

To counteract this decline the Jamsetjee Jejeebhoy School of Art was founded at Bombay. But it is not sufficient to teach the principles of art; what is wanted is to secure the application of those principles to the artistic industries. During Lord Reay's Government the Reay workshops were established under the supervision of the School of Art. He did not try to introduce new artistic industries by means of such workshops, but to revive those which were languishing or deteriorating for want of care and encouragement. His plan was to have promising craftsmen, belonging to local industries of the Presidency, sent to Bombay, and practically trained in the workshops of the Jamsetjee Jejeebhoy School of Art by the best masters of their craft, so that they might become efficient teachers in their own localities.

Lord Reay did not initiate the teaching of drawing in the primary and secondary schools of the Presidency, but he fostered it as the first step towards artistic training. New drawing-classes were being constantly opened during his administration, and were annually inspected. The advance made in this direction may best be shown by the statistics. In 1886-87, only 784 candidates from 52 institutions offered themselves for the first-grade examination in drawing, and 22 for the second-grade examination. By 1889-90, the numbers had increased to 1515 candidates for the first-grade, and to 177 for the second-grade examinations. Still more striking is the rapid growth in the number of children reported to be learning drawing in the schools for ordinary education,

who in 1889-90 numbered 8413 as against 1600 in 1886-87.

Under Lord Reay's government an institution was founded for practical instruction in the mechanical industries, which should become the normal school for teachers of technical education throughout the Presidency—the Victoria Jubilee Technical Institute at Bombay. The scheme had many difficulties to surmount, among which may be noted the poverty of the Government and the suspicion of certain native gentlemen, deeply interested in educational work, that the money spent on technical education would be taken from other, and in their opinion more important branches. A grant from the Ripon Memorial Fund was obtained for the Textile Department. The Municipality of Bombay gave Rs. 80,000 and promised Rs. 5,000 annually. The Bombay Government felt justified in promising Rs. 25,000 a year, and subscriptions flowed in from wealthy merchants when the project was associated with the celebration of Her Majesty's Jubilee. It was wisely resolved not to be too ambitious at the start. The school was to be a technical, not a technological, institute. Only so much science as was required to make an intelligent and efficient workman, was to be taught; the training of millowners and managers in the higher branches of technology was not at first to be attempted.

Sir Dinshaw Manekji Petit, with his accustomed liberality, met the initial difficulty of finding an appropriate place, in which to house the infant institution. He presented a suitable building for the Government

Central Press, and the newly-erected buildings for that Press thus became available for the Elphinstone College, near the University. This left the old college in the heart of the manufacturing district vacant for the Technical Institute.

An English technologist, Mr. Phythian, C.E., was appointed the first principal, and so many students offered themselves that advertisements had to be inserted in the newspapers, stating that no more could be admitted. Work began in September, 1888, but the Institute was not formally opened until April, 1889. Lord Reay, in his inaugural speech, defined the scope of the teaching to be given. 'What we are doing here,' he said, 'is to supply to the artificer and the artisan of this Presidency that education which he wants, that education which will train his hand and eye, and through his hand and eye, also his mind, by the combination of mental and of manual training.'

The Victoria Jubilee Technical Institute consists of three separate departments. The main building, formerly the Elphinstone College, contains lecture-rooms, and the drawing-room, in which 120 students can study the drawing of machinery. The Sir Jamsetjee Jejeebhoy Technical Mechanical Engineering School contains the pattern-room, the foundry, the smithy supplied with eight anvils, the lathes, the machine-tool room, and the fitting-room. The Ripon Textile School is fitted up with a complete cotton-mill, containing the latest improvements in machinery, by means of which all the various processes connected with cotton, from the separation of the fibre from the

pods to the weaving of ornamental fabrics of mixed cotton and silk, can be thoroughly learned. These are the two practical schools ; but as the essence of sound technical education is to impart a knowledge of the principles involved in the use of machinery, the student has to spend two hours every day, throughout his three-years' course of the Textile or Engineering Schools, in the Physical Laboratory.

The Laboratory is divided into two sections, in one of which the laws of sound, light, and heat are taught ; in the other electricity and magnetism. Students must be over fourteen years old at the date of admission, and must have passed the Fifth Standard. The latter regulation is necessary because the instruction is given in English and not in the Vernacular. As a matter of fact these regulations have caused no inconvenience, for of the 233 students who attended the first year's instruction in the new building, no fewer than 139 had passed the Seventh Standard, while their average age was twenty years. With the name of Lord Reay, in the foundation of this most useful institution, should also be recorded those of Sir Frank Forbes Adam, the Chairman of the first Board of Management, and of Mr. Nauroji N. Wadia, the first Honorary Secretary.

While the establishment of the Victoria Jubilee Institute at Bombay was the most important step taken towards a scheme of thorough technical education, other parts of the Presidency were not neglected. The workshops at the Poona College of Science afforded further scope for the boundless energy

of Dr. Cooke. These workshops not only serve for the practical training of matriculated students reading for the Bombay University degree of L.C.E., but also as a junior department for technical training.

'The school there,' says Mr. Lee-Warner¹, 'is on the half-time system, the morning being devoted to mental education, the afternoon to practical training in the workshop, and the course extends from the age of thirteen to sixteen. The pupils learn drawing, mathematics, physics, chemistry, and the elements of various trades, the best practical workmen being engaged to teach these trades. It appears to me that any enterprising municipality, which is the centre of various trades, would do well to institute a school of this sort in place of the uniform Lower Anglo-Vernacular School, which is copied everywhere. But, in the first place, teachers are wanted, and I would gladly see the workshops of the Poona College largely increased, and the institution recognised as in part a sort of Technical Training College for teachers of a new class of Technical Secondary Schools, of which every District should have one.'

The people of Poona are quite aware, indeed, of the value of technical training. A large and interesting Industrial Exhibition was held there in 1888, which resulted in the formation of the Reay Industrial Museum. A group of native gentlemen have formed the Industrial Association of Western India to take over the management of the Museum, and generally to forward the cause of technical education. Technical

¹ Quoted in the *Note on Technical Education in India*, p. 23.

classes were also established in one of the Poona primary schools.

The Industrial School at Ratnágiri, under the management of a Local Committee, works on a smaller scale, as do various lesser industrial schools chiefly belonging to the Missionary Societies. It must, however, suffice to describe the schools founded by Khán Bahádúr Kádirdád Khán in the backward province of Sind, in which the Governor took an especial interest. 'Mr. Kádirdád Khán's plan,' says Mr. H. P. Jacob, the Inspector of Schools in Sind¹, 'is an eminently sound one. Taking the staple industries of the district, for which there is a constant demand for young apprentices, he provides in each of his schools a thoroughly good training in the practice of these crafts. The workshops proceed on strictly business principles, every boy's work being assessed and paid for, and touch kept with the local market by the sale of the work turned out. At Moro the craft taught is turnery; at Naushahro the embroidery and needle-work for which Sind is famous; at Kandiaro, where more elaborate arrangements have been made, joinery and cabinet-work, smithery in iron, silver-work and electro-plate, pottery, embroidery and needle-work.

'The local Zamindárs have everywhere volunteered their support, and have associated themselves with the Deputy-Collector on the committees of these schools; while the people at large have responded, simply because they have been shrewd enough to see

¹ *Report of the Director of Public Instruction in the Bombay Presidency for 1887-88*, p. 41.

that it is to the worldly advantage of themselves and their offspring that their boys should become intelligent and skilful craftsmen, able to earn better wages than the average workman now gets. Every boy spends three hours daily in the workshop, one hour in the drawing class, and three hours in the primary or Anglo-Vernacular school.'

As regards the geographical distribution of institutions, and putting on one side Bombay town as the capital, Poona is the best-endowed city in the Presidency from an educational point of view. It possesses not only the Government Deccan College and the independent Fergusson College, but also the industrial and scientific teaching given in the Poona College of Science. With such educational advantages, it is not to be wondered at that the Maráthá Bráhmans are the best-educated class in the Presidency, along with the Parsis, and that they fill a large proportion of the government offices. The Gujarátis felt this to be a grievance, and Lord Reay did what he could to remedy the supposed neglect of Gujarát by frequent personal visits, and by appointing a Gujaráti member to the Legislative Council of Bombay. The only Government College in British Gujarát, the Arts College at Ahmadábád, became an aided institution during his administration. It must be remembered, however, that Gujarát has the advantage of the College at Baroda, which is supported by the Gaekwár, and is in a very prosperous condition. An excellent division of labour would be for the Baroda College to take the scientific and the Ahmadábád College the classical

side, but the difficulty is that science is not yet sufficiently recognised in India as a regular academic faculty.

Education in Sind made a vast stride forward during the five years. At the commencement of the period Sind had no college for higher education, notwithstanding its distance from Bombay, and both in primary and secondary education it was far behind the rest of the Presidency. Lord Reay endeavoured to remedy this. He gave the largest grants in his power to the Sind Arts College and to the Muhammadan Madrasa at Karáchi, and showed his sympathy towards both institutions by personal visits and words of encouragement. Both of these institutions are increasing in usefulness, and will open a new era in the educational history of Sind.

Not less noteworthy than the beginning of higher education in Sind, was the rapid development of primary and secondary education in the province. This was largely due to the sympathetic energy of the first English 'full-time' inspector of schools for Sind, Mr. H. P. Jacob, selected by Lord Reay. This gentleman was a valued member of the Indian Education Commission of 1882, and drew up the tables attached to its Report. He may be said to have breathed new life into education throughout the province of Sind. His principal coadjutor in arousing an interest in the cause was the Muhammadan Deputy-Collector, Khán Bahádur Kádirdád Khán, whose technical schools have already been noticed.

Closely connected with the state of education in

Sind is the more general question of the educational backwardness of the Muhammadans. From the days of Warren Hastings, who founded the Calcutta Madrasa in 1782, it has frequently been placed on record that the Muhammadan population of India do not take that share in the administration of the country, to which they are entitled by their numbers and previous history. This has been mainly caused by their unwillingness or inability to avail themselves of the advantages of the British-Indian system of education, which has made the Hindus able and useful servants of the Government. Muhammadan boys have to spend so much of their time in learning the Arabic Kuran and the precepts of their religion that they are not able to keep pace with the Hindu youth in the secular schools. The Education Commission of 1882 paid special attention to this problem, and a statement made by the Director of Public Instruction in the Bombay Presidency is printed in its Report. 'The Muhammadans,' he says, 'avail themselves of our lower schools, but do not rise to the higher schools and colleges. In the list of University graduates there are one Musalman M.A. and two B.A.'s. I think that the reason is to be found, not in the poverty of the Muhammadan community (for beggar Bráhmans abound in the high schools), but in their poverty and depressed social status combined. In this matter the Bráhman and Musalman are at opposite poles. Thus we have in Gujarát ten Bráhmans in the colleges and twenty in the high schools for every Musalman, but only three Bráhmans for every Musal-

man in the middle-class, and not two for every Musalman in the lower-class schools¹.

In the Bombay Presidency, Mr., now Sir, J. B. Peile took measures to deal with this state of things. He obtained the appointment of a Professor of Persian and Arabic in the Elphinstone College; he drew up a course of instruction in Persian for the upper standards in vernacular schools, and for English and high schools; and he appointed Musalman Deputy Inspectors to inspect special Musalman primary schools. Yet the difficulty of getting Muhammadans to continue their education beyond the elementary stage still to some extent continues. That difficulty does not arise from any innate dislike for higher education. As far back as 1809 the Muhammadans of the Borah (merchant) class founded the Arabic College at Surat, which was for some years very successful, but 'secular studies never forming more than a nominal part of the college curriculum, the institution was never considered to be entitled to any aid from Government, and recently, for various reasons, it has fallen into complete decay².' In 1876, a Society, called the Anjuman-i-Islam, was started in Bombay with the object of developing Musalman education. It has done a good work in calling the attention of the Muhammadan community in the capital to the importance of the question, and has established a successful school. Similar societies are in existence at Poona and Ahmadábád, and the Honourable Kázi Sháhbudin,

¹ *Report of the Indian Education Commission*, p. 487.

² *Report of the Indian Education Commission*, p. 262.

the late Premier of Baroda, has founded scholarships for the reward and encouragement of his co-religionists.

The question of Muhammadan education in the Bombay Presidency is mainly concerned with Sind, for more than one-half of the believers in Islám throughout the Presidency are inhabitants of that province. When, therefore, I said that Mr. H. P. Jacob did a great work in Sind during Lord Reay's administration, it was tantamount to saying that he exercised a powerful influence on the education of the Muhammadans. This he did by his careful inspection of their primary schools throughout the province, and by the encouragement he gave to the Madrasa or Muhammadan College at Karáchi. The Madrasa, which I had the pleasure of visiting in November, 1885, when I examined the boys and recorded a favourable opinion on the management, was hampered by the want of a suitable building. Mr. Jacob urged its cause upon the Government, and he met with cordial support from Lord Reay. A Resolution of 30 September, 1889, sanctioning the building grant, stated that 'the Director of Public Instruction should be informed that Government wish to give to the Sind Arts College and the Sind Madrasa precedence *pari passu* over grants to other institutions.'

The only other religious body which deserve special notice besides the Muhammadans, are the Lingáyats, who chiefly dwell in the Kánarese-speaking districts. They, too, have formed a special educational association at Dhárwár, which raises funds to advance the

education of their own sect. The association gives scholarships to Lingáyat boys to enable them to complete their education at the colleges at Poona and Bombay; and in 1888 it collected over Rs. 15,000 for the purpose of sending a Lingáyat student to England to compete for the Covenanted Civil Service or to read for the bar. As an instance alike of the loyalty and of the educational zeal of this sect, it may be noted that in 1887 fourteen Lingáyat gentlemen of Belgáum raised a sum of money in commemoration of the Queen's Jubilee, which is to be paid to the first Lingáyat M.A. and to the two first Lingáyat LL.B.'s, who may obtain those degrees from the University of Bombay. The Lingáyats, like the Muhammadans, feel aggrieved at the monopoly of administrative posts by the Maráthá Bráhmans, and presented a petition to the Governor on the subject. Lord Reay, in his reply, denied the existence of any monopoly, and advised the petitioners to study self-reliance, and to attain the same high standard of education which the Bráhmans had achieved.

The question of the education of what are known as the 'depressed castes,' arises from different causes. The unfortunate people belonging to this class in the Bombay Presidency were reckoned at about 1,100,000 in number by the Education Commission. They are probably descendants of aboriginal races, and have for ages been kept in a state of servitude and degradation. The villagers resent the idea of their former serfs receiving any education, and it was given in evidence before the Education Commission¹ that when some

¹ *Report of the Indian Education Commission*, p. 514.

promising low-caste boys were sent to the Government High School at Dhárwár a number of Bráhmans at once took their children away. In the face of this deep-rooted popular feeling the time has perhaps not come when it is possible to force the companionship of the despised Mhars and Dhers upon the boys of the higher castes. Accordingly, the Report of the Education Commission recommended the establishment of special schools for the low-castes. It expressly condemned, however, the notion that they had no right to go to the public schools, and only made its recommendation on the ground of expediency. In 1882, when the Commission commenced its labours, there were but 16 special schools in the Bombay Presidency, attended by 564 low-caste pupils. The annual Reports of the Director of Public Instruction do not contain quite complete information on this subject. In that for 1887-88 it is stated that there were 21 special schools or classes in the Southern Division attended by 554 children; besides eight special schools in the Northern Division (the number of pupils not being specified); and that there were 4,546 low-caste children under instruction in the Central Division 'distributed among the common and special schools.' A favourable distribution of Government scholarships was granted on behalf of these castes during the period under review.

The so-called aboriginal tribes are too shy to come to school at all. The two most numerous of these races in the Bombay Presidency are the Kolis and the Bhils. A Resolution of the Bombay Government in November, 1887, directed the establishment of special

schools for them, six being in the Poona District near the Bhimáshankar Hills. The Bhils chiefly inhabit the Native States in the Rewá Kántha and Mahi Kántha Agencies, and it is gratifying to observe that something has been done for their education by the State of Rájpipla, where two schools for Bhils have recently been opened. Mr. Thompson of the Khedwára Mission has also opened a school for Bhils at Luseria in the Mahi Kántha Agency, and is trying the experiment of sending two Bhil boys to study at the Vernacular School at Sádra with a view to their becoming schoolmasters among their own race. The Government takes no fee from any member of an aboriginal race attending a public school.

From the education of depressed castes and aboriginal tribes to that of princes and nobles may seem a long step, but the problem with regard to the latter is equally difficult to solve. The well-known Rájkumar College at Rájkot for the education of the native princes of Káthiáwár was established to meet this demand. It has been instrumental in training many princes who have done good service to their States, and have been wise and able rulers. But it does not appear to retain its hold on the feudatory chiefs. The number of pupils sank from 44 in 1886-87 to 28 in 1889-90, and Lord Reay found chiefs like Morvi and Gondal, who were themselves *alumni* of the Rájkumar College, refusing to send their sons, and preferring England for their place of education. This decline is certainly not the fault of the Principal of the Rájkumar College, and Lord Reay attributed it to the desire of

the most progressive Native Chiefs to give their sons a thoroughly English education, with English boys as their associates, if possible in England.

Another difficulty was how to dispose of the younger sons of these princes, when they were educated. As already stated, the Duke of Connaught is said to have been in favour of an Indian Sandhurst, and the admission of its cadets into the commissioned ranks of the native army. Sir Frederick Roberts, the Commander-in-Chief in India, and Sir George Greaves, the Duke of Connaught's successor as Commander-in-Chief in Bombay, were opposed to this idea. They felt the difficulty of having English officers under the orders of natives, however excellent in themselves, and feared the demoralisation which a wealthy prince might produce in a small regimental mess. In the social grade below the Chiefs, Lord Reay encouraged the Girasia School at Wadhvān for the education of the sons of the talukdārs of Gujarāt, and took special interest in the Mirs' School established for the descendants of the former rulers of Sind.

Public opinion in India is not yet unanimously in favour of female education. A good education is becoming generally recognised as a provision for a boy. But a daughter's education does not present itself to an Indian parent in the same light. Early marriages, moreover, cut short the course of female education, and what school-teaching a Hindu or Muhammadan girl is to obtain in India, she must practically get before she is eleven or twelve years old. Another difficulty is to provide female teachers to give even this amount of

elementary instruction. The prejudice against widows (as persons stricken by the chastisement of the gods) makes them unacceptable. The ordinary Indian wife has no inducement to continue her education; and the most promising source of female teachers consists of the wives or future wives of schoolmasters. Miss Hurford, the Principal of the Poona High School for Girls and of the Poona Female Training College, and Mrs. McAfee, the Principal of two similar institutions at Ahmadábád, both give their particular attention to this class, and with excellent results. Indian youths who are training themselves as schoolmasters, quite understand the advantages of having an educated wife and a partner in the labours and the emoluments of teaching.

These institutions are directed by able ladies, but very great caution is required in ascertaining the characters of the girls who are admitted. Lord Reay met the difficulty at Poona by placing the responsibility for admission on a committee of native gentlemen, who would be more likely to know about the personal characters of the girls than any European. Mention should also be made of the Roman Catholic Convent School at Bándra, which Lord Reay visited with Archbishop Porter. His Excellency considered it a model institution. He also held a high opinion of the Alexandra Native Girls English Institution at Bombay, which is mainly under the management of Parsis and used for the education of their daughters.

Even more important for the true prosperity of a country than the scholastic results of its system of educa-

tion is the tone of morality which it inspires. If its highly educated men lead good lives and are actuated by lofty aims, the influence of their careers reflects back on their education. If on the other hand, education is perceived to make men more cunning but not better, an equally evil effect is produced. This was felt to be the touchstone of the educational system in India, and on 31 December, 1887, the Supreme Government addressed a letter to the Local Governments and Administrations drawing their attention 'to the growth of tendencies unfavourable to discipline, and favourable to irreverence, in the rising generation in India,' and formulating certain suggestions, including the 'preparation of a moral text-book based on the fundamental principles of natural religion.'

On 2 October, 1888, the reply of the Bombay Government to this circular letter, founded on an elaborate minute by Lord Reay, was forwarded to the Supreme Government. It was observed that the problem was more complex and serious than a mere question of school discipline in Indian schools, and involved the influence of Western thought on Oriental minds. The moral defects attributed to the Indian schoolboy were not unknown among the rising generation in other countries. Irreverence, superficial scepticism and even immorality are not wholly absent from the public schools and Universities of Europe. The Government institutions of Bombay never aimed at more than the production of good conduct and intellectual discipline. Never having attempted a moral regeneration they could not be charged with failure

because they had not effected it. Such a regeneration would be of very slow growth, and must lie in the hands of the people of India rather than in the hands of the Government. Internal reforms could alone cure the evil, and the first step was to raise the moral standard of those whom the people regarded as their natural leaders. Nevertheless, what Government could do would be done.

The importance of training-schools and colleges increased as Government retired from the direct management of schools, and measures were indicated by which the supply of better qualified teachers, especially in secondary schools, could be assured. It was proposed to introduce practical training-classes into specified high schools for graduates; to direct teachers to call the attention of their pupils to a consideration of their duties in life by illustrations of a patriotic, moral, and parental character derived from history. The extension of the boarding-house system involved serious financial difficulties, but much might be done by increased and more sympathetic intercourse between the professors or masters and their students—such as had been maintained successively by Sir Alexander Grant and Dr. Wordsworth. The monitorial system suggested by Mr. Jacob should be extended, increased attention given to the provision of playgrounds and manly games, and the experiment of conduct registers and rewards for good behaviour attempted.

I cannot more fitly conclude this chapter than in the words of a gentleman who took an active part

on the Education Commission of 1882, and who has closely watched the efforts to give effect to its recommendations throughout the Bombay Presidency. 'The history of education in Bombay since 1885,' writes Mr. Lee-Warner, 'will hereafter be mainly known by the systematic efforts made to encourage private enterprise, and to give education a practical turn. Higher institutions of general education have been relieved of an undue strain and enabled to become real institutions for higher education. The University arts-examinations are no longer sought as mere passports to the public service, and the idea that education may assist the rising generation to become good mechanics, good agriculturists, and good men of business has been fostered. The establishment of the Victoria Jubilee Institute was regarded as an educational revolution, but its extraordinary initial success has disarmed opposition. The Government standards of education no longer dominate the whole course of aided schools. Variety and freedom have been generally introduced. Self-help has been evoked by the transfer of the management of schools to local bodies, and the Department has learned to look upon itself as responsible rather for the direction and encouragement of educational activity, than as a State Department for giving education and managing schools.'

CHAPTER VII.

FORESTS.

ANOTHER branch of the administration which brings the Government to very close quarters with the people is the Forest Department. As education exhibits the Government chiefly in contact with the progressive and well-to-do classes, so the Forest system discloses its dealings with the poorer cultivators and the hill and woodland communities. Circumstances gave special prominence to the Forest Department in the Bombay Presidency during the five years under review, and it is convenient that its measures should be explained at an early stage of this volume.

India was in ancient days a land of forests. The Mahábhárata contains direct and indirect evidence that forests covered the country, including many tracts now bare of woodland, such as the banks of the lower Jumna. The Ramáyána, which treats of a time when an Aryan Empire had been established in Oudh, speaks of forests dark as a cloud in the wilderness of Taraka. In the north of the Punjab, the Salt Range in the Pabbi was clothed with forest sufficiently dense to conceal the movements of

the army of Alexander the Great. In the forests dwelt wild primitive races, who lived by hunting and on the produce of the woods. The Aryan settlers, as they slowly made their advance and introduced agriculture and civilisation, destroyed the forests before them; and the burning of the Khandava forest, probably situated between the Ganges and the Jumna, is a very early example of such a clearing on a great scale. The necessity of the nomadic tribes for wide stretches of grazing ground was perhaps even more destructive than the advance of an agricultural population, and hills and plains covered with forest were fired to make new pastures for their flocks and herds.

The long-continued destruction of the forests is believed to have diminished the rainfall, and certainly to have rendered it less effective, in many parts of India. The numerous deserted villages which attest the former existence of a dense population, sites in now barren deserts, are pointed to as evidence of the change—a change also supported by the analogy of other countries, which have been deforested within historical times. The once well-wooded Dalmatia is in modern times a stony desert. Persia, formerly one of the granaries of the East, is barren and desolate over a large extent of the country. North Africa, the richest corn-producing colony of the Roman Empire and the chief granary of ancient Rome, is subject to the severest droughts. Parts of Spain, Italy, Sicily, Greece, and Asia Minor are also cited as examples of agricultural deterioration due to the denudation of the forests.

It is through their influence in absorbing, storing, and re-evaporating moisture, and so husbanding the rainfall, that forests affect the climate and productiveness of countries. Where rain falls upon a well-wooded forest area, it percolates slowly into the soil, whence a large quantity is gradually pumped up again through the roots of the trees, exhaled by their leaves, and again assists in forming rain-clouds. On the other hand, where it falls upon barren hills or open plains, it either rushes away in torrents or sinks into the sand with diminished facilities for re-evaporation. As long as the freshets, the streams, and rivers, carry fertile soil, the plains are benefited by the inundations caused by the rapid rush of water from mountains and high grounds. But when the good surface-soil has been scoured away, the cultivated fields are covered by the floods with unproductive sand and stones, and are ruined instead of benefited. The influence which forests exercise in controlling and regulating the water-supply is, however, now generally recognised. Specialists have analysed the causes of that influence, and have laid the bases for the study and practice of scientific forestry.

Scientific forestry is a creation of the present century, and first developed in France and Germany. Great results were hoped from it; the waste places of the world were to be made rejoice. Its natural limitations were forgotten. The fact that forests would as a rule only grow again where forests once had flourished, was not realised, and attempts were made to plant trees in unsuitable localities; attempts which, as in

the case of the steppes of Russia, were foredoomed to failure. India was not behindhand in welcoming the new science. It was known that extensive areas had been denuded of their forests within historical times, and it was expected that careful conservation would do much to insure the country against periodical famines by regulating the rainfall. Efforts were made in different provinces, and in 1864 Mr., now Sir Dietrich Brandis, was appointed Inspector-General of Forests to the Government of India, and a Forest Department was regularly organised. In 1865 the first Indian Forest Act was passed, and in 1878 the second. These measures strengthened the idea that it was the duty of Government to preserve forests and to subject them to a separate jurisdiction. The working of a Forest Department demanded a special Forest service. It was at first recruited from members of the other services possessing a special aptitude for forest work. But the need of a thorough scientific and professional training soon made itself felt. Young Englishmen educated at the Forest School at Nancy were then sent to India, and in 1884 a regular Forest School was established at Cooper's Hill.

In the Bombay Presidency the importance of preserving timber-trees had impressed itself on the Government before the idea of systematic and scientific forest conservation was introduced into the country. The right of the British Government, as the successor of the Maráthá power, to the possession of teak trees was already recognised in 1839 and acted upon. In 1847 Dr. Gibson was appointed the first Conservator

of Forests in Bombay, and the scope of his authority steadily enlarged. The lopping of teak trees was prohibited in 1852; the prohibition was authoritatively extended to blackwood trees in 1859; and when the first General Forest Act for India was passed in 1865 considerable advance had already been made towards a system of conservation in Bombay. During the period between the two Acts of 1865 and 1878 the Bombay Forest Department increased in efficiency and energy. Its staff contained many able men full of enthusiasm for their work, convinced of the importance of forest conservancy as a factor in the prosperity of the Presidency, and ardent advocates for the extension of their powers. They were supported in their views by successive Governors, and especially by Sir Richard Temple (1877-80).

The Bombay Forest Department is divided into three divisions, the controlling, the executive, and the protective staff. The controlling staff consists of three Conservators of Forests, and of a certain number of Deputy and Assistant Conservators, each entrusted with the superintendence of a division. The executive staff includes Sub-Assistant Conservators, Forest Rangers, and Foresters. The protective staff consists of forest guards. The territorial unit of management is the 'range,' which is sub-divided into beats or protective charges; while a collection of ranges forms a division, or controlling charge. The upper places in the forest service are reserved for the trained Europeans from Nancy and Cooper's Hill; the ranger-ships and foresterships are destined for natives, spe-

cially educated for the service in the Forest Branch of the Poona College of Science. It is hoped that, as time goes on, selected men from among these trained rangers may be fitted by their experience and education for the superior charges.

The most important forests which the Bombay Department has under its charge, are those that clothe the Western Gháts and spread down their slopes into the Konkan, between the mountains and the sea. These forests abound in teak and in all the most valuable timber trees which grow in India. Of only less importance are the forests in the thinly populated parts of the districts of Khándesh and Násik and the Panch Maháls, and upon the eastern or inland side of the Gháts. In Sind, what forest exists is of a totally different character. The nature of the soil there prevents the growth of the fine timber of the Gháts; but the babúl (*acacia arabica*) flourishes within the range of the inundation of the Indus, and babúl reserves have been formed for the protection of these useful trees. Their extent, however, is comparatively small, and on March 31, 1889, there were only 624,026 acres of reserved or protected forest declared to exist in Sind out of the 9,407,549 acres of forest in the whole Presidency. In speaking of the administration of the forests in Bombay, therefore, it will be understood that Sind is practically excepted, by reason of its limited forest area, and the difference of the local conditions which prevail.

The first step towards the introduction of a sound forest administration, which should not only preserve

existing forests, but also regulate their growth so as to make them yield the maximum of advantage with the minimum of expense, is to ascertain and record the situation and extent of the existing forests before placing them under special jurisdiction. This work of demarcation was provided for in both the Indian Forest Acts, and was carried out with special vigour in the Bombay Presidency during the government of Sir Richard Temple, when as many as six or seven Civil Servants were employed as special Forest Settlement Officers at the same time, besides those engaged in the work in addition to their ordinary duties.

During the vigorous period of forest development which followed, it was complained that a tendency appeared to make popular or customary rights subservient to the improvement of forest conservancy. The result was ascribed in part to the absence of sufficiently exact rules as to the manner in which the demarcation of forests ought to be carried out. The attention of Lord Reay's Government was drawn to the deficiency, and by a Government Circular dated September 22, 1885, precise instructions were laid down for the guidance of officers employed in this important preliminary work. Detailed orders were issued as to what facts and proposals each scheme of demarcation should comprise. Directions were given as to what share the Forest Settlement Officer, the Divisional Forest Officer, the Conservator of Forests and the Revenue Officers, should respectively take in furnishing them. Distinct information was to be given under three separate heads: (1) the disposition and (2) the capacity of the proposed

forest area ; with (3) the popular requirements for its use. The principle was at the same time enunciated that the only satisfactory forest settlement scheme is one which, after full consideration of all interests concerned, is unanimously recommended by both the Revenue and the Forest Departments with clear evidence that it adequately provides for the wants of agriculture as well as for beneficial forest conservancy.

Two classes of the population are affected by the demarcation of forests in India, those living in the forests, whose means of subsistence would be taken from them under a strict system of conservancy ; and those who need the products of the woods and have been accustomed to use them, but are not so dependent upon them for existence. Both these classes have to be considered in any scheme for the demarcation of forests, and any forest policy which ignores their customary usages, even although short of legal rights, runs the risk of strenuous and well-founded opposition.

The first class of forest denizens consists of the aboriginal and semi-aboriginal tribes, who have from an almost prehistoric period dwelt in the woods, and who still lead the same life of savage freedom as their fathers before them. The Government of India has always wished to be considerate to these wild children of the forests. While trying to induce them to settle down and become civilised, it has recognised the impossibility of making a sudden change in their habits and mode of life. The Forest Department is, therefore, obliged to make allowance for the primitive tribes, and

is not allowed to deprive them of their customary means of subsistence.

The use which they make of the forests is twofold. They earn what money they need by collecting forest produce, such as the nuts of the hirda-trees, the 'myrobalams' of commerce, gum, honey and beeswax, resins, and firewood. They also grow a small quantity of grain by a peculiarly destructive process of nomadic cultivation, known in different parts of India as dahya or dalhi, júm, or kumri, and in Burma as taungya. The system consists in setting fire to a tract of forest, and raising a crop from the ground thus cleared, with the ashes as manure. When they have exhausted the clearing by a rapid succession of crops, they move on to another tract and renew the wasteful process. Such a system, if unrestricted, is incompatible with any system of conservancy. At the same time the complete and sudden stoppage of all nomadic cultivation would inflict grave hardship on the wild tribes, who live by it; and it has to be allowed for in any scheme of forest demarcation. On the other hand, the collection of forest produce only needs careful regulation. There is no reason why the Bhils and Kátkaris, the Thákurs and Kolis, should not continue to collect and sell the articles which they best know how to find; and the Forest Department may perhaps make use of their knowledge of their native woods by employing them in subordinate positions.

The second class which has to be considered in the demarcation of forests consists of the inhabitants of villages in the neighbourhood of forests, who have been accustomed to graze their cattle beneath the trees, to

take the timber they require for house-building or implement-making, to gather firewood, and to lop branches for burning into ash-manure. The unrestricted exercise of these customs for generations gives them the effect of popular rights, so that a sudden or total closure of the forest areas must cause great suffering and discontent. The Forest department in Bombay Presidency failed, at one period, to adequately realise this. In their zeal for forest conservancy, some of the Forest Settlement Officers closed woodland districts to the neighbouring hamlets, and curtailed the free use of the materials which the villagers had been accustomed to enjoy. The Revenue Officers urged the consideration of such customary rights, and came to open issue with the Forest Department. Indeed, it was the opinion of some of the most experienced of the District Officers that the continuance of a policy of wholesale demarcation of forests without sufficiently providing for existing customs would lead to outbreaks: The grievances of this class of forest borderers in the two districts of the Konkan nearest Bombay, Thána and Kolába, were brought to Lord Reay's notice immediately after he assumed office, and the measures taken to satisfy them form an important feature of the five years under review.

The district of Thána and the northern part of the district of Kolába, comprising the Northern Konkan, is a region particularly well suited to the growth of timber trees. Mountstuart Elphinstone speaks of it as formerly 'a thinly inhabited forest, from which character it has even now but partially emerged. . . . The

descriptions of Captain Dickenson in his reports on the inland parts of this Collectorate show that at the end of the Peshwá's rule the whole country was lying waste and unpopulated. That up to about 1850 waste land was everywhere so abundant as to create a feeling of despair as to the future of the district; that the increase of cultivation was so much desired that the poorest people were allowed to cut down as many trees as they liked merely for the purpose of clearing the land, and that wood itself was so abundant that every one cut where and as he liked ¹.

The rapid growth of the city of Bombay made inroads upon these forests, for firewood and building timber. A lucrative trade sprang up, which absolutely denuded the hills nearest to the city and threatened to denude the whole district of Thána. The first Conservator of Forests in the Bombay Presidency, Dr. Gibson, confined his measures of conservation to the preservation of teak trees during several years after his appointment. But in 1850 he found it necessary to take further action, and replaced the transit duties on timber which had been abolished in 1836, by a system of fees on all jungle wood. This met with violent opposition, and in view of the agitation which Lord Reay found existing in Thána, it is curious to notice the existence of a similar popular ferment more than thirty years before. 'Of such clamour we had an example in 1851,' writes Dr. Gibson ², 'when the Gujarát merchants and others in

¹ *Report of the Bombay Forest Commission*, vol. i. p. 21.

² *Ibid.*, p. 26.

the Sanján *táluká* shipped about 300 of the Várli tribe for Bombay, and marshalled them on the steps of the Council-room in order to concuss (coerce ?) the Government into a repeal of the jungle fee scheme, which had just then come into operation ; and when I proceeded to Sanján in 1852, in order to make a final settlement, I was surrounded by some thousands of persons, all of them with the same object, and little disposed to stop short even of personal violence.'

If this was the attitude of the people of Thána in 1851, on the imposition of a slight restriction on the timber trade, it can be easily imagined that the procedure of the Forest Settlement Officers after the passing of the Indian Forest Act of 1878 led to a much more serious agitation. It was no longer a question of merely checking the export of timber to Bombay. Large areas were demarcated into forests, in which the inhabitants of the neighbouring villages were prohibited from getting wood for their own use, and were no longer allowed to graze their cattle. The agitation was, however, conducted in a lawful manner. So far as I have discovered, no acts of violence against forest officials were reported. They do not even seem to have been mobbed like their predecessor, Dr. Gibson. But a 'Thána Forest and Abkári Association' was formed ; the native vernacular press was incited to take up the case against the Forest Department ; and the powerful assistance of the Sarva-janik Sabha of Poona was granted to the agitators. Even more vigorous than the diatribes of the vernacular press was the language used in a pamphlet

entitled 'A Few Words about Forest Conservancy in the Thána District of the Bombay Presidency,' published at the beginning of 1885.

'The citizens of Bombay, "who sit at home at ease,"' begins this vigorous philippic, 'will possibly be surprised to learn that within from twenty to seventy miles of their palatial residences lies a vast tract of country, in which nearly a million of inhabitants have been goaded, by the best-intentioned mismanagement, into a state of aggravation which might, at any time, culminate in a serious outbreak. It is fortunate for us, here, that the natives are, as a rule, patient and law-abiding; had any European population been subjected to the treatment that has fallen to the lot of the people of Thána, they would, despite the purely philanthropic motives of their rulers, have long since broken out into open rebellion, and, as it is, the local civil officers have more than once expressed the apprehension that the restrictions imposed upon the people would lead to "scenes of violence and possibly widespread disturbance."'

The gist of the writer's argument is contained in the following paragraph. 'Far worse than such illegalities,' he says (p. 10), 'to me is the crying injustice on which the entire scheme of forestry in this unhappy district appears to have been based, rendering it to my view indefensible from first to last, and thoroughly rotten to the core. It is one thing for Government to appropriate almost virgin forests, in which at most a few hundreds of people, often mere savages, have enjoyed the privilege of taking such produce as they needed,

and enclose these, leaving still to the excluded persons an ample open area, from which to supply unquestioned all their possible wants. Another for them to appropriate a vast wood-bearing area, over which the entire population of a densely populated district has from time immemorial exercised unchallenged all forest rights; to close this arbitrarily without any pretence of compensating any one for the losses thus entailed, and to commence charging a price for all those articles that the people have hitherto supplied themselves with without any payment to any one.'

The publication of this pamphlet, which attracted great attention in India and some in England, co-operated with other considerations to render it expedient for the Government of Bombay to vindicate, or to amend, its forest policy. Lord Reay had not been many days in office, before—on April 9, 1885—an influential deputation of native gentlemen from the disturbed districts waited upon him. They laid their views before the Governor in a somewhat lengthy, but on the whole temperately worded memorial, and concluded their petition by saying: 'Our prayer is that, being satisfied of the substantial accuracy of our statements, your Excellency will (1) direct a temporary suspension of the present Forest Rules, which are harsh and illegal, and (2) appoint a Commission of Enquiry, composed partly of experienced European officials and partly of independent Native gentlemen.'

Lord Reay decided to accede to the second request of the petitioners, and on July 24, 1885, a strong Commission was appointed, whose Report is of the utmost

value and marks an epoch in the history of Forest Conservation in Bombay. The words of the Government Resolution appointing the Commission defined its aim with brevity and precision. 'The Governor in Council—wishing to secure an efficient management of forests, and believing that the conservancy of forests and the maintenance of the rights of the Crown is beneficial to the interests of the people in providing for a continuous supply of timber; wishing to secure the agricultural wants of the people and the privileges they have hitherto enjoyed for the legitimate fulfilment of these wants; convinced that where friction has arisen in the management of forests, especially in Thána, such friction is due to a misunderstanding which can be removed; desirous to give to all parties concerned the means of bringing their views before Government—institutes a Commission, &c.'

The Commission consisted of four English and three Native members, and represented every type of opinion. The English members were Mr. G. W. Vidal, the Chairman, Acting Collector of the District of Thána, and one of the ablest members of the Bombay Civil Service; Lieutenant-Colonel Peyton, Conservator of Forests, Southern Circle, a forest officer of the old school, famous as a sportsman, who had killed more tigers than almost any other man in the Presidency; Mr. R. C. Wroughton, Deputy-Conservator of Forests, a representative of the scientific school of forest officers; and Mr. E. C. Ozanne, C. S., Director of Land Records and Agriculture, Bombay. The native members were Ráo Sáheb Rámchandra Trimbak Achárya, District

Government Pleader, Thána, and member of the Thána Local Board and Municipality, representing local discontent, who succeeded Ráo Bahádur Dáji Govind Gupte (originally nominated) before any evidence was taken; Ráo Bahádur Krishnáji Lakshman Nulkar, formerly president of the Poona Sarvajani Sabha, and now a member of the Viceroy's Legislative Council; and Ráo Bahádur Yeshvant Moreshvar Kelkar, Assistant to the Commissioner S.D. who acted as Secretary to the Commission, now Oriental Translator to the Government of Bombay.

The Bombay Forest Commission was formally opened in the Council Hall at Poona on August 27, 1885, on which occasion Lord Reay delivered a speech, which attracted great attention at the time, and which it is necessary, for the proper appreciation of the subsequent measures, to quote at some length. 'Mr. Chairman and gentlemen,' said the Governor, 'I have asked permission to attend here to-day to thank you in the first place for the way in which you have placed your services at the disposal of the Government. You have a very delicate and difficult task to perform. You will, I am sure, acquit yourselves of the trust reposed in you with complete independence. The value of your labours will be enhanced, if you lay down in your report the conclusions to which you may have been led by the inquiry, however varied they may be. It is perhaps not superfluous for me to add that the members of the Commission who represent the Civil Service, are not acting in any way on the Commission as delegates or representatives of Government, but

have been appointed to give their own views, the results of their own experience. You will, on the other hand, have to deal not with individual actions or the opinions of individual Government officers, but with the effect of Resolutions for which Government is alone responsible. As long as the actions of a Government officer are sanctioned by the open or tacit approval of Government, Government is responsible.

‘I need not here enter elaborately on the various causes which have led to the appointment of this Commission, but it is a remarkable fact that both the late and present Secretary of State have approved of the institution of this inquiry, and the sanction of His Excellency the Viceroy has also been obtained. The importance of the subject has been recognised, therefore, on all sides. Since I have had the honour of being charged with my present duties, the matter has been a constant source of anxiety to me. Agricultural problems have always struck me as peculiarly interesting, and the more one looks into the various agricultural systems of various countries, the more one becomes convinced that over-legislation in agricultural matters is a mistake, and that in the present condition of agricultural science, which is not by any means as far advanced as it ought to be, we must be careful to interfere as little as possible. Agricultural centralisation would certainly lead to disastrous consequences.

‘In his speech on the Indian Budget, the Secretary of State asked the question, how are you on the one hand to obtain the most desirable objects of preserving and renewing the forests, without on the other hand

entailing hardships on the people by depriving them of valuable and long-established rights? That is the question which has constantly presented itself to me. I believe, however, that if Forest Conservancy tends to increase the supply of fodder and fuel for the people of this country, the enterprise will meet with their support, and has a right to their sympathy. I also believe that the hardships can be mitigated, and that we have recently done a great deal to reduce them to a minimum. My chief object is to substitute co-operation for antagonism, confidence for mistrust, contentment for disturbance. The worst result of centralisation is that measures, which must inevitably benefit the people ultimately, take a longer time for their acceptance than if they had been settled locally.

‘ In every forest settlement which I have dealt with, I have always carefully considered the peculiar circumstances of the locality, the existing resources for the feeding of cattle and for the extension of cultivation, and the advantages which would accrue to the inhabitants from Forest Conservancy. And here, gentlemen, let me say that I believe that if your district boards had to deal with these questions, they would not in their decisions come to conclusions differing very materially from those to which we have come. We are at great disadvantage, because we have very often to decide at a distance intricate questions, and I for one have very keenly felt the responsibility of deciding between the conflicting opinions of local officers, who perform their difficult duties with great care.

‘ One thing, however, is quite clear. If you wish to

have improved fodder and more fuel, you must allow your plantations to grow ; you must protect the young growth by closing such areas ; you must close those areas in such a way that you cause a minimum of inconvenience to those who used to find on such areas pasture for their cattle. On the grazing question your report will no doubt throw light, but meanwhile you may take for granted that it is the determination of Government that, wherever free grazing has been lawfully enjoyed, it will be continued by giving a full equivalent in all those cases where the area hitherto used has been absorbed. I do not think that the people will have anything to complain of, as the equivalent will be an improvement on what formerly provided them with an insufficient supply. How, when, and where areas are to be closed ; how, when, and in what numbers cattle are to be admitted to open areas, and on what conditions, seem to me to be essentially questions which must be settled on the spot by the combined action of the revenue officers and the forest officers, and on which Government can only lay down general principles.

‘ Your Commission will fulfil the mandate contained in the Government Resolution of July 24, unhampered by any extraneous influence. A speedy, full, and local investigation of the Forest Conservancy of the district of Thána will, however, be most welcome to the Government, as it wishes to obtain your advice in detail on the situation of that district, which affords scope for the examination of nearly all the questions with which Government have to deal. You will, I

doubt not, assist the Government in its endeavours to remove legitimate grievances. You will also assist Government in preventing wanton destruction of timber—a proceeding utterly unwarrantable, and most demoralizing and injurious to the local and national interests.

‘A strong Government does not stand in need of exceptional measures to put a stop to such vandalism. This Commission will strengthen, not weaken, the ultimate action of Government. It will uphold law and order; promote one of the chief elements of agriculture, namely, good pasture; promote harmony between the administration on the one side and the people on the other, whose interests will be ably represented on this Commission, not only by those whom they will perhaps more especially consider as their representatives, but also by officials, whose desire I know, from personal experience, it is to preserve to the people privileges, to which naturally they attach great value.’

The Bombay Forest Commission held 123 meetings for the examination of witnesses and the preparation of its Report between August 27, 1885, and December 18, 1886. The completed Report was submitted to Government in April, 1887. The printed record of the labours of the Commission fills four volumes, and it is not too much to say that a careful study of these volumes is indispensable for every one who wishes to form a correct estimate of the difficulties which beset the demarcation of forest areas in the Bombay Presidency. Fortunately for the members of the Commis-

sion, they were saved the waste of time and trouble that would have ensued if they had had to deal with the complaints against the Forest Department individually. The local population entrusted its case in Thána District to the Thána Forest Association, which had by its vigorous agitation secured the appointment of the Commission; and in Kolába District to the Kolába Forest Sabha, a similar body. This procedure simplified matters. An experienced pleader, Mr. S. H. Chiplonkar, arranged the grievances complained of in an intelligible order, and brought the evidence to bear with some regularity upon each point.

From the Report issued by the Forest Commission it appears that the customs or rights of the inhabitants of villages bordering on forests or included in demarcated forest areas, which must be recognised and either allowed or compensated in future forest settlements, may be divided into two general heads, namely, grazing and wood-cutting. These are common to the whole Presidency of Bombay, but special consideration must be given in the Thána and Kolába Districts to their peculiar system of cultivation.

The question of grazing is almost certain to arise wherever a line of forest demarcation runs near a village boundary. The inhabitants of such villages generally pasture their cattle in the nearest suitable locality, whether it is covered with trees or not. The gáirán or communal grazing ground, in the case of a village on the plains usually a plot of waste or uncultivable land, might in a wooded district form portion of a valuable forest. But the grazing of cattle, and

still more of sheep and goats, does incalculable damage to the growth of young trees. There is therefore a natural inclination on the part of energetic forest officers to wish to exclude cattle from the forests under their charge ; it is equally natural for the villagers to resent being deprived of a valuable prescriptive privilege ; and the land-revenue officers, whose interest it is to promote cultivation, are the natural allies of the villagers against encroachments by the Forest Department.

The Government of Lord Reay had therefore to mediate between the Forest Department and the villagers. In this matter it did not wait for the Report of the Commission, but on September 15, 1885, issued a code of rules for the regulation of grazing rights in forest areas. It directed that, wherever gáirán or village pasture-lands had been taken into forest, free grazing must be granted, either in those parts of the forest lands not actually occupied by the forest officers for the purpose of forest conservancy, or in those parts which had been closed for the preservation of young trees, as soon as they can safely be opened. This privilege is reserved for cattle kept for agricultural purposes, and is not permitted for cattle kept for profit or trade. The code was followed by a Resolution, on October 9, 1885, which, in passing orders for the Forest Settlement of Sholápur taluká, instructed the land-revenue, *not the forest*, officers to prepare an estimate of the amount of grazing available outside the forest area, especially in waste lands ; and of the legitimate grazing requirements of each village. It provided that where the outside grazing was insufficient,

the deficiency must be supplied by permitting grazing over part of the forest land. On February 25, 1886, the term 'cattle kept for agricultural purposes' was ruled to mean the cattle required for the proper cultivation of the agriculturist's holding, and a cow or she-buffalo kept to supply the agriculturist's family with milk for their home consumption.

While discouraging professional graziers in the border forest villages by the imposition of grazing fees, the Government was not unmindful of the necessity of encouraging cattle-breeding where the local conditions were more favourable for that industry than for agriculture. The Panch Maháls District, for instance, is specially adapted for the rearing of cattle, and by a Resolution dated April 29, 1887, the Governor in Council directed that this natural advantage should be carefully fostered, and every reasonable encouragement given to the industry in that particular locality.

On August 27, 1889, the Bombay Government reviewed the recommendations of the Forest Commission with regard to grazing in the Thána and Kolába Districts. These recommendations, arranged in thirteen articles, had laid down elaborate rules and precautions on the subject. They were approved and sanctioned by the Government for the two districts, but the approval was accompanied by various observations and modifications, of which the most important concerned free grazing. Thus, that the exercise of this privilege be limited by the closure which the Forest Department, after approval by the land-revenue officers, might impose in areas for necessary purposes

of forestry ; and that the number of cattle admitted to graze free of charge should not be in excess of the number for which the area open could be expected to furnish a sufficient supply of grazing. Further, that the cattle should not be allowed access at the season when it is deemed requisite to close the forest to permit the growth of the young grass.

The Government issued definite orders on September 14, 1889, that where land originally gáirán had been included in forest, free grazing must either be allowed over it, or, if its closure for afforestation is deemed absolutely necessary, over an equivalent area of other forest or waste land, possessing equal grazing capabilities. It is important to clearly apprehend the scope of these provisions with regard to grazing. They illustrate the even balance maintained by Lord Reay's Government between justice to the villagers and the needs of forest conservancy. They also explain the standpoint from which that Government dealt with the pre-existing forest agitation, and quieted it.

The other general question which almost necessarily arises during the demarcation of forests bordered by or including villages, has reference to the right of wood-cutting or timber-felling. If forest officers dislike cattle-grazing on their domains, they more strenuously oppose unlicensed cutting and felling. There are two distinct sides to this latter question. Just as villagers in forest villages had been always accustomed to pasture their cattle in the wooded districts, so they had been wont to fetch what wood they wanted, whether for fuel, or for making implements or

mending their ploughs, &c. This unlimited liberty had to be checked. For the first requisite of forest conservancy is the power to preserve the trees. But the Forest Commission, and in accordance with its recommendations the Government, resolved to deal liberally with fair prescriptive rights. The people were, indeed, forbidden to cut at their pleasure, but the wild tribes and the poor were permitted to pick up dead wood for fuel, and to take away, free of charge, the small branches and twigs lopped off at the periodical Government fellings. Free grants of timber for building purposes and for agricultural implements were also allowed as some compensation for former privileges.

The trade in timber or firewood, a brisk one in the neighbourhood of a capital, further complicates matters in the Thána District, which is the nearest timber-producing region to the city of Bombay. It was the Gujaráti timber merchants who fomented the agitation against Dr. Gibson's jungle-fee in 1851—the agitation which led to the first Conservator of Forests in Bombay being mobbed at Sanján in the following year. Ever since the Department was established, the difficulties caused by the extensive timber trade from Thána, and by the temptation given by its large profits to evade the regulations issued for its control, had been the source of numerous schemes and expedients. The Bombay Forest Commission made a bold effort to grapple with the situation. The difficulty of identifying timber had always afforded the chief opening for fraud. It was quite impossible to assert that any particular log of wood came from a Government Forest.

when once it was on the road. The invariable allegation was that it came from a private owner. Government trees were therefore frequently felled and passed off as the products of occupied holdings.

The practical method of dealing with this difficulty seemed to the Forest Commission to obtain legislation for the control in transit of all tree produce, whether obtained from forests or private holdings. In return for this interference with a private owner's rights in the timber growing on his own soil, it was proposed that all Government trees, such as teak and blackwood, in occupied lands, should be guaranteed to the occupants for domestic and agricultural purposes: subject to the restrictions that (1) the tree produce of occupied lands should be utilised exclusively to meet local as distinguished from trade demands, and that (2) if the land on which the trees grew had been uncultivated for ten years or more, it should not be cleared for cultivation. The Bombay Government laid the request for special legislation before the Government of India. The Supreme Government complied, and on February 28, 1890, the Forest Act Amendment Bill became law. The legislation required by the Forest Commission for the success of the experiment being thus fulfilled, the Bombay Government issued a Resolution, dated April 8, 1890, dealing with the scheme proposed by the Commission on somewhat modified lines.

The right of grazing and the right of cutting wood have to be reckoned with in every scheme of forest demarcation, where the boundary approaches or encloses parts of inhabited villages. But in Thána and Kolába

Districts there was another prescriptive right peculiar to the local method of rice cultivation, which also brought the inhabitants into collision with the Forest Officers. According to this method, known as *ráb* cultivation, the beds for the rice seed are prepared by burning layers of cow-dung, tree-loppings, leaves and grass. The Forest Conservators naturally object to the collection of the tree-loppings, which form an important part of the *ráb* or ash manure. It was argued that this system was wasteful and barbarous, and little, if any, superior to the nomadic cultivation by burning down temporary clearings and then deserting them for new ones. Rice was grown in other parts of India without destroying the branches of the trees, and it was asserted that the innate obstinacy and backwardness of the local cultivators alone maintained the *ráb* system.

Whether this system was to be permitted or prohibited was one of the points to be investigated by the Forest Commission; and Mr. E. C. Ozanne, the Director of Agriculture in the Bombay Presidency, and a member of the Commission, made a series of experiments with regard to it. They proved that at least twice as good a harvest of rice could be raised from seedlings transplanted from a nursery or seed bed prepared with *ráb*, as from one treated with ordinary manure¹. The words in the opening address of the Governor to the Commission thus received an unexpected confirmation. 'In many instances,' he had said, 'a scientific justification for local agricultural

¹ Mr. Ozanne's experiments are detailed in an Appendix to vol. 1. of the *Report of the Bombay Forest Commission*, pp. 221-241.

practices unconsciously observed by the population will be forthcoming.'

In consequence of these experiments, the Forest Commission recommended that the cultivators in villages of the Thána and Kolába Districts which had contributed lands to the Forest Department, might, as a temporary privilege and until further orders, make up the deficiency of their ráb supply by taking loppings from certain specified kinds of trees from the unclosed portions of forests, in addition to removing grass, leaves, reeds, and brushwood from these areas, and that they might also remove grass from the closed portions of the forests. In reviewing this recommendation the Bombay Government observed on August 27, 1889, that to prohibit absolutely the lopping of all trees and the cutting of all shrubs and brushwood in the State forests would doubtless facilitate Forest Conservancy, and increase the timber-producing capacity of the forests. But the prohibition would, in some tracts, be disastrous to agriculture, and check superior cultivation. The Forest Department would have to superintend, not to check, the ráb supply in order to avoid waste, as it was undesirable and impossible to withdraw all the privileges in respect of ráb supply hitherto enjoyed. At the same time it was to be remembered that the available supply, whether from the forests or from trees in occupied lands, is limited, and it is necessary in the interests not only of the present but also of future generations, that the cultivators should practise economy in the consumption of their own ráb resources, as well as of those of the State.

The chief points to be considered in the demarcation of forests from cultivated land in the Bombay Presidency have now been noticed, together with the principles laid down by Lord Reay's Government for the guidance of forest settlement officers. It remains to examine the treatment of the wild aboriginal tribes, who are absolutely dependent on the woods for their living. Their nomadic system of dalhi or kumri cultivation, which is much more primitive and wasteful than ráb cultivation, notwithstanding the analogy drawn between the two by enthusiastic forest officers, has been over and over again condemned by the Bombay Government, as it has been by the other Provincial Governments in India. The ordinary custom of these tribes to wander from place to place in the forest tracts, and to burn down patches for temporary clearings, has done more to check the progress of Forest Conservation than ráb cutting in its extreme and most abused forms. Lord Reay's Government recognised the evil, and made several attempts to check it. A Government Resolution, dated August 3, 1885, ordered that all possible inducements should be offered to the dalhi cultivators in the Peint Táluká of the Násik District to abandon the practice and to resort to less destructive methods of agriculture, and it was distinctly laid down that no expansion of the custom would be permitted in the future. A more stringent Resolution was published on April 13, 1888, with regard to the same District, declaring that the custom must be extinct after the next generation.

But it is one thing to proscribe their wasteful method

of cultivation, another to deprive the wild tribes of the means of earning their livelihood in the woods. In this regard the Bombay Government cordially endorsed the views of the Bombay Forest Commission. 'There is every reason to hope,' say the Commissioners in the Report¹, 'that much additional work will be found for the wild tribes, when the completion of working plans will enable the Forest Department to carry out felling operations up to the maximum legitimate yield of the forests. All the labour in connection with the annual fellings should, in future, be entrusted to the wild tribes as far as possible.' With reference to the subsistence to be derived from the collection of forest produce, such as gums and resins, myrobalams, and the flowers of the mahuá tree, the Commissioners also speak hopefully. 'The wild tribes,' they say², 'owing to their local knowledge of the jungles and the localities where the different products are to be obtained, now have, and probably always will have, a practical monopoly of the right of collection. Without their co-operation, collection of forest produce on a large scale would be difficult, if not impossible. This fact will, we believe, always ensure fair rates being paid to them, whether they sell to private customers or to the Forest Department.'

In spite of the favour shown to the wild tribes, it was believed that certain criminal proceedings on the part of the Kolis, an aboriginal tribe, in the Junnar Taluká of the Poona District, which were brought to

¹ *Report of the Bombay Forest Commission*, vol. i. p. 122.

² *Ibid.*, vol. i. p. 106.

the attention of the Bombay Government in 1887, were caused by the strictness of Forest Conservancy. A special inquiry was ordered into the condition of the Kolis, not only in the Junnar Táluká, but also in the Khed and Máwal Tálukás of the Poona District and in the Akola Táluká of the Ahmadnagar District. The officer who conducted the inquiry reported that the Kolis were moderately well off, deriving a considerable income from the sale of myrobalams, and that they were in no way hampered or aggrieved by Forest Conservancy. He attributed their tendency to form dacoit bands to their hereditary customs and instincts. Among the remedies he suggested was the provision of more land for the extension of cultivation; and accordingly in July, 1888, one hundred and thirty-three acres of reserved forest were disforested, and nearly twenty thousand acres, which had been included in the demarcation scheme for the Junnar Táluká, were abandoned.

The difficulties and popular agitation which Lord Reay found on his arrival in Bombay were largely due to the circumstance that the forests were not properly defined and demarcated. It took some further time for the rural population to become generally acquainted with the privileges which were restored to them. Before Lord Reay left India the important work of settlement had greatly advanced. It is work which can be done once for all, and the real aims of Forest Conservancy cannot be pursued until it is done. When the Forest Department knows the exact limits of the forests under its charge,

and what local or tribal rights exist over them, it can turn undisturbed to its proper functions, the preparation and carrying out of regular working plans.

Lord Reay's activity was mainly concerned with the principles of demarcation, but he also took a keen interest in the development of the working plans. The object of these plans is to ensure the working of the forests in such a way as to carefully husband their resources. They take account of the forest capital and growing stock, they arrange for regular fellings at periodical dates; they re-stock the cleared areas and preserve the young trees until they are strong enough to be left to themselves. As the work of forest settlement approaches completion this becomes the essential duty of the Department.

Another measure undertaken by Lord Reay's Government was the reorganisation of the subordinate Forest Establishment. For this purpose the Bombay Government appointed a Special Committee in July, 1889, to settle the details of reforms. It consisted of the chief officers of the Forest Department, the Commissioners of Divisions, Dr. Cooke (Principal of the Poona College of Science), and Mr G. W. Vidal, who had been the Chairman of the Forest Commission. The Committee presented its report on February 14, 1890. It deals chiefly with the reorganisation of the executive and protective staffs, and proposes that the number of Sub-Assistant Conservators of Forests and Rangers, who form the executive staff, should be increased from thirteen and forty respectively to twenty-four and one hundred and sixty-three, and that the

protective staff and the office establishments shall also be strengthened. It recognises the importance of employing trained natives, who have passed through the course of instruction in the Forest Branch of the Poona College of Science, and proposes a liberal scale of pay and travelling allowances for them. The requisite additional expenditure to carry out this scheme of reorganisation is estimated at slightly over two lakhs of rupees.

The necessity for defining the relative position of the forest officers to the general administration of the Presidency was not less needful than the reorganisation of the Forest Establishment. A Bombay Government Resolution, dated April 8, 1890, on the eve of Lord Reay's departure from India, pointed out that responsibility for a wise and efficient management of forest matters rests upon Collectors and their assistants as well as on officers of the Forest Department. Forest administration was stated to be as much a branch of the general administration requiring the direct supervision of the Collector and Magistrate as any other branch of Revenue or Police Administration.

It was clearly inexpedient that the forest officers should exercise independent authority when the Collector is made responsible for the welfare of the people of the district. The Forest Department, like all other special departments, supplies the general administration with technical knowledge. But in providing a special establishment for forest purposes, Government did not intend, and it could not allow, the ordinary

executive to be relieved of any responsibility which before attached to it. It remained a part of the duty of village and revenue and police officers to protect Government property in trees, as it was a part of their duty before trees were transferred to the Forest Department. This being the case, it is obvious that the members of the lower grades of the Forest Service, such as the forest guards, who form the protective staff, and must depend largely for the efficient discharge of their duties on the co-operation of the village officers and the police, ought to be placed to some extent under the supervision of the Revenue and Police officers.

This question was referred to the Forest Establishment Reorganisation Committee, who in an Appendix to their Report have drawn up seven simple rules on the subject. The most important of them provide that, 'when a Mahalkari or Chief Constable, or any Revenue or Police Officer of higher rank, camps in the limits of a forest village, or in the limits of a beat or round, the forest guard shall report himself to such officer, and bring his diary with him for inspection'; yet that 'No Revenue or Police Officer shall punish or censure a forest guard, but, if he deems it necessary, shall report the result of his enquiries and observations to the Divisional Forest Officer.'

From one point of view, the forest administration of the Bombay Presidency may be dealt with as a system instituted for the good of the country, for the preservation of an important source of its natural wealth, and for the advantages believed to be obtained from it

in regulating the rainfall and preventing erosion. This was the point of view from which Lord Reay himself mainly regarded it. But it has another side, as a source of revenue, and this was not neglected during the period under review.

The result of the vigorous forest policy inaugurated in 1879, after the passing of the Indian Forest Act of 1878, and consistently carried out under successive Governors of Bombay, may thus be briefly stated.

Excluding Sind, where forest revenue and expenditure have hardly altered, the gross revenue from forests in the Bombay Presidency proper has risen from Rs. 11,14,254 in 1879-80 to Rs. 24,34,322 in 1888-89, or rather more than doubled. The nett revenue has grown from Rs. 3,40,888 in 1878-79 to Rs. 10,31,309 in 1888-89, or more than trebled during the ten years. The totals for the whole Presidency, including Sind, were in 1878-79, gross forest revenue Rs. 15,24,712, nett forest revenue Rs. 4,64,095, and in 1888-89, gross forest revenue Rs. 28,50,189, nett revenue Rs. 11,61,065.

The forest administration of Lord Reay will repay careful study. He found the Forest Department at issue with the Revenue officials and disliked by the people, and he set himself to remove the causes of the official dissension and of the popular dislike. He found discontent and agitation in Thána and Kolába Districts; he put an end to the disturbances by the issue of special orders, by the appointment of an impartial Commission, and by promptly giving effect to the equitable changes which it proposed. He

found that the vigorous impulse given to forest policy in previous years had gone so far as to exceed the limits of justice to the people, he gently but firmly restrained the ardour of the Forest Department without diminishing its efficiency. In his speech at the opening of the Forest Commission, during the first year of his government, Lord Reay used these words: 'My chief object is to substitute co-operation for antagonism, confidence for distrust, contentment for disturbance.' He succeeded in attaining his object.