

THE INDIAN FOREST SERVICE

By PROF. E. P. STEBBING
University of Edinburgh

THE passing of the British forest officer from India, where a succession of young men possessing that British intuitive love of an open-air life, with a touch of the adventurous in it, has built up a magnificent forestry property for India, merits a record. It has been a work which has had a minimum of publicity, due perhaps to the failure of the forest officer (until comparatively recently) to write for the public.

The history and work of the British forest officer in the teak forests of Burma was reviewed in *Nature* of December 13, 1947 (160, 818). Earlier, in *Nature* of September 8, 1945 (156, 286), an article on "Post-War Forest Policy in India" was published. When the memorandum discussed in the latter article was written by the Inspector of Forests to the Government of India, the decision as to the future political division and status of the country had not been settled, and it was considered likely, in fact probable, that many British forest officers in the different provinces would continue to serve out their time under whatever Indian government or governments were set up. This, in the event, has not proved generally to be the case.

The history of the forests of India from the practical point of view commences with the introduction of British administration into the country after the defeat of the French; as distinct from the earlier days of the East India Company, which only maintained trading posts at Bombay, Madras and Bengal. It was after the defeat of Tippoo Sahib in 1799 at Seringapatan in the south that British administration spread throughout a large part of Madras, and was accelerated in portions of Bombay and lower Bengal. The administration extended almost in spite of ourselves, the forward progress being necessitated if the areas already under British rule were to be safeguarded; it was not premeditated.

The gradual extension of British rule soon began to have its effect on accessible forests. The partition of the provinces into divisions and districts necessitated the erection of headquarters buildings in each, the construction calling for large amounts of timber. The military authorities required timber for many purposes, while the Admiralty at home and the smaller dockyards around the coast of Britain and at Bombay were soon taking increasing amounts of teak timber from the forests in the south, Malabar, Travancore and southern parts of the Central Provinces and Hyderabad, etc. The population of India, now living under settled conditions, rapidly increased in numbers, and in their old-time demands on the forest for fuel, grazing and small timber. In the south, teak was the only timber in use. It was the difficulties in meeting the requirements of the Naval dockyard in Bombay that resulted in the appointment of Dr. Gibson as *ad interim* conservator of forests in Bombay in 1844, with an assistant conservator and small office establishment; these were the first appointments of the kind in India. Gibson was confirmed conservator of forests in 1847. In Madras it was not only the Government's and Army's annual teak supplies which were causing the gravest concern, but also the scarcity of firewood for Madras city and the hill station

at Ootacamund which eventually led to the appointment of Dr. Cleghorn as conservator of forests in 1856. He was given three assistants. Shifting cultivation was rife in both presidencies when the British took them over. It was due to their efforts that this wasteful utilization and destruction of the forests had been, to a great extent, eliminated by Government order by 1860.

In the northern half of the country on the eastern section, sal (*Shorea robusta*) was the only timber in common use, and Government departments, in the absence of teak, would only take this type, while in the north, Punjab, etc., the chief timber in common use was the deodar (*Cedrus deodara*) brought down from the outer Himalaya. The partial disappearance of the accessible teak forests in Malabar, on the west coast of Madras, was the first intimation that forests were not inexhaustible, and from the middle thirties of last century, the recognition that some form of control would be necessary was gradually forced upon the Government of India, not only in connexion with the large annual Government requirements in the three timbers mentioned (the deodar after the capture of the Punjab in 1850), but also to safeguard the requirements of the population itself throughout much of the country.

Many attempted panaceas in short-term measures, to tide over sudden emergencies, were made before the position was faced squarely by the Secretary of State for India at home and the Governor General in India. The Indian Mutiny had come and gone, with, as a main first step, the commencement of the building of the Indian railways, for which large amounts of timber would be required, threatening, if left in the hands of timber contractors, to result in the extinction of large areas of timber forest. Correspondence between the Governor General and the Secretary of State, Sir Charles Wood, in 1862-63, resulted in the formation of the Indian Forest Service, and the appointment of Sir Dietrich Brandis as the first inspector general of forests. But it was one thing to create a forest service on paper and another to fill its ranks and to lay down the powers and duties of the new Service in connexion with the districts in which forests were situated, hitherto entirely under the charge of the Civil district officer. From the first it was laid down that a conservator of forests should be appointed to each province (save where already in existence), his duties to be administrative and advisory to the lieutenant governor in charge of the province; and that the provinces should be divided up into a number of forest divisions, each under the executive control of an assistant conservator of forests. In the first instance, the new Service was filled by young men volunteering from the Army, the newly disbanded Indian Navy, and other sources. Many of those so appointed had some experience of the forests gained on private shooting expeditions. This served as a start; but Brandis soon realized that the fully trained forest officer would be required to introduce and maintain an effective organisation in the country. In the late sixties, with the consent of the Secretary of State for India, he commenced choosing yearly a few young men with sufficient acquaintance with scientific subjects—botany, zoology and so forth—who received their forestry training in France or Germany. In 1885 home training was started at the Royal Indian Engineering College, Coopers Hill, where it remained until 1905, after which probationers were trained at the University of Oxford, and eventually also at Cambridge and

Edinburgh. This training of British probationers for the Indian Forest Service persisted until about 1933; some Indian probationers were also trained in Britain, and eventually entered the Service up to 1939. Up to the outbreak of the First World War, the India Office advertised the number of probationers required annually, and the annual quota was selected before the specialized training commenced. It was this consistent policy, maintained throughout so long a period, that produced a fine body of men who have, through the years, built up and brought to its present position the magnificent forest estate in existence. For now it can be readily recognized that it was the action of the Secretary of State and the Governor General in the early sixties of last century which saved the forests of India from extinction in all accessible (to the timber market) regions, while the smaller areas in the vicinity of villages and small towns would quickly have disappeared.

Perhaps the four most important steps taken in the pre-Forest Service period were the formation of the very successful Nilumbur teak plantations, initiated by Conolly, Collector of Malabar in 1843; the public recognition by Cleghorn, a few years after his appointment as conservator, that sylviculture must be introduced into the management of the Indian forest; and the recognition of the damage done to the forests by the shifting cultivator, and the virtual suppression of the practice throughout the greater part of Madras and Bombay. Lastly, the growing realization and conviction of the Government of India between about 1840 and 1860 that the forests of India at the time accessible to exploitation of all types, including the provision of fuel and grazing required by the rapidly rising population, which was primarily agricultural, were not inexhaustible.

After its inauguration, the Indian Forest Service made considerable headway during its first decade. Apart from the constant support and driving force of successive Secretaries of State for India at home, there can be little doubt that the rapidity with which it got fairly settled in the saddle was due to the policy of railway construction adopted at the period. Buildings were required and wood fuel for the engines; also the sleepers for the tracks had at this time to come from the forests in the regions concerned, teak, sal and deodar. The unchecked exploitation of the forest by the timber merchant had been stopped. The brunt of the organisation for this enormous quantity of timber required fell on the young Department, and its energetic chief, Brandis. It is an Odyssey in itself, both the work and the names of the men mainly associated with it.

Some of the work during the first thirty years has already been dealt with in the article in *Nature* on "Post-War Forest Policy in India" referred to above. The main work of the Department, apart from exploitation and providing for the requirements of the people, lay in selecting and, after sanction, demarcating the forest reserves and protected forests in different parts of the country (including Burma), in laying down and cutting a network of fire traces for their protection, and in the division of the forest blocks by lines or rides into the unit of working and supervision termed the 'compartment'. This was a gigantic task which in the main was completed by the end of the century. To enable forest reservation to be legal, a special Indian Forest Act VII of 1865—amended by Act VII of 1878—was enacted. Separate Acts were passed for Madras, Bombay and Burma. The fire protection policy, the first attempted in a tropical country, was

based on a first successful attempt to protect the Bori teak forests in the Central Provinces from fire during the hot weather season. At the period, fires ran unchecked across the countryside in India during the hot weather, and the consensus of opinion held that it would be impossible to protect the forests from their customary baptism of fire. Forest officers of those decades can tell of the hardships of fire-fighting during the hot weather months. But great results were achieved.

During the latter part of this period in the more advanced forests of the country it was possible to give up departmental exploitation and introduce the method of marking standing trees in the forest for sale, their felling and removal being undertaken by the purchaser, thus enabling the forest officer to turn to a study of the sylviculture of his forests, and other professional duties. It was in this way that a beginning in the preparation of working plans took place in India. From the appointment of Brandis in 1863 as inspector general of forests, to the end of the century, three men occupied the post, himself and two other Germans, W. Schlich, and B. Ribbentrop, who had been recruited as fully trained young German forest assistants, and sent out to India in January 1870. Schlich held the post only for a couple of years, 1883–85, when he accepted the appointment as professor of forestry at the newly organised forestry school at the Royal Indian Engineering College at Coopers Hill. Ribbentrop held the post with distinction up to 1900.

The next great departure, and one which on considering the history and order of the progress would have been misplaced had it occurred earlier, that is, before the reservation of the bulk of the forests contemplated had been achieved, was the formation of the Imperial Forest Research Institute by Lord Curzon in 1906. By now the officers in charge of the forest divisions throughout the country had much more time to give to purely forestry problems, and moreover, in the more advanced forestry areas they had the advantage of ranger executive officers who had been trained at the (N.C.O.) ranger's class at the Dehra Dun Ranger's College, instituted in 1885. Many of the divisional forest officers had problems which urgently needed study by the research officer. Sir Sainthill Eardley Wilmot was the inspector general of forests at the time, and to him and the Viceroy belongs the credit of taking a step which was to have widespread ramifications, although it is impossible to go into the matter in detail. When Curzon asked the Inspector General where he was going to get his research officers from he replied, to the Viceroy's expressed amazement, "from the Forest Department". The Agricultural Research Institute for India had been inaugurated a few years before, also under the ægis of Curzon; but its officers had all to be recruited from home. One outcome was the new research building, built at Dehra Dun and opened in 1912, which quickly made its value apparent during the First World War—so much so that at the close of that war a new building on a far larger scale, outside Dehra town itself, was projected and sanctioned by the Government of India at a cost of one million pounds. This has been functioning for many years, and once again, during the Second World War, was its value to India and the fighting forces fully shown. The introduction of research as a part of the work of the Forest Department necessitated some form of publications of the investigations achieved. These are now well known. During the previous century

there were no official publications of the Department. *The Indian Forester*, a monthly magazine, started in 1885 and still issued, was a private departmental publication.

As research work progressed, it gradually became obvious that some decentralization would be necessary; for example, one or more provinces might have a major silvicultural problem requiring study by the silvicultural research officer. Even with the assistance provided at the Institute, it was not possible to answer all calls. The selection and appointment of local research officers in the provinces which required them was sanctioned, and thus came into being the local research, silvicultural, forest entomologist, and utilization officers, and, as important as any, the provincial conservator of working plans. These officers kept in close touch with Dehra Dun.

Reference was made in the article in *Nature* on the teak forests of Burma to the great progress made in working the forests under carefully prepared working plans. In India, by the opening of the Second World War, a network of plans for the forest reserves was in force, and many of these had been revised more than once. Since their early and tentative introduction, great advances had been made in the scope and intensity of management of many of these plans. The one *sine qua non* of the working plan, if properly prepared, is that all over-felling is permanently checked. Briefly, only the annual yield, that is, the annual increment put on the trees, is cut. In the memorandum on "Post-War Policy in India, 1944", the Inspector General of Forests was able to write on the subject of excess war fellings in the Government reserve forests in India: "Little is required to restore the departure from normal, that is the excess War Fellings; a 40-50 per cent reduction in pre-War yields for a period of five to ten years, may in some cases be necessary. The true position can be determined by the revision of the Working Plans which must, therefore, be accelerated after the War." This is forestry management brought to a high standard of efficiency.

Lastly, since the financial aspect of this great undertaking by Government forms one of its aspects, the following figures speak for themselves:

Revenue in 1868-69 = Rs. 40,38,800 and Surplus	
	Rs. 12,65,467.
Revenue in 1936-37 = Rs. 4,38,07,019 and Surplus	
(last year before separation of Burma)	Rs. 1,53,58,194.

In addition, forest produce to the value of Rs. 84,14,946 was given away free or at reduced rates during 1936-37.

This article has no concern with political questions. It is merely a parting—a farewell to the Indian Forest Service. But in the light of the long experience I have been fortunate to have had in following the progress of the management of the forests of India, and in the study I have been able to make of the history of those forests, it may not be out of place to put out a word of warning. In the case of forests in which the management has been brought along the road to efficiency in working, as understood by the forester using these words, there can be no standing still, no relaxation of supervision, either by the gazetted officer in charge or his chief ranger executive officer, and no delegation of important silvicultural operations—the constant inspection, for example, of young crops of regeneration until they have passed out of the danger period, the marking of thinnings upon which the whole future of

the timber crop depends, and so forth—and equally and all-important, no over-felling, even in an emergency, without a full recognition by the higher authority of its necessity. These are fundamentals. That they have not only been introduced but also maintained in the Government forest estate in India, the Second World War has effectually proved.

I would say this to India and Pakhistan. The British forest officer has built up not only a great legacy which he now makes over to the owner, but he has also brought it to a pitch not, I believe, existent in any comparable area of forest in the world. If it is a proud legacy to leave behind, it is an equally proud one to take over. In the hands of the India and Pakhistan forest officers, the world will watch with interest the further great progress to be achieved, a progress which will afford lessons in tropical forest management for both the executive forester and the research officer, wherever he may be working.

THE WORK OF THE NATIONAL PHYSICAL LABORATORY

THIS year, 'open days' at the National Physical Laboratory were held on June 21 and 22. On the first day representatives of industry, including many from organisations having no previous contact with the Laboratory, took this opportunity of seeing the large variety of research and investigational work that is undertaken. On June 22, the occasion of the annual inspection by the Laboratory's General Board, of which the president of the Royal Society is chairman, the visitors included members of the scientific staffs of universities and Government departments.

During the last twelve months the work of the Laboratory has been concentrated so far as possible on those short-term projects of the greatest immediate benefit to industry, although much has also been done during the year on the maintenance of the various national standards and on programmes of fundamental research. No outstanding new developments were on show, but the two hundred and seventy-two scientific exhibits well illustrated the work of the Laboratory's ten divisions, and mention will be made of a few of the more interesting items.

The aerodynamical work on the design of the proposed Severn Suspension Bridge, one of the most interesting exhibits in 1947, has now been transferred to an outstation where scale models are undergoing test in a large wind tunnel. The work of the Aerodynamics Division is largely concerned with problems of high-speed flight, and exhibits in the various tunnels demonstrated the work being done to improve flying performance by the use of specially designed low-drag wings and boundary-layer control by suction or blowing. Researches into problems of stability, control and flutter, increasingly important at high speeds of flight, are being carried on and a model 'xylonite' elastic wing, incorporating the major structural characteristics of a typical aeroplane wing, is used in the study of the twist of a wing caused by a change in distribution of the air loads and its effect on the response of the aeroplane to movement of the ailerons.

The Metrology Division has just completed for the first time since 1932 a comparison of the national copies of the Imperial Standard Yard and the International Metre with their respective principal copies.