p. 291. “The planters seem to me to think more of climate than of soil, or rather, I should say, they find it more difficult to find a favourable climate in India than a favourable soil,”—p. 292. Dr. Forbes Royle, *Culture and Commerce of Cotton in India*.

“By irrigation the cotton itself would be improved, and there would be a much larger production.”—*Colonization and Settlement Committee, 1858*. J. O’B. Saunders, Esq. Questions 10,237-38.

“He (his father) varied the culture ; he subjected the ground to more or less ploughing and manuring, and, at last, to watering, and the conclusion at which he arrived, after several years’ experience, was this, that the length of the staple and its fineness depend entirely upon the degree of care bestowed upon its culture, and upon its being irrigated at the proper time.”—*Cotton Committee, 1848*. Question 2,795. F. C. Brown, Esq.

² And the great Ganges Canal. It is asserted that the famine is attributable to the unfinished condition of this work. We learn, however, from the “Memorandum,” published by the Indian Government in 1858, of which the following is an extract, that “on the 30th April, 1856, the canal had been carried so far that the water flowed continuously through 449½ miles of the main trunk and terminal branches. The extent of the main channels of distribution (rajubhas) completed was 435½ miles, and 817 miles more were in active progress.” Estimated cost under 2,000,000*l.*,—amount expended 1,560,000*l.* According to the local newspapers the scourge is most severely felt about the upper or finished portions. “The

"For eight months in the year all India is a road,"—so said Colonel W. H. Sykes in the House of Commons, which saying has been iterated by others of long Indian experience, implying that for eight months in the year the surface soil is burnt up as dry as an English road in summer. Is it, therefore, possible to produce good crops of cotton, which, to be grown to perfection, require a supply of moisture throughout the year, without artificial irrigation? It is evident such crops cannot be profitably cultivated without a cheap and efficient artificial supply of water. Were this obstacle removed, notwithstanding the existence of others, I am confident in the opinion that India would supply the whole of the cotton and sugar imported into Europe, even if the importation exceeded 100,000,000*l.* a year, which, in the course of a few years, it probably would, supposing the prosperity of the cotton trade of this country should continue.

amount of distress," says the Lahore Chronicle, "existing around Delhi is appalling." I am informed, on the best authority, that the supply of water in the dry season is greatly insufficient to supply the channels now open, although the quantity running waste in the rivers is more than enough to irrigate all the land in the Doab throughout the dry season. My opinion, therefore, is that had the finished portion been efficient it would have prevented any scarcity of food, not only in the Doab of the Jumna and the Ganges, but throughout the North-West; the more so as the canal is navigated, after a fashion, as low down as Cawnpore. It is now upwards of 15 years since the surveys were commenced (Sept. 16th, 1845). If it had been undertaken by private capitalists it might have been completed 10 years ago, not as a comparatively valueless ditch, but as a fully efficient canal. That it is a ditch only, although a very large one, is shown by Col. R. B. Smith, the Director of the North-Western Canals, in his book on Italian irrigation (Vol. ii. p. 361), in which he states that the Commissioners appointed to report previous to its commencement recommended that it should be kept below the surface of the country, which recommendation was adopted. Thus the first object of an irrigating canal, which is to get the water above the surface of the country, and one which would be cheaply purchased at a cost of 5,000*l.* a mile, was ignored, or as is more probable (the Commissioners were not commercial men, or civil engineers, but of the military profession) overlooked at the beginning. That it possesses none of the requisite features of a carrying canal, is proved by the cost as given in the "Memorandum," viz., 2,200*l.* per mile. It is said that a district once visited by severe famine does not recover for ten years (*vide* evidence of Sir John Lawrence before the C. and S. of India Committee, 1859). The cost of the present calamity to the public treasury will probably exceed the interest of 40,000,000*l.* The loss of human life, and of labour, which is the source of all revenue, will be something enormous, and can never be recovered. According to Sir John Lawrence, the Government revenue suffered in the famine of 1838, to the extent of 400,000*l.* in one year, in one of the divisions of the North-West Provinces, viz., that of Agra, which has a population, according to the last return, of 4,373,156. The present drought, which is said to be much more severe in its effects than that of 1838, prevails, as is reported, with greater or less intensity throughout a population of upwards of 33,000,000.

Although the drought is the first, and beyond comparison the greatest, yet it is not the only cause of the poverty of India. Fair, in some cases good, crops of the cereals and of oil-seeds, which require comparatively little moisture, are produced without artificial irrigation. Their value, however, especially such as are exportable, is greatly reduced by reason of the want of cheap communication from the interior to the sea-board. As the present cost of carriage is 2*l.* per ton per 100 miles, and the incidental expenses about fifty per cent. of the cost of carriage, the value of a bushel of linseed which is 4*s.* 9*d.* at a seaport, is reduced in the interior, at a distance of 200 miles from the seaport, to 1*s.* 9*d.* per bushel; that is to say, that the cost of carrying oil seeds 200 miles by cart amounts to 200 per cent. nearly of its first cost. Beyond this distance it amounts to a prohibition to export.

To the limited extent to which the railways now constructing will accommodate traffic, this will be reduced to about one-half the present cost, and the expense of carrying seed, grain, &c., 400 miles by rail will be equal to about 200 per cent. of its first cost, and for longer distances will operate to prevent any export. Thus it appears that the want of cheap communication from all parts of India, where exportable products can be grown, to the sea-board, causes an enormous loss to the country. The only remedy either for this or the greater evil, viz., the drought, is an efficient system of canals. As a canal would be required to serve the double purpose of irrigation and navigation, it would be necessarily a work of greater magnitude than any of the kind intended for navigation only. At the mouth or head where it receives the water from the river which feeds it, it would be 200 feet or 300 feet wide, according to the extent of the land to be irrigated, gradually tapering down to a width of 40 feet at the tail, which would be sufficiently wide to accommodate any amount of traffic that might come on it.

For such a canal there are three essential requisites, the absence of any one of which would involve a loss or reduction of profit to the cultivator—supposing him to be sufficiently intelligent to avail himself fully of his resources—of some pounds sterling per acre per annum. 1st. It should give an abundant supply of water throughout the year. 2nd. The supply should be free from the cost of lifting. And 3rd. It should give a navigable communication with the sea-board. Without a sufficient supply throughout the year, or nearly so, the land would yield less by some pounds sterling per annum per acre than with it; if subject to the cost of lifting, the expense, even at the present value of labour, would amount to some pounds sterling per

annum per acre; and without a communication with the sea-board the general produce would be depreciated at any distance above 200 miles from the sea by some pounds sterling per acre per annum; the article of cotton only being an exception.

To grow crops of cotton in the greatest perfection it would be necessary to cultivate the plant as a perennial, and to give it occasional waterings throughout the dry season. This, in skilful hands, would raise the value of the crop to par with that of the best irrigated crops of Egypt, that is, from 8s. 4d. per acre (the present produce of Scinde) to 10*l.* and upwards. An abundant and continuous supply would also admit of the cultivation of the exotic sugar-cane—as is proved in Egypt, and has been proved experimentally in India¹—which yields 25 cwt.² of marketable sugar to the acre, instead of 4 cwt. It would also enable the cultivator to obtain not only a larger but also a second crop of grain or seed from land which now yields but one, and that often a very poor one.

The cost of lifting water from any existing works of irrigation in the dry season—when there is water to lift, which generally there is not when it is most wanted—would be from 3*l.* to 10*l.*³ and upwards per acre for cotton or sugar, consequently irrigation is not used in the dry season, except for sugar—almost exclusively for home consumption—and gardens. The saving of this expense would be a gain of pounds per acre per year, and would admit of its application to all crops.

The third requisite which I have mentioned is a canal communication with the sea-board. As the capital cost of an Indian canal, and also the cost of maintenance of works would be amply provided for by the profits of irrigation, the cost of carriage would be merely the cost of boat hire and draught power, which in India would amount to almost nothing. At a speed of 2½ miles per hour, one horse power is equal to a load of 64 tons⁴ on a canal, and, as a pair of bullocks is more than equal to a horse power, the cost of carrying on a canal with towing paths would be 6s. 6d. per ton only for 2,048 miles: viz.—

¹ *Vide* Evidence of Mr. Arthur Crooke.—Sugar and Coffee Committee, 1848.

² Sir John Bowring's Report.

³ The cost of *one watering* of an acre of land in the dry season from channels and wells, with bullocks at 3d. per pair per diem, and men at 2d. per man per diem, as given by Mr. Leonard Wray (*vide* Report of the Sugar and Coffee Committee, 1848, p. 55) is 5s. 4d.; and by Dr. Moore (Colonization and Settlement [India] Committee, April 7th, 1859) 6s. 3d., exclusive of the cost of wells or channels and lifting machines.

⁴ Brunel's Treatise on Draught.

64 tons 32 miles = 1 ton 2,048 miles.

	s.	d.
4 pair bullocks	4	0
2 men	0	6
Boat hire	2	0
	<hr/>	
	6	6

This statement may appear striking, but it is one which will bear examination. Thus then the cost of carriage would be almost annihilated, and the present cost, which, as I have before stated, amounts to about 2*l.* per ton per hundred miles per road, and 1*l.* per railway, exclusive of incidental expenses, would be almost entirely saved, and by so much the value of the crop would be enhanced. The average weight of crop from irrigated land would be one ton per acre ; of grain, seeds, and sugar it would be more, and of cotton much less. Taking a ton as the average, the gain by canal carriage would be 1*l.* per acre nearly, at a distance of a hundred miles from the sea, even with a railway communication ; and without it 2*l.* per acre ; the amount increasing with the increasing distance from the sea-board.

To put the advantages of canal carriage in a strong light, I assume a traffic of 7,680,000 tons 500 miles for all India, which for the extent of country and population would, if the land were more productive be extremely small. Comparing the cost of this traffic by canal with its present cost by road and railway, shows that canals would effect a saving of 76,160,000*l.* per annum as compared with roads, and 37,760,000*l.* per annum as compared with railroads ; the cost of carriage being taken at the prices named before :—

	Per 100 miles.	£
7,680,000 tons 500 miles	per rail 1 <i>l.</i> . . .	38,400,000
„ „	per road 2 <i>l.</i> . . .	76,800,000 ¹
„ „	per canal 4 <i>d.</i> . . .	640,000

However valuable railways might be to the general interests of the country or profitable as commercial speculations (about which I express no opinion), it is clear they are infinitely less so than canals would be, for either agricultural or commercial purposes.

¹ The navigation of Indian rivers is so much impeded by shoals and other obstructions, that the cost of carrying on them is as much, or nearly as much, as by cart. In Scinde “the Banyans generally, and the Affghan traders altogether, prefer the land to the river route.”—Letter from the Collector of Shikapoor to the Commissioner in Scinde. The Godavery, although said to be navigable for at least six months in the year, and that, too, immediately after the gathering of the cotton crop, has not a ton of carried traffic.—*Vide* Colonel Cotton’s “Public Works in India,” p. 81.

If I am correct in these statements, and you will find in the notes to this paper and the documents referred to, that they are well supported by evidence, it follows that any works of irrigation which do not possess all three of these essentials must be comparatively worthless, and will become entirely so, wherever the fully efficient canal is introduced, which kind of canal is illustrated by these drawings. No 1 is a ground plan showing the course of a proposed canal. The continuous red line is the first section, or the part to be first constructed, and the dotted lines the future extensions. Nearly the whole of these two provinces of Scinde and the Punjaub are alluvial plain, with an average fall from the hills to the sea of about one foot to the mile, consequently there would be very little lockage; certainly not more than one lock in fifty miles.

As the flow of water in an irrigating canal would be too great to pass through locks, it would be necessary, where the fall of the country caused a rapid flow, obstructive to navigation, to pass it by a side lock, as shown in Fig. 2. Fig. 3 shows a cross section of the canal, with its embankments above the surface of the country, puddled and lined with brickwork or masonry, and a metalled towing-path on each side. The canal would be full of water throughout the year, except when emptied for repairs. The water would rise and fall more or less daily between these high and low-water marks, according to the extent of the draught for irrigating purposes. To prevent its being run dry it would be necessary to fix the sills of the irrigating sluices four feet above the canal bed, which would secure a depth of four feet for navigation at all times. The overflow of the embankments would be prevented by a simple contrivance, known to every owner of a water-mill as an overfall to carry off surplus water, which would prevent its rising above high-water mark. Through sluices in the embankments the water would flow without any lifting to the extent of eight miles on both sides, the transverse section of the country being a matter of no importance as regards the fall, because anything that might be lost on one side would be gained on the other. The area of irrigation might be easily extended beyond eight miles, if it were thought expedient to do so, by means of short branches at intervals.

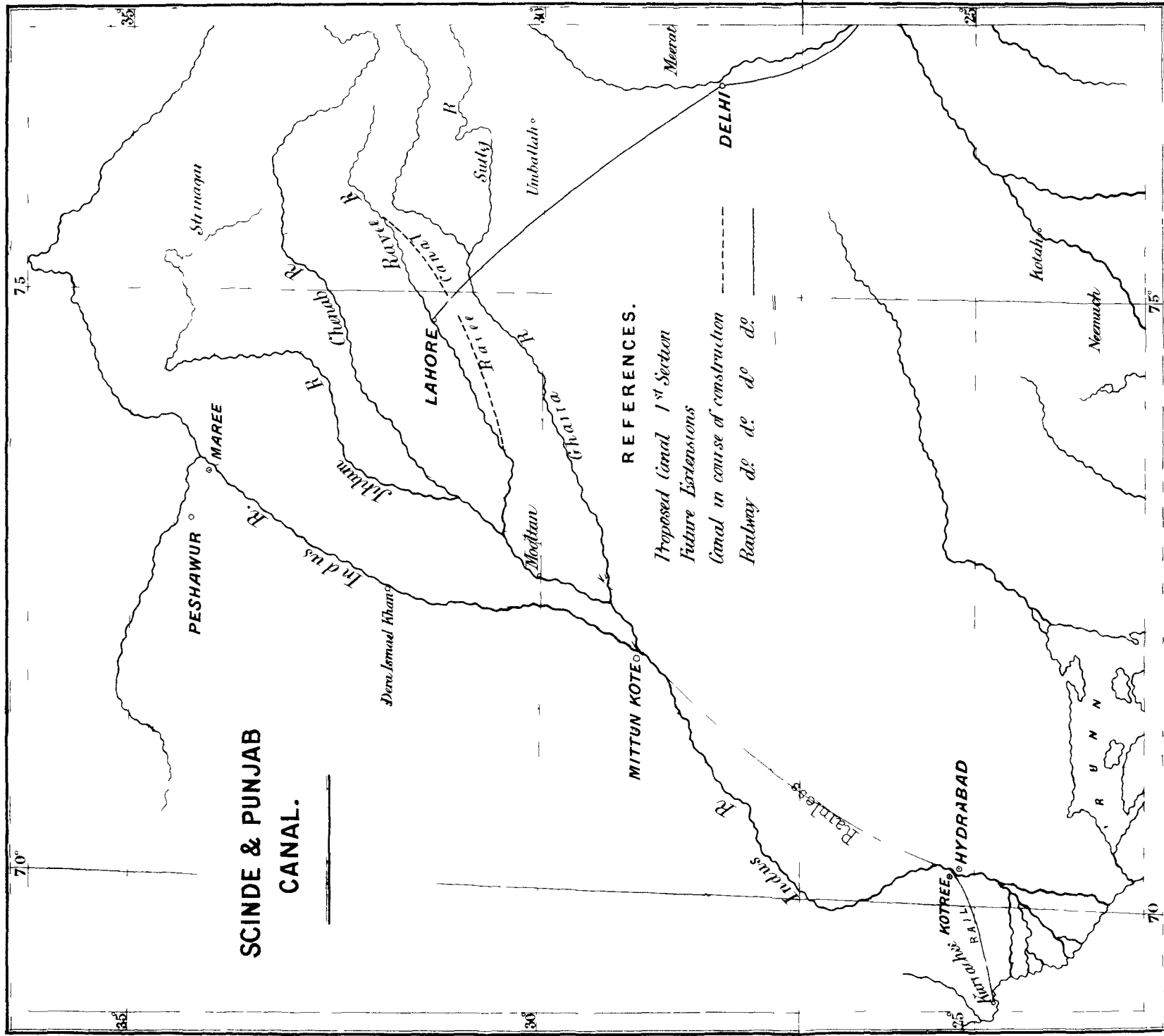
The plan of supplying the canal is to throw a dam (Fig. 4) across the river near Mittun Kote, to raise the whole body of the water in the river to the surface of the country, at the same time protecting the land above the dam from inundation by embankments, as shown on the ground plan (4½). The water thus raised would be admitted through sluices at its head, which would regulate the supply. According to the estimate of Mr. W. Purdon, Government Engineer, in his Report on the Rivers of the Punjaub, the minimum flow of water in the

river at Mittun Kote is 51,500¹ cubic feet per second, and the maximum at Midsummer nine times this quantity. Taking one-half the maximum as the mean quantity, and allowing 5,000 cubic yards for the irrigation of an acre of land, the mean quantity of water is equal to the irrigation of 54,000,000 of acres, or more than the whole of the cultivable land in the provinces. As it is proposed to irrigate but a million and a quarter of acres by this canal, or 4,500 acres per mile, it would take from the river, at low flood, one-tenth part, and at high flood, one-ninetieth part only of the water now running waste; the remainder, passing over the dam, would follow its old course to the sea. I have estimated the cost of the work as 5,000*l.* per mile; without any excessive pressure on the labour market this cost would not be exceeded, the construction of such works being easier in Scinde and the Punjaub than any other part of India, or of the globe, except similar countries, such as Egypt, &c. In other parts of India a similar work would cost from 5,000*l.* to 8,000*l.* per mile, according to the character of the levels and the drainage to be encountered. These canals would enable the planter or cultivator to obtain as good a crop of cotton or sugar as is produced in any country.

In speaking of agricultural products, I have confined my observations to cotton and sugar. As regards the agriculture and commerce of India, as well as the commerce and manufactures of this country, besides other important considerations involved in our dependence on slave labour, they are the most important. Their production, too, in sufficient quantity, and at a sufficiently low cost, to displace, in the markets of Europe, the produce of the slave, depends entirely upon an efficient system of canals. Beside these, however, there is scarcely an article of tropical or ex-tropical growth which is not produced in India, and of which the production would not be greatly stimulated by canals. In short, a general system of such as I have described would increase (in value) the proceeds of labour of 180,000,000 of people ten-fold, or from 3*d.* to 2*s.* 6*d.* at least per adult labourer per diem, or, speaking in the gross, it would increase the general produce of the country from 200,000,000*l.* (which, if I remember correctly, was the estimate of the late Sir Thomas Munro) to 2,000,000,000*l.* a-year. This, it may be said, is mere theory. Sound theory is always the stepping-stone to all profitable practice. It is a theory only, that a competent builder, with all necessary materials in the form of bricks, mortar, wood, &c., could build a house; but it is a theory that is based upon well-ascer-

¹ The relative cost of lifting this quantity of water by steam power, and by permanent dam, would be as under:—

	<i>£</i>
93,636 horse-power, 365 days of 24 hours, 150 <i>l.</i>	14,045,400
Cost of dam, &c., 200,000 <i>l.</i> , interest 5 per cent.	10,000

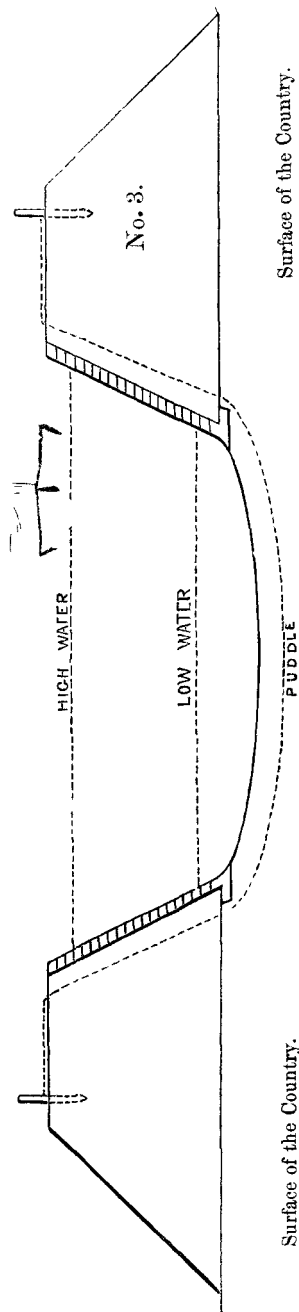
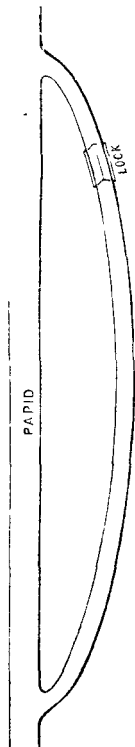


SCINDE & PUNJAB CANAL.

REFERENCES.

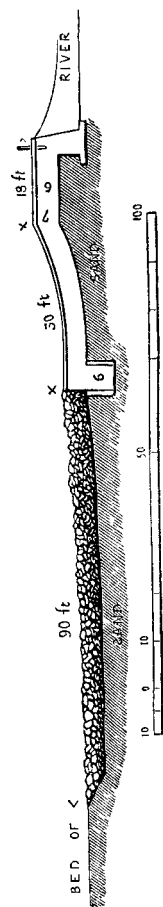
- Proposed Canal 1st Section
- Future Extensions
- Canal in course of construction
- Railway do do do do

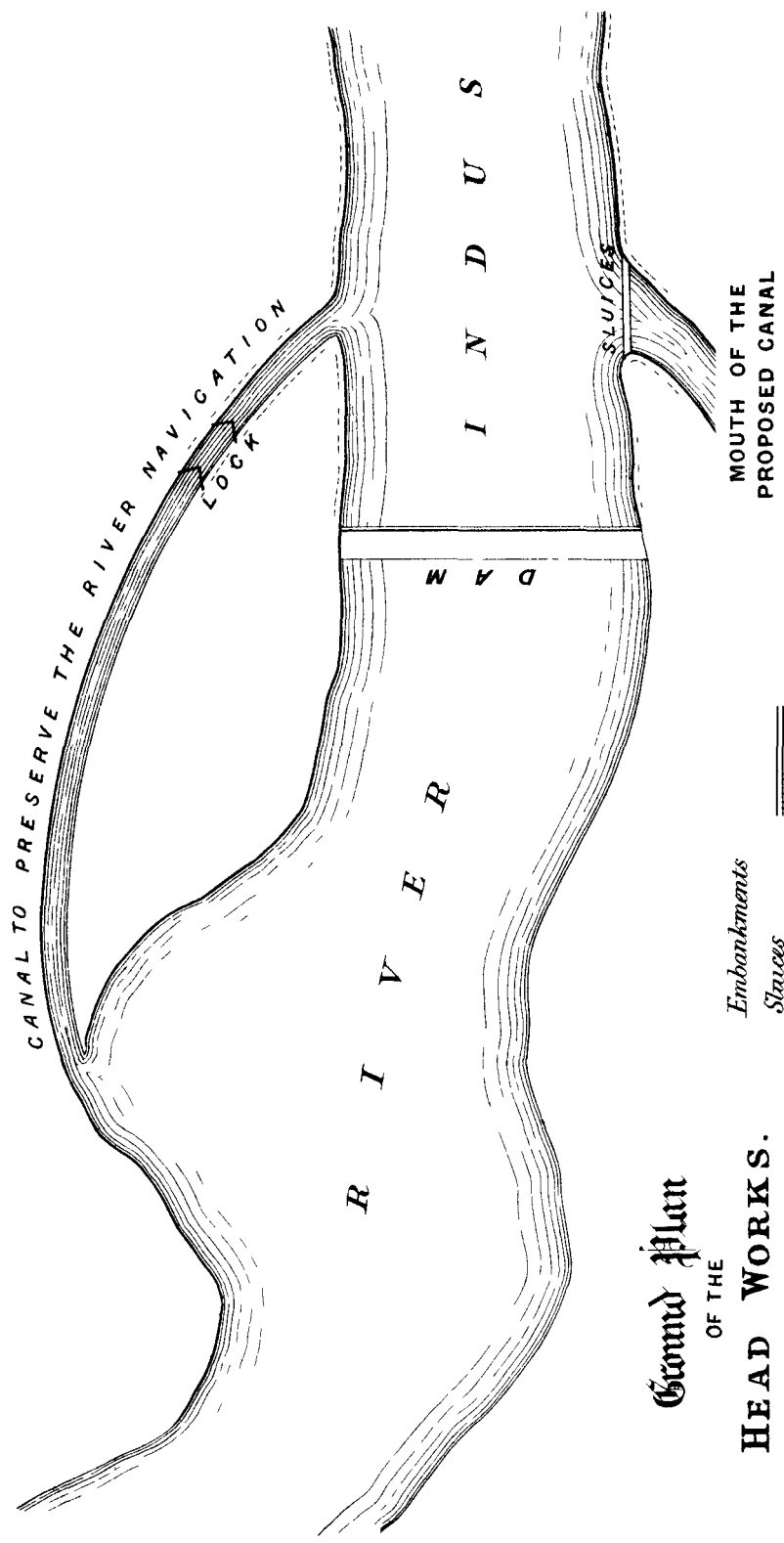
No. 2.



Surface of the Country.

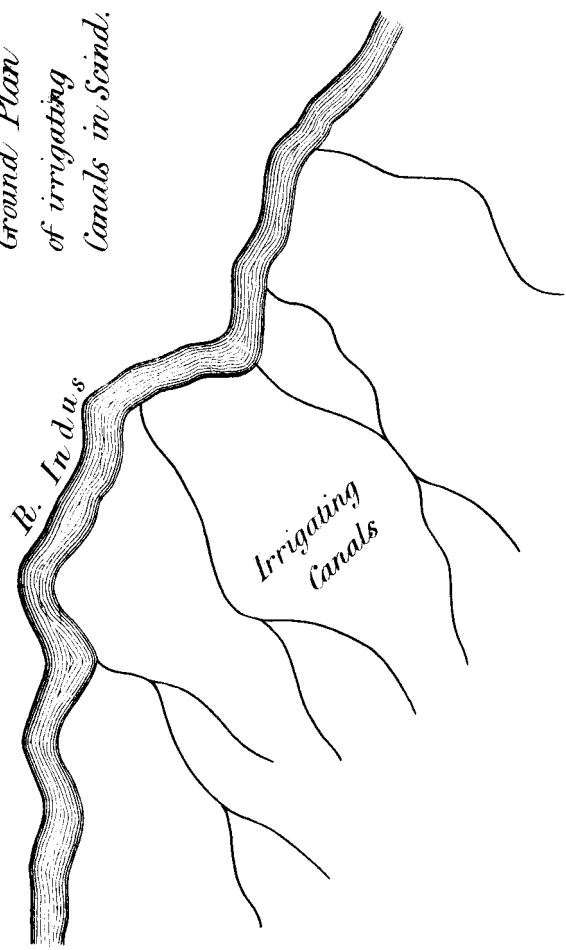
Surface of the Country.

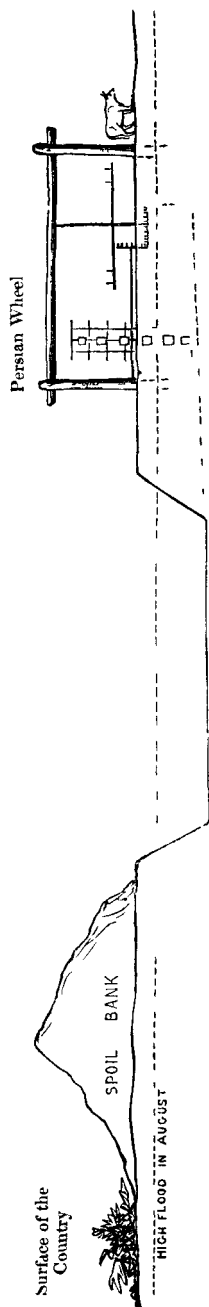




Ground Plan
OF THE
HEAD WORKS.

*Ground Plan
of irrigating
Canals in Scind.*



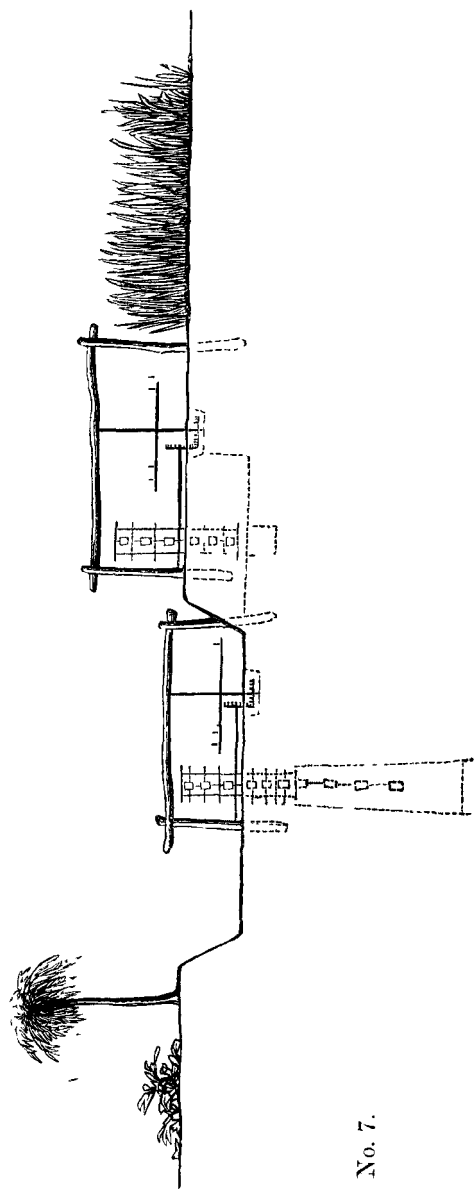


No 6

Scale 10 ft. per inch.

Low Flood in January

DATUM LINE



No. 7.

tained facts, and, therefore, removed from all manner of doubt. So this theory,—that the soil of India might, by means of canals, be made to yield as liberal a return for the labour bestowed on it as that of any country, is founded on equally well-known facts.

That the means of producing good crops would attract European settlers, and thus provide the skill necessary to the complete development of the agricultural resources of the country we have proof in the present cultivation of tea and coffee in India, as well as the infallible laws of commercial economy. There can be no doubt that such canals would attract planters from all parts of the world where cotton, sugar, flax, and hemp are grown. Although improved cultivation would increase largely the value of labour, yet that of the abstemious, and when stimulated by a fair remuneration, the industrious native of India, will be for many generations to come much cheaper than any other.

I would willingly pass on from this subject of agriculture to speak of the manufacturing capabilities of India, but that this paper would appear deficient if I said nothing of existing works of irrigation. The fact is, that there are no works in existence combining the three essentials which I have named. I doubt if there are any possessing any one of them, except in a very imperfect degree. The science of engineering has never yet been applied to these hydraulic works,—no more than mechanical science to the process of cotton spinning by those who still use the wheel and spindle. The native idea of damming a running stream and forcing the water through excavated channels over the surface of the country,—an idea as old probably as the human race—has been carried out in some cases on a very extensive scale. This, however, is not engineering, according to the meaning of the term in the present day, but an idle and profitless misdirection of labour. Not to trespass too much on your time, I will confine my observations on this head to those of Scinde. There is in this province about 2,000 miles of inundation channels, called in the Parliamentary returns, navigable canals. This sketch No. 5, is a ground plan of a few of these works. They are generally from 6 to 10 feet deep at the mouth, where the water enters from the river, gradually shallowing to one foot deep, at a distance of twenty or thirty miles inland; and varying in width from 20 feet to 60 feet at the head, to 3 or 4 feet at the tail. It is only during the three or four months of high river flood in summer that they contain water, which is lifted to the land by Persian wheels, as sketched in drawing No. 6. As soon as the river has subsided below the beds of these channels all cultivation ceases, except that of sugar-cane and garden produce. This is carried on by means of water drawn from wells sunk below

the beds of the channels and raised with a double lift, wheel working over wheel as shown in drawing No. 7. The cost of thus lifting it with hired labour is, as nearly as I could estimate it, 8*l.* 10*s.* 6*d.* per acre of sugar-cane, which is of much higher value for local consumption, both as a vegetable and as a vegetable product, than for export in the form of sugar, which is imported from other countries. This kind of irrigation is not applied to cotton. It is only to a very limited extent that it could be used for the purpose, because of the scanty supply of water from wells; and I doubt if even a good crop would pay the expense.

It was stated by Lord Stanley, when Secretary of State for India, that some of these canals realize a profit of 50 and 100 per cent. This requires explanation. None of them pay more than an ordinary amount of land-tax, which may amount in some cases to 50 or 100 per cent. on their net cost. If in addition to such cost they were charged with the proportion of Government expenses, justly chargeable to them, the result would be not a profit but a loss, as the expenses would be greatly in excess of the returns. Were any private individual to construct such works and pay the land tax, which is an imperative charge on all cultivated land (except in cases of privileged exemption), the whole of the money so invested would be lost. The more efficient kind of canal would so largely increase the produce of land and labour as to yield not only the land tax, but also a large profit to the canal owners, and should the water rent be limited to 20*s.* per acre, a yet larger profit to the land proprietor, which is all I have to say on this subject.

In speaking of manufactures in India, I will limit my remarks to that of cotton. With extensive coal fields easily worked, an abundance of cheap, docile, and teachable labour, raw cotton at about one-fourth part the English cost, an unlimited demand for manufactured fabrics at prices greatly in excess of those obtainable here, and a Government which would certainly do nothing to discourage a manufacturing trade, its facilities for such operations are unequalled. Few of these advantages are to be found in the same degree in any other country; all of them combined, in none. The only disadvantages compared with this country are the high cost of European superintendence, and the expense of carrying out machinery. These would, in my opinion, be counter-balanced in the course of a year or two by the cheapness of Indian labour; and the cost of spinning on the great coal field of Central India would be no more than at Manchester. It follows, therefore, that the expense of taking cotton from Central India to Manchester to be spun, and back again, amounting to the enormous sum of

7d.¹ per lb., exclusive of the cost of spinning, would be saved, and by so much add to the profits of the manufacturer. So large would these profits be till a sufficient quantity of machinery should be employed to spin all the cotton now spun in India, estimated by Dr. Forbes Watson at 5,400,000 bales² a year, which quantity would probably be doubled by an improvement in the material condition of the labouring classes. These profits would continue till reduced by the competition of machinery with machinery in India, or in other words, till the whole demand was supplied by steam power. Although the manufacturer would no doubt realize extremely large profits for many years to come, the people of the country would derive no benefit from the application of machinery to manufacturing until employed extensively enough to reduce the cost of spinning to the consumer below its present cost, as spun by the antediluvian wheel and spindle. Even then the benefit would be small. To a man who spends less than 20s. a-year in clothes, a slight reduction in the price of cloth would be no great advantage. The means of producing 10l. worth of cotton from an acre of land, which now yields but 10s. worth, would obviously be infinitely greater.

As regards the commerce between the two countries it appears clear to me that the promotion of agricultural improvements in the way suggested, would increase immensely the exchange now carried on of manufactured for raw commodities, the more so as such improvements would provide a more profitable employment than that of making their own cloth, for those who are now engaged in the dry season in manufacturing with a wheel some millions of bales of cotton; the want of which employment is the sole cause of their taking so small a quantity of manufactured goods and so much bullion from this country. On the contrary, the extensive employment of capital in manufactures, would greatly diminish the commercial intercourse between the two countries.

	d.		d.
¹ Price of cotton in Central India (<i>vide</i> Chapman's Cotton and Commerce of India) per lb.	1½	Selling price of 20's water twist at Bombay, as per prices current, 7 annas per lb.	10½
Cost of spinning 20's water twist, including waste, interest on capital, and ordinary profit	3½	Cost of transmission to Central India, commission, &c.	1½
Extra profit	7		
	12d.	Selling price	12d.

² Cotton Supply Reporter, August 1st, 1860. This includes a portion used in its raw state for padding purposes.

Having thus touched on the most important points in connection with the agriculture, manufactures, and commerce of India—briefly, but yet elaborately enough for the time and the occasion, the conclusion at which I arrive is, that—in accordance with sound principles of public economy—to promote the greatest happiness of the greatest number, it is the interest of both countries to encourage the investment of capital in land improvements rather than in manufacturing; the first step towards which is the efficient canalization of the country. The only practical way of accomplishing this, is to encourage English capitalists to undertake it, who, as a matter of course, would secure the services of the most competent men for the work. It is one which has yet to be commenced, and which requires a large amount of capital, and the greatest engineering experience that can be brought to bear upon it.

Mr. Balston having finished the reading of his paper, and, on the invitation by the President for any gentlemen present to offer their remarks upon it, Mr. Fincham and Mr. Dickinson, having shortly offered a few objections to some of the passages,

Dr. Forbes Watson next remarked that, “although exception might be taken to some of the views in the paper which had just been read, there could be only one opinion as to the indebtedness of the Society to Mr. Balston, for having so well brought before it a subject of vast importance to the welfare of India.

“In the very few remarks which he (*Dr. Watson*) could make, he should not stop to do more than indicate the questionable fairness of contrasting the value of the exports from the least developed province in, perhaps, the whole of India, with those from the most highly cultivated portion of the United States, and therefrom drawing an inference as to the unproductiveness of all other parts.

“India’s two greatest wants were, undoubtedly, water and roads. The necessity for artificial irrigation depended, however, very much upon the climate and soil of particular districts. Mr. Balston had considered the advantages of such works in connection with the cultivation of two products of great importance, viz., cotton and sugar. For the cultivation of the sugar-cane, an abundant supply of water was essential; but with respect to cotton, he (*Dr. Watson*) would beg to point out the fact, that Central and Southern India afforded huge tracts of country admirably adapted for

its cultivation, in which means for artificial irrigation are not only not required, but which if applied would prove, except in seasons of unusual drought, actually hurtful. The great black cotton soil of India absorbs certain moisture with extraordinary avidity, and not only theoretical considerations founded on a physical and chemical examination of such soils, but the results of the experiments in India and the reports lately to hand, showed that in black soil districts artificial irrigation is practically not required. The case, however, is very different when we pass to the river systems of the north and east, with their great alluvial plains formed by them in course of ages. Alluvial soils have but poor capacity for moisture, and it is to these that canals are of such importance. While fully impressed with the vast, indeed paramount, importance of such works, the practical point which he (Dr. Watson) wished to enforce was this, that as far as cotton is concerned we have existing in India tracts of country sufficient, with adequate management, to supply almost the whole of the cotton marts of Europe, without our having to wait for the carrying out of works, which must of necessity take years for their completion." After a few other remarks on the kind of canals proposed by Mr. Balston for universal adoption and the probable interference of such with the general drainage of the country,—points on which he, however, did not feel himself competent to speak,—Dr. Watson concluded by remarking, that "if the sad trial through which our fellow-subjects are at this moment passing in India had only the effect of stimulating the discovery of the advisability of raising special loans for the execution of works so calculated not only to save life but to fill up the exhausted coffers of the State, the present famine so imperatively requiring every exertion, public as well as private, for its amelioration, will in the end, like most ills, have brought its attendant blessing."

Major W. H. Greathed, C.B..—"I trust that the circumstances of my being an officer of Bengal Engineers, and of my being employed during a considerable portion of my career in India in the construction and superintendence of works of irrigation, will acquit me of presumption in addressing a few words to the meeting on the interesting subject which has been brought before us by the gentleman whose paper has been read this evening.

"Mr. Balston appears to divide his subject under four heads. He argues at some length that irrigation is desirable in India; he contends that the cultivation of cotton and sugar is the most profitable that can be carried on in that country; he declares that no works of irrigation have heretofore been constructed which are of practical

benefit to the country; and he implies that he has originated a scheme for utilizing the waters of the Punjab rivers, and fertilizing the countries which border them.

"The first conclusion, 'that irrigation is desirable in India,' is so universally regarded as an axiom by all who are acquainted with the capabilities and the needs of that vast country, as to require no discussion; but remark is challenged by some of the statements on which Mr. Balston's reasoning is founded; such, for instance, as his deduction that the soil of India is unproductive in comparison with that of America, because the wages of an agricultural labourer are three pence (or less) a-day in the former country, and four shillings in the latter. I hope to be excused for repeating the truism that the value of labour, as of any other marketable commodity, depends mainly on the proportion between supply and demand, and of suggesting that the great difference of wages cited by Mr. Balston is chiefly the result of the old country, India, being covered with a teeming population; whereas the new country, America, is as yet only partially occupied by people who within the last two generations have come from beyond the ocean to settle there. And indeed the comparison instituted would seem to disprove the conclusion drawn, for it establishes that an agricultural labourer in India must be able to live with his wife and family, or with his plural wives and families, as the case may be, for three pence a-day, which is all he earns. Must not the products of the earth be cheap indeed where, even the merest necessities of life are purchased at such a price?

"The propriety of growing cotton and sugar in India rather than any other kind of produce is a question which I am confident this meeting will agree with me we cannot discuss with advantage. The practicability of growing these crops to profit under certain conditions is beyond a doubt, the degree to which they are grown must continue to be governed by the inexorable laws which regulate supply and demand.

"I now turn to Mr. Balston's statement, that nothing has yet been done towards the successful development of irrigation in India. We find that in Bengal we have canals parallel to the river Jumna, which diffuse on either side the whole of its available waters taken from the point where it debouches from the Himalaya mountains. Regarding the canal at the western side of the Jumna, the result of commercial calculation of profit and loss establishes that, after computing all monies sunk, not only in its construction, but in its administration and maintenance, at five per cent. compound interest, a net-profit has directly accrued to the State by receipts from water-rent

alone of 285 per cent. on the total amount of these moneys. Let this be clearly understood, the revenue derived from the mere sale of water on the Western Jumna Canal has repaid all the capital sunk in it nearly three times over within a period of five-and-thirty years, in addition to a yearly dividend of five per cent. per annum throughout that period; and the revenue derived from the sale of water is the least benefit conferred by the canal. By rendering culturable vast tracts of land, which in the absence of irrigation were incapable of cultivation, the construction of the canal has converted tribes of nomad cattle-reivers into industrious labourers, it has increased the production of the country it traverses at least tenfold, and it is doubtful whether even this multiplication of wealth is a boon as great as the safeguard against drought and local famine, which the canal affords to the Government and to the people. The Eastern Jumna Canal, in a career of five-and-twenty years, besides paying a five per cent. dividend, and conferring on the country it waters the indirect benefits above described, which are common to all canals, has repaid in hard coin six-sevenths of the capital embarked upon it.

“Passing over minor works of irrigation, the next important work taken in order of date of construction is the Ganges Canal, which would seem almost too large to be accidentally overlooked by any one competent to speak on the subject of irrigation in India. For this magnificent work stands without a parallel in the world—a Mississippi of canals. Its design and execution are triumphs alike of hydraulic engineering and of persistent energy: for difficulties, material and moral, had to be overcome in the course of its construction, which would have subdued any brain less fertile, any heart less gallant, than that which Sir Proby Cautley has devoted to this imperial work.

“The length of the navigable main channels of irrigation will be 850 miles; the volume of water it carries amounts to 6,750 cubic feet per second, which will suffice to irrigate an area of 8,500 square miles, equal in extent to two-thirds of the whole kingdom of Belgium. The capital embarked in the undertaking amounts to nearly two and a-half millions sterling, and the promise of returns is proportional.

“I quote an extract from a letter of Mr. Login, executive engineer of the northern division of the canal, dated January, 1861:—

“‘The canal is doing wonders this year; results are estimated thus:—

	£
“‘ Water rate	75,000
“‘ Revenue saved	500,000
“‘ Produce saved	2,000,000

“‘In other words, the crops saved by irrigation this cold weather will more than pay the prime cost of the Ganges Canal, besides saving the lives of thousands ; it not only saves by its irrigation, but by its navigation ; about 4,000 tons of grain being brought up monthly by the canal, on which 520 barges are now plying.’

“This year of grievous famine is of course a very favourable one for the canal ; because, save where its waters penetrate there is no production from the earth, consequently no revenue, no means of sustenance ; so that all the produce and revenue saved by the canal is in very truth for this especial year produce and revenue *created*. The result of the navigation of the canal is, that the Company which has undertaken the carrying trade offers its shareholders a thumping dividend, as we shall presently learn from our Honourable President. Thus, both in respect of irrigation and navigation, the Ganges Canal, as yet an incomplete creation, affords contradiction to Mr. Balston's implication that no efficient canals have yet been constructed in India.

“In the Madras Presidency more has been done for irrigation than in Bengal ; the waters of the Cauvery, the Colerom, the Kistnah, and the Godavery, all rivers of first or second class magnitude, have been turned to full account by the genius of Sir Arthur Cotton, and a system of storing the rain-fall of the wet seasons in large reservoirs or tanks has prevailed in Madras on a very large scale throughout the historic period. In Tanjore the result of the Cauvery and Colerom Canals has increased the revenue by an average of upwards of 100,000*l.* a-year for 58 years, in which period 6,380,000*l.* is reported to have been added to the revenue by an expenditure of 600,000*l.* ; and this increase is a very small part of the benefit done. At the mouths of the Kistnah and Godavery, several small harbours whence the produce of the irrigated districts is exported, afford opportunities of correctly gauging the material condition of the country. In 1841–2, a year of unusual prosperity, previous to the construction of the irrigation works, the total value of exports from these ports amounted to 29,000*l.* In 1857–8, a year of scanty rains, and therefore of limited natural production, the value of exports stood at 280,000*l.*

“These are startling figures ; and as about a thousand miles of connected river and canal water-carriage have been given free to the community, whilst the revenues have increased 80 per cent. per annum on what they were formerly, such increase amounting to 25 per cent. per annum on the capital sunk, we may venture to conclude that the art of ‘canalization’ is pretty well understood in the Madras Presidency.

"The meeting will now be well disposed towards Mr. Balston's proposals for utilizing the waters of the Punjab rivers, and fertilizing the countries which border them ; but that gentleman's claim to the original conception of this project cannot in fairness be admitted. So long ago as 1837, when the Punjab was yet subject to Seikh rulers, Colonel W. E. Baker presented to Government a mature and scientific project for employing to advantage the waters of the Sutlej, on which alone, at that time, we had a right to lay our hands. And in January, 1849, whilst actually in the field with the Army which finally conquered the land of the five rivers, and before that country was annexed, Colonel Baird Smith, the distinguished successor of Sir Proby Cautley, employed his scanty leisure, and applied his mature experience, to the production of a scheme, based on the example of the Ganges canals, for the application to irrigation of the waters of all the Punjab rivers. Of this project a part has already been carried out, and the waters of the Ravee are doing good service in mitigating the famine with which India is now scourged.

"Mr. Balston has informed the meeting that he had devoted his attention almost exclusively to the subject before him during a seven years' residence in India, yet he evidently knew none of these things ; for he takes pains to define the essentials of irrigation canals, and distinctly implies that no canals have been constructed on the principles he advocates. It is, therefore, only a coincidence that his plan No. 1 represents the general features of Colonel Baird Smith's plan of 1849, and that the diagrams Nos. 2, 3, 4, 4½, representing the methods he has invented for some portion of the works of a canal yet to be made, are almost absolutely identical with pictures of works actually executed, as represented in various printed Reports of the Governments of India and of Madras respectively.

"Let the meeting be assured, that no subject has engrossed the attention of the faithful, earnest men who have devoted, and are devoting, a life-long service to the material improvement of India, than that of promoting irrigation, and there is none which the Government has for many years past more cordially encouraged ; but want of funds has always prevented vigorous action.

"It is owing to a want of money that the minor channels of distribution of the Ganges canal are now so incomplete that the country it traverses is not receiving one-half the benefit which should accrue from its influence ; it is owing to want of money that the scheme for irrigating from the Sutlej has been in abeyance since 1857, and that but one river of the Punjab has yet been applied to irrigation ; it is want of money which accounts for the delta of the Mahanuddy being

still a desert, whilst that of the Godavery is a garden. The Government, representing the country, is in the position of a man succeeding to an estate covering unworked coal mines, upon which every procurable penny has been already raised and dissipated by his predecessors in the title. Like such a man, the Government of India finds itself unable to raise the capital which would certainly so fructify as to terminate financial difficulties, and create riches and prosperity. Any one who can devise a means of enabling the Government, or inducing the public, to provide the requisite funds, will be a true benefactor to his species ; nor need his powers of invention be any further taxed, for on the shelves of the India Office he may find, cut and dried, the outlines of projects which would suffice for the profitable employment of more money than is likely to be very speedily obtained, and which would extend the benefits of irrigation to provinces equal to European kingdoms in magnitude, and to peoples whose numbers no census has yet recorded."

Colonel Sykes then addressed a few words to the meeting in confirmation of the remarks made on Mr. Balston's paper, and concluded by reading an advertisement from an Indian newspaper, informing shareholders of the Ganges Canal Company that a dividend of 34 per cent., for the half-year, on the paid-up capital, was now payable at the office of the advertiser.

Mr. Balston then replied as follows : " I will not, at this late hour, detain the meeting by answering the gentlemen who have spoken, but will content myself with observing, that I am not induced, on account of anything that has been spoken, to alter or to modify any of the opinions which I have expressed."
