



more, its back being broken ; it was soon despatched. We seldom went to bed without a provision of boots or brushes to throw at snakes.

On one occasion I went with the children to see a large blast, and we had been placed, as it was supposed, in a safe position, but the stones flew in an unexpected direction, and we had a narrow escape from very serious injury.

All this time the stones were being poured into the river bed, the anicut was progressing ; consequently the interest and excitement were great. The work was carried on with increased activity, and all the workers were labouring to the utmost of their strength, as the river might be expected to come down in flood on (or very near) the 20th June. All thoughts were fixed on the newly-completed anicut for many weeks before that time. Would it be ready, and would the masonry be dry and firm enough to stand when the great body of water reached it ?

We had watched the swollen torrent in previous years, bearing down large logs of timber, and living trees uprooted, roofs of houses, and dead animals (one year a large black bear). We could not but hope *that* year "the flood" might be delayed as long as possible. At this critical time the dear "Chief," worn out by the strain of labour, responsibility, and anxiety, became seriously ill ; a sunstroke, added to his labours, completely prostrated him, affecting him with severe nausea, so that, while support was specially needed, the name or smell of food even was loathsome to him. In this state he had been lying for some days and nights, and I had ceased thinking much of the anicut, because my heart was full of fears on his account.

After an anxious night, when the light was just beginning to dawn, I went out upon the hill a few steps to refresh myself with the sweet morning air. As I stood and looked towards the river, I was surprised to see one of the young officers making his way up the hill toward me at that very early hour. He soon arrived where I stood, and said he had brought bad news. There had been a perceptible rise



in the river during the night. He had just been again to examine it, and there could be no doubt of a continued rise; the flood had begun. He ended his story with, "I have no hope that any part of the masonry will stand. The flood is coming nearly three weeks before its time!" I felt I dared not tell my husband. His life seemed hanging by a thread, and such news might cause his death.

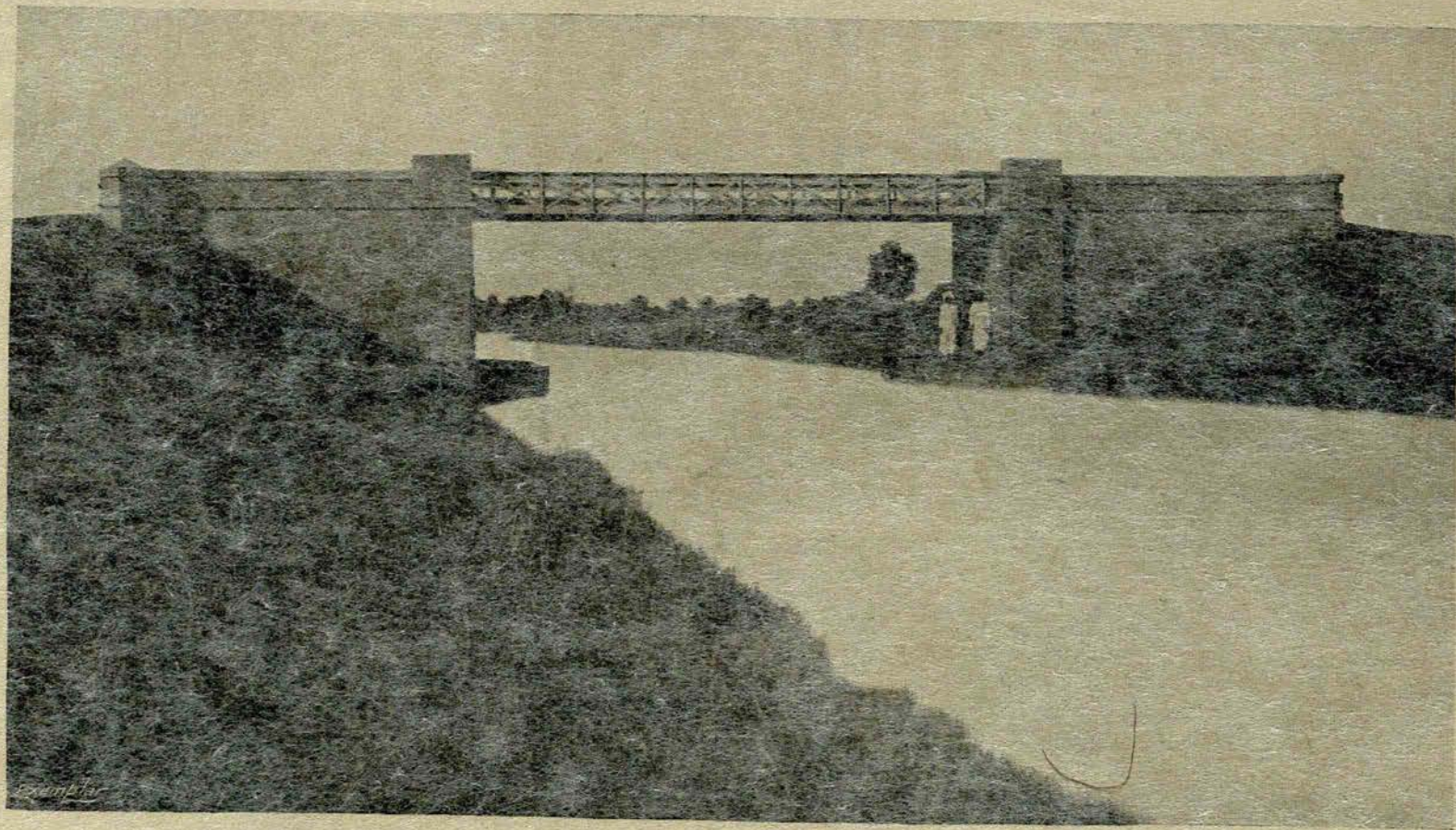
I begged my informant to go away, and for a little longer at least to leave him in ignorance. But he wisely replied that would be of no use. As soon as the day had advanced he said the people would be sure to come with the news, and that I had much better go and break it as well as I could myself; he would remain to see whether I brought any orders for him. How I told the dreadful tidings I do not know. I am sure divine help was given to us both at that awful moment. I remember saying to him as he lay silent, knowing that nothing could be done to save the work, or hardly anything, "What would you do if you had no God to look to?" and he quietly answered, "I should destroy myself." But God *was* with him, "a very present help in trouble," and he was kept in wonderful peace.

The river rose and rose, until no vestige of the work could be seen, and we could only wait. Before the water had subsided, a steamer was sent from Madras to take him away for change, friends there being very anxious about his state; the Governor especially showed kind concern. One of the married officers most kindly offered to come into our house, and take charge of our children. So we left together, and went to Bangalore.

Before we left, or very soon after, I do not quite remember which, we heard that by God's most gracious care very little damage had been done to the anicut; the works stood beyond all expectation.

Thus far my mother writes. I resume my narrative:

The water came down on the occasion of these floods in



PENNUMANTRA BRIDGE, GOSTANADI AND VELPUR CANAL.



such tremendous power, that it took possession of the lowland on either side of the river, and during that time would wash away whatever obstacles might be within its reach. On one occasion we were absent from home; a friend told us of a strange sight that was witnessed. The water had taken possession of our house, which was on the lowland at that time, and had swept away furniture, boxes, baskets, and all sorts of articles from our dwelling rooms; amongst other treasures that floated down the stream were my father's cocked hat, in its tin box, and a very favourite book, which he and my mother had often read and studied together, marking with their pencils the passages they liked best. It was none other than *Madam Guyon's Autobiography*—a very rare book then, and written in old-fashioned English. So great a treasure could not possibly be lost, and the cocked hat must also, if possible, be saved. So a boat was sent out to the rescue; and, to this day, we have on our shelves the precious book, its leaves stained by that memorable flood.

It is interesting to me to look back to the Indian days, when the mingling of work and pleasure, which have been my lot all through life, first began. My father, as we have seen, was a man of earnest purpose. His devotion to his work, and the ardour with which he pursued it in all its details, even incurring severe hardships himself amidst his daily toil, left the mark of his own personality upon all those who were associated with him. It is not surprising, therefore, that on my own mind these early memories are clear and strong. The latter years of constant association with him, and knowledge of his life's interests, have helped to sustain and sharpen these memories; it is, therefore, with real pleasure that I am able to provide some reminiscences of those days.

To go back to my earliest recollections. I think I see him now when I was a tiny child in India. We were all living then in a rough temporary house on the banks of the Godavari. The house stood on a rocky hill, the further side of which was being quarried, for the erection of the



great anicut. His lithe figure and rapid step are impressed upon my memory as he walked from the house or entered it in his holland blouse with a leathern belt round his waist and pith hat on his head, to keep off the rays of the morning sun. The heat was very great in this part of Southern India, but he never allowed it to interfere with his daily task. He often laughed over the care that many Englishmen took of themselves in that climate, saying that he never stayed at home for the heat, but worked just as he would have done in England, being out amongst his men, giving his orders, and carefully investigating every part of the operations throughout the district. For days together on his long expeditions he would live on milk and bananas, which he would purchase for a few pice from the people in the villages through which he passed.

Even in that great heat he would walk for hours, and never seemed to feel the effect at the time, though I remember that on one particular occasion, when he returned from a three days' absence which he had spent in travelling some distance by stages on foot, he walked straight into the house, without even greeting my mother, and threw himself down on the bed, where he instantly fell asleep and thus remained many hours. He then woke up quite refreshed, and was ready for his work. He was untiringly active, and too anxious, perhaps, to make every officer who worked with him carry out his long programme of unwearying effort, but not a hard chief to get on with, and all his coadjutors loved him.

He had the greatest love for Christian mission work; he loved the missionaries too. He hardly asked or knew the section of the Church of Christ to which they belonged; they were God's servants; they were labouring for the souls of men; they were carrying the personal message of the gospel, with its present blessedness and its future joys, to those around us who knew not the gospel. That was quite sufficient for him. The missionaries always had a ready access to the house, and a hospitable welcome when they came. Many and many a one could tell of his loving



gifts and his self-denying kindness to them in their difficulties.

On Sunday a service was held for the English people ; my father would often conduct the service himself—reading the prayers, giving out the hymns, and finally reading a sermon from the works of one of his favourite divines. Those happy days and Sunday services I well remember. We often went to church at six o'clock in the morning, as later on the heat would have been very trying.

His kindness to the people of the country was extraordinary and to all who worked under him ; he was greatly beloved, and we have been told that his name is still well remembered, and that he is always looked upon by those who have benefited by his labours as their benefactor and friend. They could see the practical results of his daily toil in the free profusion of water, which passed from the channels which he cut, to their very doors, irrigating their fields and supplying their villages with the much-needed streams, which saved them from famine, and also delivered them from the consequences of flood.

Our servants were divided into different classes—one servant would not touch another's work ; each must perform his or her duties according to his or her caste. The lowest caste of all are the sweepers, and they may not eat their food with any of the other servants, nor may they mix with them in any way. One of these poor women came one day to my mother, and said to her, "Please, Missis, advance one half rupee."

"What do you want it for, Letchee? You know I do not like to pay your wages in advance." (Letchee's wages were only six shillings a month, and she had to get her own food and everything else out of that.)

She would not say what was her reason for asking for the half rupee in advance, but only repeated her request, making very low salaams, bending her head nearly to the floor, "Please, Missis, advance one half rupee."

At last my mother said : "There it is then ; I will give it you."



She next asked if she might go to the market at Rajahmundry, about ten miles from our house. She returned the same evening carrying a little child. The tiny creature had, as is usual, no clothes on; its head was shaved, all except a little black pigtail at the back. The wee baby was brought into my mother's room, and exhibited with great delight by its new mother. "Please, Missis," she said, "I very lonely. So buy baby . . . for one half rupee—in market."

From this eventful day, Letchee was seen performing her daily work with the baby sitting cross-legged in one corner of the room. She loved this little child very much, and would sing and talk to it all the time she was sweeping. When it died, after a year, she was quite broken-hearted.

Many a little present from humble givers was brought to us (the children) at the Godavari, as an expression of gratitude for my father's kindness. He and my mother did everything in their power to lessen the troubles and help to comfort the people in times of sickness and distress. Trays would be brought in to us often, laden with toys and animals made of sugar; and little articles of wood exquisitely carpentered by some of the men in the place were given to me.

I well remember many of the young officers who worked under my father: they were all more or less inspired with the spirit and energy which so continually moved him; but, more than that, his influence spiritually was beneficial to all those around him.

I never remember a dull moment in those early days of ours, when all hours of the day were alike filled with useful, pleasant recreation; they passed only too quickly. I think that when children live in an atmosphere of busy, useful work, they learn to realise the importance of time and its value; we were always taught to do something, and that there was no happiness in being idle. "If you want rest," my father used to say, "vary your employments. Nothing relieves the mind and body from fatigue like this."



His life, while in India, was indeed one of toil and exposure ; still, he was always bright, genial, full of fun, and ready to devote his leisure hours to those around him, if only he could do anything calculated to give them happiness and amusement.

The wildness and solitude of some of these places in which we lived in South India could hardly be believed now. The jackals howled round the house through the nights and long twilight evenings. The rafters of the house were generally open ; there were no ceilings to the rooms ; more than once snakes have dropped down on to the floor in front of us, and once even, one fell on my mother's lap. On another occasion, she had lifted her baby from its cradle into her arms, for no apparent reason, but just that she wanted to rock the child more soundly to sleep on her own knee. As she did so, she saw something move in the little bed ; she raised the pillow and a snake crawled out from under it.

Very often we travelled in tents from point to point, to the different places to which my father's engagements led him. I remember now, seeing him constantly surrounded by maps, which he used to study, making notes of the delta of the rivers, and planning out his canals. Life seemed too short for him, his active and mental work were carried out on so large a scale. Little as we understood of it while we were children, we always realised the importance of the weight of care, that rested on our father's shoulders.

There was an occasion of great danger to us all (already alluded to by my mother) when a huge rock in the quarry was being blasted, and we were allowed to stand in one particular spot, which was supposed to be at a very safe distance from the explosion, to see the rock shattered, and hear the noise that it would make. However, by some accident, the rock was burst in another direction from that intended, so that the splinters fell on all sides of us. My brother, who was a small child, and carried in a bearer's arms at the time, had an exceedingly narrow



escape of being killed on the spot ; and I, a little child of about eight years old, had my bonnet torn with the sharp stones that passed through it. Mercifully none of us were hurt.



ALAMUR LOCK WEIR, FROM BELOW, CORINGA CANAL.



CHAPTER VIII

Indian Family Life—Furlough—Home Life—
The Star of India—Retirement

AS to our family life, while my father was engaged on his Godavari work, the days passed very pleasantly at Dowlaisweram. There was an early morning ride at five o'clock and breakfast on our return. Then two or three hours of lessons, and in the evening walks and rides or stories read aloud under the shade of the trees at the back of the house. About this time, my health not being good, I was sent to Madras to visit some relatives. We sailed from Coringa in a small Indian vessel, the captain of which was the kindest and most courteous of men. Our voyage proved an adventurous one, for, after we had been at sea two days, a terrific hurricane came on, and the ship was in great danger. Our experiences were not pleasant. My aunt and I were in one of the stern cabins, and in the middle of the night so rough were the waves that the ship lurched and rolled, the wind howled and the rain dashed against our port-hole, until at length the sea broke into the cabin, and the mattress on which I was laid on the floor was soaked with water; our alarm was very great, for there were now several inches of water in the cabin, and the movements of the ship having loosened the cords which bound our furniture to the walls of the cabin, it fell piece after piece on the floor, and finally "brought up" against the door, where it was piled in a large mass, threatening to fall on us at any moment. But when the morning came we could not make any one hear our cries of distress. The



door was blocked, we could not hear if any one knocked, nor could they hear our voices from outside; the gale was still raging fiercely. I think it was eleven o'clock before help reached us.

When the captain went into his cabin which was adjoining ours, he shouted to us to ask how we were; we were then able to make him understand that we were in a difficulty, and could not reach our own door. He immediately sent for the ship's carpenter, who cut an opening between the two cabins. I was taken out from our surroundings, and put into the captain's berth; he spent the next few nights on deck whilst we occupied his cabin. It was indeed a relief when the storm died down, and the beautiful calm set in. The ship was not materially injured, and we were enabled to reach land in safety after a fortnight's tossing on the rough seas. This journey would ordinarily have taken about four days. Travel in India has vastly improved since those days. One of Sir William MacKinnon's British India steamers would now cover the distance in less than two days in any weather.

Leaving Madras, I went with my relatives to the hills, where my mother joined me in a short time. She told me that my father was coming and, to my great joy, took a cottage in these lovely surroundings: it was like so many of the hill cottages in India, bowered in roses, surrounded by strawberry beds, with many other English delights. Even in this charming place, we were exposed to the inroads of visitors not usually expected in a similar cottage in England—rats, centipedes, snakes, scorpions, and shiny green frogs, used to traverse our house as if it were their own. It is astonishing how speedily one gets used to this sort of thing, looking calmly on what seems, when described, very unpleasant.

We did not know exactly the day on which my father would be able to reach us, so our excitement was great when we were told, early one morning, that he had just arrived, after climbing the hills on foot and taking short cuts to reach us quickly. I forget for how many hours he



had been walking, but I know that he had no sooner gone to rest after his morning meal, than a messenger came running to the house, asking if Colonel Cotton had arrived. Though my mother explained that he was resting after a long journey, the messenger would brook no delay. He kept on repeating that the lake at Ootacamund had disappeared.

"The lake all gone, all gone! Colonel Cotton come tell us what to do."

It was discovered that during the night the dam across the bottom of the lake had been swept away, and the waters, having burst their barriers, were flowing in torrents down the sides of the hills. No one could tell what the results might be. My father's presence was greatly needed and here, as elsewhere, he found work ready for him.

On leaving the hills he went to Madras, having been appointed chief engineer for the whole Presidency, a very important position. It necessitated our leaving the old home on the Godavari to take up our residence in the neighbourhood of Palaveram, six miles from Madras.

My mother and I made our journey from the Neilgherries to Madras alone. We travelled either by bullock-cart or palanquin, according to the state of the roads. Our palanquin bearers sang weird, monotonous songs all the way, in order, probably, to help them to keep step, and perhaps to make the journey seem shorter. Travel of this kind is now almost unknown, certainly to the ordinary visitor to India, and though our experiences were not specially exciting, they may perhaps bear record.

Late one evening the palanquin in which I was travelling, at a short distance from my mother's, was suddenly dropped and dark faces peered into it, curious to see the little white child. That child's terror may well be imagined, but her tears soon brought gentle and loving words from the onlookers, and the bearers took up their burden once more. Further on, when we were travelling in a rough cart drawn by bullocks, we came to a rest-house—practically an empty house, as travellers in India then



generally needed only the shelter of a roof, for they carried bedding and other necessities with them. There were but two rooms; the furniture consisted of one bed and a few chairs, all in a most dilapidated condition. Exhausted with the long journey and the heat, we were compelled to shelter and rest for a time, but, unfortunately, we found that our provisions were not fit to eat, having become stale and mildewed. We were dreadfully hungry and though the rest-house keeper could give us nothing whatever, my mother did not lose heart. The burning heat and solitude of that place we can never forget. Suddenly, to our intense surprise, we saw, through an open window, a native servant coming towards us. He was neatly dressed, as though in attendance on an English gentleman. Having attracted my mother's attention, he handed to her a note from a gentleman, who had pitched his tent close by, an Englishman, who had heard that a lady and her child had come to the lonely rest-house. The note merely contained a few lines, offering, in the kindest possible manner, whatever supplies my mother might desire, adding that his servants were at her disposal, and he hoped she would allow him to send round luncheon. Overcome with gratitude, my mother gladly accepted this offer, and before long, a tray of appetising provisions was brought. It was indeed, in the circumstances, a luxurious meal. Nor did the kindness of the giver end here. At sunset, when we started again on our journey, we found that our unknown benefactor's servants had brought us a bountiful supply of provisions for the rest of our journey to Bangalore, where we stayed with friends. The Maharajah of Mysore, who had heard of my father's achievements, gave a reception in our honour. To us that reception was a strange, but agreeable, experience. A goodly number were in attendance and not a little magnificence was displayed. The Maharaja treated us with great kindness, and offered us every hospitality. His gardens, formed of stiff little flower beds and white glistening fountains, out of which the water rose in columns, were picturesquely arranged.



His crowd of tame animals, and his innumerable servants occupied my attention, while my mother and our friends talked with the Maharajah himself.

At Madras we found my father waiting for us and we all went together to our new home. It was as airy and cool as any place could be in that southern land, a few hundred feet above the sea. From its terraces we looked down on one side to the plains stretching far away until lost in a haze of heat, on the other side over the Bay of Bengal towards the sunrising. We were only a few miles from Madras, and though busily engaged in office work during the day, my father found time in the early mornings and evenings to help in mission work, while my mother visited the soldiers' wives in the cantonment, arranged for mothers' meetings, and clothing clubs, besides caring for the sick. My father generally took the service on Sunday in our little church, as there was no resident chaplain; sometimes a clergyman from a distance came over to take duty.

About this time my father felt how unfit he was for life in the tropics. In a letter written to a relative he says: "My health has greatly improved by my tour, and physically I am well, but mentally very weary. There seems no probability of my being able to remain at my post. I fully expect that I must give up my duties, and my dear wife's health is so uncertain that she must, if possible, leave India. Every way seems closed to me, but He who has provided for us hitherto will not fail now to help and direct."

Medical advice made it clear that it was absolutely necessary for my father to have a prolonged rest; consequently we sailed for England on March 8, and arrived on July 2. The voyage occupied four months, during which time small-pox broke out on board, to the terror and agitation of the passengers. The first child affected died, the disease spread, and thirteen others found their last resting-place in the deep.



My father occupied himself during the voyage in reading, in making calculations and notes in connection with the many projects he was ever pondering, in talking them over with the passengers, and in winning all hearts, old and young, by his cheery and genial manner.

The captain of the ship in which we sailed, Mr. R. D. Crawford, one of Sir Arthur's early friends, writes of this voyage:—

"I had some misgivings as to how so active-minded a man would feel, with no direct occupation, on a voyage of three or four months; but he always appeared to be perfectly happy, and contributed greatly to the general cheerfulness. Soon after starting, he asked me to let him have the 'cuddy'¹ after breakfast each day for prayer and Bible reading; but I said as it was the only public room I feared interruptions, which, though I should regret them, I should not feel that I could use my authority to prevent. A day or so after he told me he had found in the steerage what he thought a suitable place. He kept up the reading and prayer there all the voyage, and most kindly told me that he felt I was right as to the 'cuddy.' I often attended myself, and realised what truly Christian feeling he showed in the matter. I remember I requested him to sit opposite to me at the table for the sake of general conversation. He consented at once, and we all benefited greatly by his talk. But his power of abstraction was so perfect that, on many days, I have said to those near me, 'We shall not get a word to-day from the Colonel,' and I was sure that he was too fully occupied to hear me.

"We had a good many children on board, and he felt much for one of them who, having been left completely to ayahs, could not talk with the rest, or understand them. Finding near the end of the voyage this child chatting merrily with the others, he was greatly pleased at the proof thus afforded of the superiority, over books, of learning orally first.

¹ East Indianman equivalent for saloon in the big ocean steamers of to-day.



"Subsequently, he wrote a pamphlet instancing this, and got two men going to India to promise not to look at a book till, with a munshi, they had got words and accent, with the result that in two years the natives said they spoke just as one of themselves."

When we reached London, though it was the hottest July weather, my father felt the change intensely. His health was in so delicate a state that it was considered advisable that he should leave Town as soon as possible. He went for a short visit to Penge, near Beckenham, to renew his friendship with the Rev. Frederick Chalmers, who at the age of seventeen had fought side by side with him in the first Burmese war, and for whom he always cherished the deepest affection. Mr. Chalmers lived at the delightful house which, in after years, we learned to know and love so well—Beckenham Rectory. It was a large house and always full, for Mr. Chalmers and his wife as well as her beloved sister, Miss Marsh, and aged father, the Rev. William Marsh, D.D. (author of many once popular works, such as *English Hearts and English Hands*), dispensed an almost ideal hospitality. The hall door was always open; friends came and went in the pleasantest way, and every day, at noon, the family met in the drawing-room, or in the garden, or in Mr. Chalmers' study, for a short Bible reading.

In the *Memoir of the Rev. F. Chalmers* is an allusion to his first meeting with my father at Beckenham, after so long an absence:—

"Many were the pleasant meetings at Beckenham Rectory with friends of former days; but none more pleasant than the unexpected arrival of Sir Arthur Cotton. It was on a summer morning, and the doors were wide open to the sunny air; family prayer was just ending, when a stranger entered, unheard and unobserved, and knelt just behind Mr. Chalmers. As all the voices joined in the Lord's Prayer, the stranger's voice was heard amongst them, and scarcely had the last 'Amen' been said, before



the friends and comrades—parted for thirty-six years—were clasped in each other's arms."

From Penge we went to Tunbridge Wells for a short time; but he longed for more quiet than is to be found in that somewhat lively resort, and was anxious to find a warm climate in which to spend the winter. Eventually he took a house at Weston-super-Mare, where we spent six months; from there we moved to a lovely place in Gloucestershire, on the Cotswold Hills. The luxury and delight of that old-fashioned house, and well-filled flower and fruit gardens, we shall never forget. To an Indian family the pleasures of English country life are indescribable, and certainly we enjoyed them to the full. My father very willingly helped the clergy of the neighbourhood in their work and enjoyed intercourse with some of the manufacturers, who had mills and cloth works beside the river, that flowed through our grounds, whose waters were stained with a deep indigo blue from the dyes that were used. It was in one of those villages that he gave an address at a Church Missionary Meeting, the notes of which we still have in his own handwriting. He said:—

"I have been more than thirty years in India, and having been generally throughout that time travelling about the country, I have had much opportunity of observing the progress of things among the native community; and nothing can be more certain in my mind than that, through missionary operations and other means which have operated in God's gracious providence, there has been a wonderful preparation for the spreading of the knowledge of our Lord and Saviour, Jesus Christ, throughout India.

"When He visited Samaria, He said to His disciples, 'Behold the fields are white already to harvest.' He clearly foresaw, not by Divine power, but by the signs that He had witnessed, the reception of the Truth at the preaching of Philip, which is afterwards recorded in the Acts. The signs He had seen were the simplicity of faith shown by the woman, who said, 'We know that Messiah cometh, who is called Christ; when He cometh, He will tell us all things.' The eagerness with which she ran to tell her fellow-townsmen that she had found the Messiah,



and their ready reception of her testimony, and anxiety to keep Him among them, were all proof of ready faith.

"Here, I think, we may draw two inferences from what occurred on that occasion, which will bear directly on the matter about which we are met.

"First. Jesus says to His disciples, 'Say ye not, there are yet four months, and then cometh harvest?' as though He had said, 'How clear is your perception, and how strong your faith about the things which are seen and are proved!' Four months before harvest; that is when the blade has but just appeared, where there is nothing to be seen but what can scarcely be distinguished from grass or weed, you speak with the utmost assurance of a coming harvest, as if you already saw the reapers filling their hands with the golden corn. Why did He say this but to call His disciples to observe how well, were they equally observant about such things, they might discern the joyful symptoms of a coming spiritual harvest—of the time when a glorious crop should be gathering in.

"And, secondly, He says, 'Other men laboured, and ye are entered into their labours.'

"I think from this we must conclude that this poor woman had not obtained her faith, as it were, by accident, but that, at Samaria also, there had been humble, patient, persevering preachers of the coming Messiah, labouring diligently, hoping against hope, among these outcast Samaritans, according to almost universal experience, in spiritual things, as in material things, that when there is a harvest, there has been a seed time long before—this is of the greatest importance at this time, and worthy of our earnest consideration with reference, indeed, to the whole vast field of operations of this blessed society, but I would observe more expressly with reference to India, because I wish to speak of that which I have seen, and about which I am myself conversant.

"Would not our Lord say of India, 'Other men have laboured.' For how many years have simple, faithful, self-denying, practical and persevering men lived and died in that country!

"These men truly hoped against hope—they were indeed children of Abraham; they were opposed to the utmost by a so-called Christian Government, they encountered in all its strength, the madness, the stupidity, the love of sin, the system of idolatry, which Satan had been for so many ages training his dupes to raise against



their own salvation ; they laboured some ten, some twenty, some thirty years, often the case appearing more and more hopeless, with nothing to support them but the plain commands and promises of God, except that now and then God was pleased to remind them that when He would work, none would let, by giving them the soul of some poor perishing one for their hire, and these too often so weak that they were a constant trial to those who were trying to lead them in the way of Truth.

"At this time, how continually have they had to bear, in addition to so many trials, the blaspheming taunts of their ungodly countrymen, exulting over their small success. Perhaps many of them have died, without being favoured with even a few proofs that the Word they proclaimed was the power of God unto salvation, but, almost all, till of late years, without anything that would be called a harvest. It may be safely said of them—'They died in faith, not having reaped indeed, but having seen the fulfilment of the promises afar off.'

"But, now, what is the state of things? I am sure we have more than once to say, 'The fields are white already to harvest.'

"First. Government have, in a great measure, withdrawn their opposition.

"Second. Several of the local Governors are most heartily supporting the Missions, subscribing liberally to them, and presiding at the meetings."

From Gloucestershire we returned to London, where we spent the winter. A very sad winter it was, for whooping cough found its way into the nursery and the whole family became infected by it. My father was very ill, and my little sister, to our great grief, succumbed to it, leaving a blank that has never been filled.

We settled next at Barnet, within easy reach of London, where we remained for some years, and appreciated fully the ministry and work of the vicar, the Rev. W. Pennefather. My father, however, was not with us long. He was obliged to return to India. This was our first separation, and we all felt it keenly. It was followed by another trial, the death of my youngest brother at the age of six years.



Amongst the friends we saw at Barnet from time to time were Sir Herbert Edwardes, who had returned from India soon after the Mutiny, also Reginald Ratcliffe, who had bravely ventured on the race-course, and in other ways supported the open-air missions that were just then coming into vogue. The battle of life was as serious to him as the military engagements had been to Sir H. Edwardes and others whom we saw at that time.

I cannot pass over without further mention the name of Sir Herbert Edwardes—that most distinguished soldier and noble Christian, whose career was so much spoken of, and greatly noted at the time. I can call to mind his tall figure and handsome face, and his cordial, kindly manner. He had had many seasons of suffering and suspense, with regard not only to his military duties and the dangers to which he was exposed, but also on his wife's behalf, at that most terrible time, when she refused to leave his side, though in the utmost peril of her life, and it was not until he had sternly insisted on her removal to a safe place, that she at last, with many tears, quitted his side, and left him for a time, going with friends to a hill station in India, and thence to England. His bravery and indomitable determination to overcome difficulties are matters of history, and are beautifully told in the *Memoir* which records his life of usefulness, devotion, and courage. It is only to our personal knowledge of him that I refer here.

Amongst other interesting reminiscences of his life in India, and especially during the time of the Mutiny, Sir Herbert told us that one night, just after his wife had left, he was alone and looking forward with great anxiety to the coming day. He had noticed, when the troops had been paraded, the scowling expressions of the men and other threatening signs of probable insubordination. He had thrown himself on to the bed, hoping to get an hour's rest before what he feared would be a night of great responsibility and possibly of disaster. His orders were that he was to be called at once, should anything occur which demanded his presence. At midnight he heard the



cry, "Sahib! Sahib!" He sprang up and, hastily pulling aside the curtain of the doorway, heard a loud hiss. He called for a light and there, above his head, was a large cobra with its hood spread. The servants soon despatched it, and the peril was past. "I returned to my room," he said, "with such a sense of God's care. I had been riding about the lines expecting my death every moment from muskets of angry men, and God has now shown me how death might have come in my quiet room but for His loving care and protection."

Not a few references have been made to the danger experienced from snakes. Every one who has lived in India knows of hair-breadth escapes. But, I believe, there is no record of any European—man, woman, or child—having died from snake-bite in India, at least for many years. I am told that a few years ago a discussion was raised in a Calcutta newspaper on this subject, when authentic instances of deaths of Europeans from snake-bite were sought, but none were forthcoming. Yet the latest returns show that in 1897 nearly twenty-one thousand Indian people perished from snake-bite. The habit of the native population of sleeping on the ground with the feet uncovered largely accounts for this great mortality. Deaths from this cause are hardly ever less, in any year, than the number given above.

Dr. Livingstone also was one of our heroes, having just returned from Africa. He took a small house near the Parsonage, where he and his family were gathered together after a long parting. He enjoyed the private life and domestic pleasures, which he had so nearly forgotten during his long residence in Africa, nor would he consent to be lionised, even in the smallest degree. The very power of English speech had almost forsaken him, and he had to hesitate for several seconds before he could give expression to his thoughts. On one memorable occasion he was asked to speak at a missionary meeting to be held in the schoolroom, and with many misgivings he undertook the task, but the result was nothing more nor less



than a breakdown in the middle of his speech, for, as he expressed it, "the words would not come." In private intercourse he was delightful and would entertain and instruct us for hours together with reminiscences of his travels and adventures.

Amongst other friends resident in the neighbourhood, whose intercourse was a constant cheer to my mother, were Captain and Mrs. Trotter and their family, Mr. and Mrs. R. C. L. Bevan, Mr. and Mrs. Wilbraham Taylor, of Hadley Hurst, the Honble. Arthur (afterwards Lord) Kinnaid and his wife, and many others whom I might name.

General Colin Mackenzie was another of the friends whom we knew at this time. He also passed through the perils of the Mutiny, and not without personal danger. He was attacked at a defenceless moment by sepoys, and, as my father used to express it, was "almost cut to pieces by their sabres." It was said that he had thirty-seven sabre cuts on his body, but, owing to his vigorous constitution, and his wife's nursing, his life was spared. He was, indeed, a magnificent specimen of British manhood—tall, strong, and typically fair, with very handsome features. He visited the Godavari on one occasion, and it is recorded that "one of his first adventures was on the march from Madras, when, in endeavouring to cross the Godavari river at Rajahmundry, the strength of the current carried his horse off his feet. He disengaged himself, and swam, accoutred as he was, to the opposite bank, landing with his whip in his hand. His horse found his way to shore lower down."

His wife afterwards wrote of a visit from my father, as follows: "We had a delightful visit from Colonel Arthur Cotton, who did wonders for the Madras Presidency by his Irrigation Works. In ten years the revenue rose twenty-five per cent. and the exports were doubled. He told us of whole districts being depopulated by famine, and not a shadow of inquiry made, nor any remedy being thought of. Lord Dalhousie reported him to the Home Government as 'perfectly insufferable,' because he said the state of Cuttack



was 'a disgrace to any Government.' He got out of the scrape by stating that it was 'formerly a disgrace, even to a Native Government, and that now *it was worse*,' neither of which facts could be denied.

"The Bhagavati, one of the rivers in Bengal, and, like all the rivers in that province, requires control, as otherwise it shapes its course yearly, cutting away banks and destroying property to an immense amount. There is not a stone in all Bengal, so there is nothing to oppose the progress of the water. A great part of the city of Murshidabad was threatened with destruction, and Major Mackenzie, being much concerned, took his friend to judge of the impending danger. Colonel Cotton sent in a plan for diverting the course of the current by 'groynes,' the whole expense of which would have been £2,000. Major Mackenzie backed the recommendation as strongly as possible. The Lieutenant-Governor supported it, but he and the President of Council were on such bad terms that whatever the one proposed the other opposed; the latter, as the acting representative of the Supreme Government, returned for answer that he 'did not see the Government was called upon to protect the city of Murshidabad!' And, of course, nothing was done."

Colonel Cotton had returned to Madras, but did not again occupy the post of Chief Engineer, to which he would have been entitled by seniority, had not the organisation of the Department of Public Works been altered, and the Chief Engineership allotted by selection and no longer by seniority. Colonel Cotton consequently became Commandant of Engineers without any special functions, and an informal adviser to the Government on engineering subjects.

During most of the troublous time of the Mutiny, he was in attendance on General Sir Patrick Grant. He went about with him from place to place, inspecting different stations, where it was thought danger might arise, but the Mutiny did not develop in the Madras Presidency, and he never once found himself in a disturbed district. He was



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at this time a guest of the Governor of Madras, for whom he had the greatest affection.

Although now Commandant of Engineers, and greatly occupied with military duties, Colonel Cotton was admitted to be the chief authority on all matters connected with irrigation ; not only in his own Presidency of Madras, but, generally, throughout India his counsel was found necessary, for in regard to irrigation he was without a peer. That this was emphatically so, will be apparent by an extract from Minutes of Consultation in the Public Works Department, dated May 15, 1858, when Sir Charles Trevelyan, Bart., was Governor of Madras. The final paragraphs of the Minutes were :—

"It is finally resolved that when pointing out to the Honourable Court of Directors the several difficulties which have been reviewed in these proceedings, the Government express their unanimous, strong, and earnest advocacy that all irrigation works which, on a comprehensive view of the wants of the country, may be deemed necessary to develop its undoubtedly great resources, be commenced at once boldly and on a large scale, be pressed forward throughout all times, and under all circumstances, and be looked on, and practically treated, as in fact they really are, as the most economical, because the most profitable, undertakings in which the Government could possibly engage. It is needless now again to bring forward the innumerable instances in which money has in this Presidency been most advantageously invested in irrigation works. The proceedings of Government have in this respect been only too desultory, too vacillating, and it is confidently asserted that India could be placed in a position to pay all her expenses and gradually discharge her debt far more readily and speedily by a judicious expenditure than by any scheme of retrenchment or reduction.

"It is right to add one remark to a paper otherwise too long. If we have done our duty at least to this part of India and have founded a system which will be a source



of strength and wealth and credit to us as a nation, it is due to one master mind, which, with admirable industry and perseverance, in spite of every discouragement, has worked out this great result. Other able and devoted officers have caught Colonel Cotton's spirit and have rendered invaluable aid under his advice and direction, but for this great creation of genius we are indebted to him alone. COLONEL COTTON'S NAME WILL BE VENERATED BY MILLIONS YET UNBORN, WHEN MANY, WHO NOW OCCUPY A MUCH LARGER PLACE IN THE PUBLIC VIEW, WILL BE FORGOTTEN; but although it concerns not him, it would be, for our own sake, a matter of regret if Colonel Cotton were not to receive due acknowledgment during his own life-time."

At this time he reported to the Supreme Government on the project of irrigation in the Province of Orissa, which had been suggested by himself and entrusted to the Madras Irrigation and Canal Company. He also visited Calcutta, and gave a lecture on the subject of a dam across the Ganges at Rajmahal, and a canal therefrom for irrigation, navigation, and the supply of water to Calcutta, and subsequently reported on the same subject to Government.

Later on he reported, at the request of the Irrigation and Canal Company, on the Ganges Canal, with a view to a new project to be connected with it. His report, one of the ablest of his numerous writings, was printed without his knowledge, and fell into the hands of Sir Proby Cautley, who planned and executed the works of the canal, and who felt himself obliged to answer the criticisms of his work. Eventually it was fully acknowledged that Colonel Cotton's main objection to the site of the canal head on the hill, instead of in the plain country, was well founded.

In 1860 he left India,¹ and, on his arrival in England, received the honour of knighthood, and was entertained at a public banquet in London. No report of what passed at the banquet is on record; from all such manifestations

¹ The order passed by the Government of Madras is most cordial



KNIGHT COMMANDER STAR OF INDIA 179

Sir Arthur Cotton shrank with deep modesty which could not be shaken. Lord Halifax (then Sir Charles Wood, Secretary of State for India) conveyed the intimation of the offer of knighthood in the following letter :—

INDIA OFFICE,

Sept. 20, 1860.

DEAR COLONEL COTTON,—

I availed myself of the opportunity of my being in attendance on Her Majesty, at Balmoral, to bring before her your long continued and good services in the public

in its acknowledgment of his services. I reproduce it exactly as it appeared in the *Fort St. George Gazette*, Madras :—

MILITARY DEPARTMENT.

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Read the following letter :—

From the officiating Secretary to the Government of India, Military Department, Fort William, 22nd December, 1859, No. 904, to the Secretary to Government, Military Department, Fort Saint George.

With reference to your letter, No. 3734, of the 21st October last, I am desired to acquaint you, for the information

No. 3733, dated 21st October, 1859. of the Government of Fort Saint George, that the proceedings of that Government in relation to the office of the Commandant of

Engineers, are approved by the Government of India.

I am desired to observe, that when recently reducing the number or brigade commands in this Presidency, the reductions were carried out at once without reference to present incumbents ; but in the present case, the honourable the President in Council is disposed to approve of a different course, with a view, in some measure, to mark the valuable and signal services performed by Colonel Arthur Cotton, as especially noted in the minute of the honourable the Governor of Fort Saint George, dated the 17th October, 1859.

Order No. 121, 10th January, 1860.

[Communicated to the Commander-in-Chief, Commandant of the Engineers, and Pay Department.]

(*True Extract.*)

Acting Secretary to Government.

To the Adjutant-General.

„ Commandant of Engineers.

„ Military Auditor-General.

„ Accountant-General.



works of Madras, and I have great pleasure in acquainting you that Her Majesty was pleased to signify her intention of conferring upon you the honour of knighthood in recognition of your services.

I remain, yours truly,

C. WOOD.

Col. Arthur Cotton.

Expression must be given to the view, strongly cherished by many of his friends, that Sir Arthur Cotton's remarkable services to India were never adequately recognised. This, one need hardly say, is no complaint of his; it is the complaint of his friends. He was a life-saver, not a life-destroyer. Had he killed in battle but a tithe, or a hundredth, of those he saved from suffering and premature death, he would have received the thanks of both Houses of Parliament, been made a peer, and have received a large grant from the public funds. That the opposite to this is the way we treat the heroes of peace shows how far our Christian nation is from the ideal which Christianity has set up. Mr. Deakin, speaking as one having no personal concern in Indian administration, is constrained to say :—

"It cannot be said that even upon the spot the services of the Engineers have been duly recognised by those entrusted with the control of the administration. Far-sighted viceroys have adopted a bold policy of expenditure upon irrigation works, and thoughtful members of other branches of the service have at times expressed their admiration for the ability which has made them a success; but the men themselves have rarely been rewarded as they deserved, either in view of the importance of their charge or its arduous conditions, even when measured against the always exhausting work of other officials in the same outlying districts."¹

Again, he remarks: "Seeing their high character and great ability, recognising their physical trials when, in the

¹ *Irrigated India*, p. 230.



weary, wasting, feverish, autumn heats, the demands upon them culminate—the safety of the summer crops requiring them to be abroad daily, at a time of year when all the heads of the service have fled for relief to the coolness of the hills—it is not too much to say that, after all, the finest product of irrigation in India has been, and is, the gallant company of its Engineers. Enormous responsibilities are theirs, and they have discharged them with as much courage, and as much success as their brethren who have stormed the hill forts, or faced the tremendous odds of battle, planting the standard upon a territory which, even then, was but half won, seeing that it had next to be maintained by an endless struggle, no less severe, for fertility and against drought.”

My father retired from his arduous labours in India, his health sadly broken, and his spirit worn and jaded by the constant struggle he passed through in his earnest, but often unsuccessful efforts to obtain the sympathy and interest that he desired from those in power, in order to continue and maintain the progress of the works which he had so much at heart. He was essentially a man who lived before his time. His ambitions were so great, and his sympathy so bound up with the interests of the people of that great country, to which, he considered, England owed such a debt of provision and protection, that he could not rest content with things remaining as they were, but always sought by every means in his power to alleviate the miseries which he witnessed in India, and to increase her prosperity. This burden weighed ceaselessly on his mind, and, much as he had been able to accomplish, he was always considering what more might be and ought to be done. He felt it his imperative duty to make India's wants known and to suggest remedies. He was never content to rest in the contemplation of the things that were past, but pressed ever forward to those which were to come. He had every confidence in his own plans, not only from his practical view of how these great



and necessary works ought to be carried out, but also from the experience which the past had taught him. His schemes had proved far more beneficial than even he had estimated in his most sanguine moments. He had good reason to urge forward his crusade in season and out of season. Not iridescent anticipations, but sun-bathed successful projects, were the foundation of all that he urged. To carry out these great schemes he laboured incessantly both with his pen and by interviews with those in power. Yet so unwilling (or so unheeding) were those in authority to recognise the full significance of what Arthur Cotton had done, that at every turn he was met by the insuperable barrier, "No supplies." The furore of railways as the one means of communication in India had seized all in power, with disastrous consequences to that country.

When he returned to England at this time, he was, as I have said, broken down in health, and was advised to try a year's rest in some warm, sheltered place. He decided to go into the neighbourhood of the Gulf Stream, in the north-west corner of Devonshire. He was constantly liable to attacks of fever, and was so ill that when we reached Barnstaple, in search of a suitable house, he had to admit that he was quite unable to undertake even this simple task.

We had only been a few days in the town when a friend called and told us of a delightful place which was to be let. My mother drove over to inspect it, and found it replete with every comfort: fires burning in the rooms, lovely grounds, in fact everything that could be desired for our emergency. We were able to take possession at once, to the delight of us all. I shall never forget my father's gratitude for the provision of just such a home as he needed.

There was a very pretty drawing-room in this house, an oval-shaped room, with mirrors and china artistically disposed, besides Chippendale tables and other light articles of furniture. My father's first act on entering the house was to remove all the ornaments, and cover the tables with



maps, papers, compasses, and measuring rules, as well as sundry other implements of his own particular craft. There was a good study, which was at his disposal, but his answer was: "Oh! I daresay I shall use that too. I like to see every room in the house fit for sensible employment, and I like to be reminded of India wherever I go." So nothing would induce him to allow the maps and papers to be removed.

He was very fond of colouring charts and maps, which he would spread on the floor, while he marked the course of the rivers, and the way in which canals for irrigation and navigation could be constructed. A map will be found, in pocket at end of book, showing India irrigated according to his ideas, and with the large storage centres which are necessary to maintain water in the channels in all conceivable circumstances.



CHAPTER IX

Earnest Endeavours to make India Prosperous
rendered Futile by Official Inertness in
India and in England

"I have heard the state of agriculture attributed to apathy of the natives, their want of enterprise, their dislike of change, but I cannot say that this view of the case is confirmed by my experience of the native character. I have generally found them open to the adoption of improvements, and to the introduction of any change, when satisfied that the same will prove personally beneficial; but, being poor, they are naturally very cautious in employing their labour in channels of which they have no experience. That the natives are not enterprising is true, but it is their poverty which is the cause. If they had the means and the education necessary, I believe you would not find them one whit behind ourselves in any enterprise which might be open to them."—JAMES THOMSON, *Merchant, President of the Madras Chamber of Commerce.*

THE closing years of Col. Cotton's official career, spent as they were at headquarters in Madras, afforded opportunity to him for taking a comprehensive view of the needs alike of the Madras Presidency and of India as a whole. He made full use of this opportunity. He propounded policies and put forward schemes, which, had the policies been accepted, and the schemes adopted, would have changed the whole history of the past half-century in India, and have given the future a hopeful, instead of the present almost hopeless, outlook. And, at this moment, when heart-rending accounts of the most awful human suffering is reaching this country from India, it is hard to restrain one's indignation at the indifference with which the later proposals of Sir Arthur were received at a time



when, if they had been adopted, these troubles need not have occurred. The fight between him and his opponents, as will be shown again and again in these pages, was between railways and canals, or rather, between a few trunk lines of railway, and widespread navigation and irrigation canals. Because, in England, we are very familiar with the former, and know but little of the latter (to be almost more charitable in assigning a reason than the facts permit), railways were pushed more and more to the front, while water navigation and irrigation were relegated to the third place. Railways were an easy first, buildings and roads came second, with nearly twice as much money expended upon them as was spent upon the watering and improvement of the soil, though it was from this last the money had to come to enable the railways and the buildings and the roads to be constructed. An exact reversal of this policy, navigation and irrigation first, and railways third, would have worked such wonders in India, that the Empire would have been in the first rank of British dominions for prosperity, instead of being (the remark is deliberately made because it is founded upon Indian official publications), as it is now, perhaps the poorest and most distressful country in all the earth.

Colonel Cotton, in those last days of his in India, saw the existence of distress which would grow more acute in the future. In him,—

“Old experience did attain
To something of prophetic strain.”

It was in earnest, even agonizing, terms, that he besought the rulers of India to apply to India the remedies which that country needed, and which were easily to hand, while he implored them not to introduce means foreign to the country's necessities;—not entirely in vain, for something irrigationally, although practically nothing navigationally, has been done. But the evils, against which Sir Arthur's remedies would have saved our Eastern Empire, have advanced in seven-leagued giant strides, while his remedies



have been shuffled forward as with a slippered tread.

From Sir Arthur's writings during his last ten years in India I make some copious citations. Some of his remarks are fifty years old. They are as pertinent to the existing situation in India as though they were written this year. No one, who wishes to understand what may be done to lift India out of its present distressful and resourceless condition, can afford to leave these remarks unread. I commend them to my countrymen and countrywomen, in the prayerful confidence that some good will surely come to our unhappy Indian fellow-subjects from their republication at this particular time. Of the book then published, *The Times* remarked: "It is the solution of what has always been a most difficult and intricate problem, it sheds a flood of light over the dark future of our Indian possessions, and, while scarcely yielding in cogency of argument to mathematical demonstration, arrives at results at once practical and scientific—at once of general truth and immediate usefulness. Such as it is, we not only commend it to the study of India, of Presidents and Directors, but of every English gentleman who wishes to understand how the resources of modern science may be brought to bear on the happiness of individuals and communities, and how those principles, which every one is anxious to apply to his own estate, may be used for the regeneration of a mighty empire."¹

Great would be the gain to India, if, once more, *The Times* would commend Sir Arthur Cotton's teachings, and so bring about "the regeneration of a mighty empire." These are among the observations which called forth the commendation of *The Times* :—

WHAT MAKES INDIA A POOR, AND ENGLAND A RICH,
COUNTRY?

Why are the people poor? Because, being entirely without any means (excepting bullocks), which can be sub-

¹ *The Times*, Dec. 28, 1853.



stituted for human labour, it is as much as they can do to feed, clothe, and shelter themselves ; or rather, I should say, more than they can do, at least while they have to keep their rulers in luxury. This is the plain, indisputable answer to the question : Why are the Indian people poor ? Now, as to the converse question : Why is England rich ? That is, why has it the means of supplying itself with a thousand things beyond the mere necessities of life ? Because, though it contains only twenty-five millions of people, there is as much done by the aid of steam, water, roads, canals, railways, ports, docks, etc., as could be effected by the labour of perhaps two hundred millions of people without those aids ; and, having, therefore, the work of that number, while the necessities of life are required for only one-eighth, there is, of course, an enormous surplus for other things. This is not peculiar to one country, for, if besides the labour of one hundred and forty millions in India, we had the work of another five hundred millions performed by roads, canals, railways, water, steam, etc., there would be in India also abundance of labour available for other things beyond producing the necessities of life.

WHERE THE EVIL REALLY LIES? THE RULERS ARE MERE REVENUE COLLECTORS, THEY ARE NOT STATESMEN.

Now, where is the difficulty ? Thousands want to lend money at four per cent. ; thousands of Europeans and Indians want employment as superintendents of works, etc. ; thousands of iron manufacturers and others in England want a sale for their goods ; tens of thousands of people in India want employment as labourers and artificers ; millions of ryots want water for millions of acres ; tens of thousands of miles of communication and means of carrying produce need to be constructed, and thus millions might be expended so as to yield ten, twenty, or fifty times the interest paid for them. Everything is ready except one thing. But there is, indeed, a difficulty, the difficulty which has kept India immersed in ignorance and poverty from the time we commenced our rule up to



this day. It is this, that Englishmen, instead of coming to India to teach the natives the things which have made us what we are, sit down to learn of the natives the things that make them what they are. How wonderful it is, that the man who, if he were in England, would be certainly engaged in furthering everything in which England glories, should, in India, occupy himself from morning to night with this notable subject : the settlement of the land revenue of his district. He sees, for instance, that his district is paying £100,000 or £200,000 a year for the transit of goods, and that it cannot find a sale for what it produces for want of the means of sending it to places where it is saleable ; and yet he is completely at a loss as to what can be done to relieve and improve it. He turns again to the "settlement," and tries once more what he knows has been tried a thousand times before in vain, how to make a district, steeped in poverty, pay additional revenue without increasing its resources. He sees and hears of capital, employed in almost every kind of public works, yielding fifty or one hundred per cent. ; he sees that his own district, in producing certain articles of food, clothing, etc., pays double or treble what they could be procured for from another part of the country, if there were but cheap transit ; whilst other districts are wanting, and paying double or treble for, things which could be got far more cheaply from his district ; and yet he cannot think of anything to enrich his district except giving a little more time to the "settlement," or reading a few more thousand sheets of paper on that everlasting subject. Here is the real and sole difficulty. To remove it, one word from our rulers is all that is required ; everything else is ready, and has long been ready. Let them only open a loan for twenty millions to begin with, order the expenditure of £30,000 a year in every district, purchase a million tons of rails and such other things as can be got at once for money, and will help towards the improvements of the resources of the country, and the whole difficulty is got over. This might be done to-morrow ; nothing is required but that which has been so



well done by the Governor-General, about the telegraph, be applied to everything else of this kind; that is, to say, "Let it be done." But, like everything else that has ever been done to promote the real welfare of India, it must come from without; it will never come from within, neither from the Court¹ nor the Civil Service. Every step in advance has been made not only without emanating from within, but in direct opposition to the utmost efforts of the Court as formerly constituted. The freedom of the press, the abolition of suttee, the admission of European merchants, missionaries, etc., steam communication, and now the electric telegraph, etc., etc., every one, without exception, has been hitherto, in some way or other, really forced upon the Indian House.

WHAT A SUFFICIENCY OF WATER WOULD ENABLE
INDIA TO DO.

Now, if a community can purchase water at a certain price, and sell it again in the shape of sugar, rice, indigo, tobacco, pulse, cotton, etc., in unlimited quantities for fifty times as much as it cost, one would suppose that the question, as to how to make both ends meet, was settled. Such is, undoubtedly, the actual state of things in India. The prices of all exportable articles, whether rice or cotton for instance, are equally made of the cost of food and clothing. And if water be applied to diminish labour in raising articles of food, the proportion of the population set free thereby, will, of course, employ themselves in raising whatever their country is best suited to produce for foreign countries; and any quantity of cotton and other things can be sold to Europe, China, etc.

Port Philip, in Australia, has been loaded with wealth by discovering a thing which can be obtained at one-fourth its value, while India continues poor with a thing which can be obtained at one-fortieth of its value.

¹ The Court of Directors of the Honble. the East India Company.



THE USING, NOT THE HAVING MERELY, OF VALUE
MAKETH RICH.

Nothing, therefore, can be more evident than that it is not the having a treasure in the country which makes it rich, but the taking every advantage of it. It is not the gold underground that made Port Philip rich, for it was not a bit the better for it for many years, but the digging it up and giving it in exchange for consumable things, etc. In the same way India will continue poor, even if water were ten times its present value, as long as it is not made the best use of, but still allowed to flow into the sea by millions of tons per second. The water that flows off in this way in an hour by the Godavari, is sometimes as much as four thousand million cubic yards, and is worth £800,000, or three times the whole revenue of Rajahmundry for a year. But, till it is made use of, the country continues just the same as if it had no such treasure.

How strange it seems that whilst the dullest labourer can perfectly understand the value of gold, the wisest statesman cannot perceive the value of that which is exchangeable for gold; so that though a hundred pounds worth of gold in the form of water can be obtained in India for £2 10s., no Indian statesman has yet been found wise enough to set a thousandth part of the population to work to obtain it; whereas, in Port Philip, when it was discovered that a hundred pounds worth of gold could be obtained for twenty-five pounds worth of labour, more than half the population were immediately employed in digging it up. Whenever the subject is stated, the defence is, "But, see what we are doing now! Look at the Ganges canal and the Godavari and Kistna works!" Suppose the Port Philipians had continued as poor as they were, and, upon somebody taunting them with neglecting their great treasure, they were to say in defence, "What shameful misrepresentations! Out of our sixty thousand people, we have got twelve people digging at Ballarat, and twelve at Mount Alexander," what should we think of their sense



and activity? Yet twenty-four diggers bear the same proportion to the population of Port Philip as the sixty thousand employed in hydraulic works in India bear to the whole population of that country.

THE NEGLECT TO KEEP ANCIENT WORKS IN GOOD ORDER.

There is not a district in the Madras Presidency, except Tanjore, in which the old works are all in good repair.

It is not the ruinous wars that have kept us poor, but the most unaccountable neglect—a neglect the more extraordinary because it is not endured for a moment in other things. Let any man propose to provide money for wars by leaving buildings to go to ruin, and he would be thought mad; and yet this is only what is systematically done with works upon which the food of the people and the revenue depend.

India is like the field after an Indian battle; there is but one cry: "Water, Water." All that is wanted is water, and this want supplied, everything else will almost follow of course. Water for irrigation, and water for transit, will provide for everything else. Water is the universal solvent, and can solve that which has puzzled all the Indian wise men from Lord Cornwallis down to the present day, namely—the revenue settlement question. It has solved that question in Tanjore, the only district where it has been tried. When a man has to pay only twelve shillings a year for an acre of saleable land at four pounds ten shillings, the question is substantially solved. There may be, of course, a thousand questions of trifling importance about it, as there are about everything else; but the essential difficulty is gone. The real difficulty all along has been this—how to get twelve shillings of revenue out of a land on which the total profit was only ten shillings—and nothing but water can solve this; and it will assuredly do the same in every district of India where it is applied, by the simple process of making the profit on the land one pound or thirty shillings per acre.



COL. COTTON'S SINGULARLY ACCURATE PREDICTION.

Colonel Cotton, in his first report on the Godavari, made the following prediction :—

In examining the question of the propriety of such an outlay as this, there is one point which I consider deserving of particular attention; we are apt, generally, to think of a Government expenditure as if it were precisely similar to one made by a private individual; but, in countries circumstanced as these are, there is a vast difference, and especially in this particular case of Rajahmundry [afterwards Godavari] district. Ten thousand pounds cannot be spent in any district without a large portion of it immediately finding its way back to the Treasury, but, in this district, which is now suffering such difficulties from the immense diminution of specie, probably the greater part will be paid back in the course of the year. This additional circulation will enable many to pay their kists [taxes], who would otherwise not have done so; and perhaps there would be little more difference made by its disbursements, in respect of the state of the Treasury, than that such portion of the population as would otherwise have been not at all employed, or employed to little effect, would thus be usefully occupied. During three or four months the great bulk of the population are employed to very little purpose, where there is literally almost no capital to enable the landowners to make improvements. But an expenditure of £30,000 to £40,000 a year would put life and activity into the whole district. That part of the population which is just now, from the impoverished state of the district, a dead weight upon the rest from want of employment, would be provided for, and the supply of specie would give a great stimulus to the remainder. Indeed, I would state it as my opinion that, independently of the ultimate returns, the Treasury would not be at all the poorer at the end of the year; for such a disbursement, in the present state of the district, such an outlay seems to me more nearly allied to a



loan from a landlord to his tenant, to be expended in improving his farm, than to simple expenditure.

"The revenue accounts of recent years," say the Public Works Commissioners, in a most elaborate and able report, "show how singularly accurate this prediction was."

The Commissioners themselves observe (section 269):—

"Even while the works are in progress and far from being complete, and while a large part of their effect is of necessity still undeveloped, the direct returns in revenue have amounted, taking each year's increase of revenue in comparison with the whole expenditure up to that time, to above sixty-two per cent. per annum on the capital laid out; and there is no doubt whatever that the future returns will be enormously larger, while to the people the change may be described as one from death to life: at so low a point were they before in poverty and indifference, so great is the contrast now in activity and energy. And all this has been obtained, it should be remembered, literally without any outlay, without any sacrifice of income whatever, for in every year of the progress of the work the increase of revenue has been materially in excess of the expenditure. It would be unsafe to reckon upon an equal measure of success in every instance, for the circumstances of Rajahmundry were peculiarly favourable, but we are bold to declare our firm conviction that there is no district in the country in which a similar expenditure would not be largely remunerative to the Government and a blessing to the people, though not in all to the same degree."

HAVE WE KEPT PACE WITH OUR INDIAN PREDECESSORS IN IRRIGATION?

In a work published in Madras in 1854, the question is asked: Is irrigation, on the whole, better or worse since the commencement of our rule? The writer answers his own question thus: "It is clear that the old works of irrigation are not kept in a sufficient state of repair. Their original cost is estimated at £15,000,000; their repairs cost annually £70,000; less than one-half of one per cent. on



the prime cost. The estimated return to Government in the shape of assessment is £1,350,000 annually; the whole returns between Government and cultivators are £3,750,000, so that under two per cent. of their yearly return, and but four and two-thirds per cent. of the revenue derived from them by Government are expended in keeping them in order.

"This is evidently insufficient,¹ and the result is that the works not being in proper repair, so large a space of land is not now cultivated as formerly; and it is reckoned that in the twelve chief irrigation districts there are 1,262,906 acres of land, with an assessment of £475,480, once irrigated and cultivated, now lying waste, but capable of being again brought into cultivation, if the tanks and channels were put into proper repair; and many works are classed as in proper repair, though in fact they are not supplied with the full amount of water which they are capable of containing."

Mr. Dykes, in his *Salem*, informs us (p. 391) that there are in that district alone at the present time 8,864 wells, 218 dams, 164 small channels, and 1,017 small tanks, of which no use whatever is made.

Lieutenant Tyrrell writes as follows:—

"Regarding the present state of the country, it is deplorable to one who compares this old country with England or any country on the Continent; particularly when he comes to examine it attentively, and finds that there are tracts of ground, formerly cultivated, lying waste and overgrown with dense jungles; that broken tanks are met with constantly; and villages once large and flourishing are now perfectly deserted. The country here (*Salem*) is generally very fertile, and a good deal of grain is sown, but not one-half the quantity that might be raised. There are at least eight or ten broken or disused tanks that I have passed in a distance of thirty miles. One must have been of considerable size, the bund being about eighteen feet high. Towards the ghauts, particularly, are large tracts of land now deserted; the soil

¹ Colonel Sim, Chief Irrigation Engineer, is of this opinion. See his evidence before the Lords' Committee, 1853—Q. 8736-7.



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is particularly fertile. They say that fever is the cause, but I am disposed to think that it is not so, as there are still some good villages who do not complain. Tengericottah is the most lamentable place; formerly a flourishing village, every requisite for extensive cultivation, now a perfect wilderness. A little engineering might supply an immense amount of water for irrigation."

This is declared to be no isolated picture applicable only to a peculiarly unfavourable district. "Lieut. Tyrrell is speaking of Salem, one of the finest collectorates in the Presidency; and there is no doubt that in whatever direction men push their enquiries away from the high roads into the less frequented tracts of the mofussil [country districts], similar reports will be the necessary result."

And the Commissioners come to the following general conclusion (sec. 240):—

"In short, all the works in the country, with a few exceptions, are in a state that may be called 'below par,' that is, they are below their state of full efficiency, and incapable of effecting their proper amount of irrigation. The tanks are in want of sluices, or such as they have are out of order, or they have no calingalahs, or such as they have are too small or too high, and so the stability of the tank is in danger; or the bank is low or weak, and the ryots are afraid to store a full tank; or their channels of supply have become choked up, and no longer bring a full supply of water. And as to the irrigating channels, many of them are in the condition described by Lieutenant Rundall, from the want of regulating works at their head; or they have become filled up by deposit, or the river has thrown up a bank in front of them, and they get no water; or they have too few outlets for irrigation, and the ryots cut through the bank; or the outlets are too large, and a vast quantity of water is wasted. Such is, unfortunately, the description which now applies to a very large proportion of all the irrigation works throughout the country, with the partial exception of the favoured districts of Tanjore and a part of Trichinopoly."

Nothing can be more satisfactorily proved by experience than the advantage of a liberal expenditure in repairing ancient works. For instance, in Tinnevelly, where operations have been confined to increasing the efficiency of



existing works, and no attempt has been made to extend irrigation by new works. There (see *P.W.R.*, section 243) an outlay of £32,341 in fifteen years produced a direct return in revenue of £197,480, or about six for one, besides an addition of £3,000,000 to the income of the people.¹

RESULTS ON BOTH SIDES OF THE RIVER.

Again, in South Arcot, in fourteen years, we have the following results :—

“Adding together the results on both sides of the river, the following are the facts :—The total cost of the anicut and all the connected works, inclusive of all repairs, to the end of 1850, is £45,667. The total aggregate excess of collections subsequently, over what they would have been in the same period at the average obtained before the improvements, is £180,029. Thus within a short period of fourteen years there has been a return of £37 10s. for every £10 expended, while the anicut and channels remain permanently valuable works. And taking their total original cost at £35,000, and assuming that annual repairs to the amount of even as much as two per cent. on that will be required to keep them in good order, we have the cost of these annual repairs £700 and £1,750, being interest at the rate of five per cent. on the original outlay, total £2,450, to set off against an annual gain of £12,875, being a net annual gain of above £10,000, clear of all expenses, obtained by an outlay of £35,000. And to this large gain to the Government must be added the share of the ryot to the amount yearly of £19,300 more; being an aggregate yearly net return of nearly £30,000 for an outlay of £35,000.”²

THE ADVANTAGE GAINED IN EVERY DIRECTION FROM IRRIGATION WORKS.

“ . . . And this triumphant success, this magnificent addition to the revenue, is not to be gained by exaction, by trenching on the fair rights of property and industry; on the contrary, the noblest feature of all is that this vast gain to the Government is to be obtained by adding in a far higher degree to the wealth, comfort, and happiness of the people. The value of the crop on

¹ J. Bruce Norton, “Letter to the Secretary of the Board of Control,” p. 33.

² *Public Works Report*, sec. 247.



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an acre of dry land does not exceed twelve shillings, but that of an acre of rice is forty shillings, and of an acre of sugar cane it is £23, being a gain of £1 8s. in the former case and £22 8s. in the latter. The gain to the producer, therefore, by the improvements in question, may be stated as follows, at a low estimate :—

	£
100,000 acres of sugar cane and other valuable products, at £20	2,000,000
11,000,000 acres of rice at Rs. 12	1,320,000
Total	£3,320,000

“Reckoning the value of the crops at these moderate rates, and taking no notice of the fact that much of this will be land now altogether waste and unproductive, or of the certainty of the crops under river irrigation, compared with their precariousness at present, we find that the gain to the ryot is £3,320,000, and if he pays £300,000 in revenue, he will still be a clear gainer of £3,000,000 a year. It is no wonder that the greatest anxiety is displayed to get a share of the irrigation, or the greatest alacrity to use the water when so obtained; nor is there anything surprising in the striking change which Colonel Cotton so prominently remarks on in his later reports, as exhibiting itself in the character of the people, activity, enterprise, and life having taken the place of their former apathy and despondence.”—(*P. W. R.*, secs. 264-5).

Other instances, the Samulcottah channel and the Wundy taluk, not less surprising, are given in detail; and in the Appendix Z to the *Public Works Report* will be found a tabular statement of all the undertakings within the last fourteen years, which shows a clear return to Government of sixty-nine and a half per cent. per annum on the cost of outlay; and a table of thirteen of such works is given in section 273 of the *Report*. The aggregate cost of those thirteen improvements was Rs. 2,34,901, and the total net annual gain in revenue, after deducting the annual charges, was Rs. 3,17,357, being at the rate of one hundred and thirty-four per cent. per annum on the capital expended.