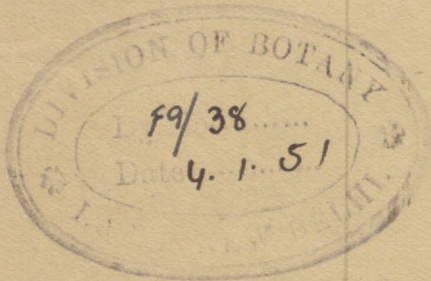


Will Dr Chatterjee pl. let me have recent
 articles describing the work of the Botanical
 survey of India? Will he also indicate
 whether there are any analogous institutions or
 organizations in other countries? of the
 nature, also, who carries on the work of
 the B.S.I. is doing in India.
 I shall like to have this
 information within a week.
 Mural
 2.1.51



A note with references (to published papers
 of 3 papers as desired by the Director
 is attached herewith.

D. Chatterjee
 9.1.51

Forwarded
R.D. Usame
 9/1/51

shows. Call Dr Chatterjee and
 also add a page giving an
 objective account of the
 present activities of the B.S.I.
 Mural
 10.1.51

u.o. to Hd.B.

2/30
 3/1/51

Quoted

A revised note for Dr D.
 Chatterjee is sent herewith

M. Pantias
 22/1/51
 of Hd.B.

Recd. from
 Dr. Chatterjee
 Jan 24/51

Dr Lal H. Singh
 the note is put up.
 Mural
 22/1

Dist. Lal
 2.5.51

concentrated on the above broad lines and the survey is immediately reinforced by couple of first class trained men on reasonable salary. ~~It is~~ So far as I know there ~~was~~ ^{is} no T.A. grant for plant exploration work. ~~It has been~~ Rs 5000/- per annum which has been stopped since 1932. ~~This~~ Because the survey work is restricted due to the ^{absence of} funds, consequent work in the herbarium is also restricted due to the absence of collected specimens. The quality of the trained personnel is also not very high and it is not surprising that ~~the~~ the standard of ^{productive} work ~~and out~~ is poor.

Fuller expansion may wait till better times. There has been lot of public criticism about the survey. The original amount was

a far off places (Sambalpur), with no herbarium has published a first class flora of Bihar and Orissa

- (a) No ^{update} work on regional floras was published during the last five years. Yet Dr. H.F. Mooney working in
- (b) The most important work on which much of the future industrial development ^{of the country} will depend, is a revised flora of India. Nothing has been done in this direction nor any proposal submitted. When the original flora of British India was published in (1872 onwards) it took more than 20 years to complete. ~~The~~ Urgent steps are necessary to start this work, as the old flora is completely out-of-date and of not much use now. It might easily take ~~so~~ another 20 years to revise the flora and make it up-to-date.
- (c) Exchange of specimens with other herbaria must be organised
- (d) Publication of really good taxonomic papers in the Records of Botanical Survey of India. This journal is so irregular that many scientists outside thinks that it has stopped
- (e) A good account of the Calcutta herbarium itself, its history, ~~its~~ details of its collections, number of type and co-type sheets etc may be published. (Phanerogams and Plant Geography)
- (f) Full review of botanical work done in India during the last 10 years may be published.

D. Chatterjee
20.1.51.

Present activities of the Botanical Survey of India.

An idea of the present activities of the B.S.I. could be obtained from the annual reports of the last five years. It has to be admitted that considering the wonderful work done in the early days of the Survey the present activities can not be even compared. Commenting on the annual report of 1947-84 of B.S.I. the Science and Culture ~~has~~ 15:275 (1950) says "Report will no doubt indicate that the affair of the Survey were not being attended to in the right direction. The Survey in fact exists in name only with one officer maintained by the Govt. of India at its headquarters at Sibpur and another officer who is in charge of the Industrial Seed Section of the Indian Museum. . . . It is all the more distressing when one notes that botanists from far and distant countries are constantly hunting for Indian plants and we are yet unconcerned over the matter. etc."

It is unfortunate to note that due to ^{lack of} properly qualified men and ^{necessary} funds, the B.S.I. is in a state of stagnation. With practically no trained staff it has been stated that they had been doing plant introduction. It appears that the amount of work involved in doing this work on a scientific basis i.e. replicated trial, trial in the states, ~~seed~~ selection of special types for special areas, assessment of their value, utilisation ~~for~~ in breeding programmes with available Indian relatives etc. ~~is~~ is not clearly understood. Nothing whatsoever is done on these lines and no records or reports on these points are ^{ever} published.

~~If the Botanical~~ A department like the B.S.I. should concentrate on the following:—

- (a) Actual survey of unexplored areas of India. This should be planned in consultation with the Central Agriculture Research Institute, so that along with the Survey some ideas of the methods of agriculture in these regions and types of crops cultivated could be available.
- (b) Identification of collections by Herbarium taxonomists
- (c) Preparation ~~of~~ of floras and revision of existing floras
- (d) Exchange of at least 4000 to 5000 specimens with 15 or 20 leading herbaria of the world.
- (e) ^{with} ^{regular} publication of these results.

A careful investigation on all these points would show that major part of the above work is not done and papers on atom bomb experiment in Pacific ~~and~~ Ocean — a subject of very little significance to the Botanical Survey of India being contributed by some of the officers (Science & Culture 12:500; 1947)! The importance of B.S.I. can only be kept alive if the work is

Botanical Survey of India

Recent papers:--

- ① Botanical Survey of India — D. Chatterjee, Nature 160: 387 (1947)
(Reprint herewith)
- ② Early history of Royal Botanic Garden
Calcutta — D. Chatterjee, Nature 161: 362 (1948)
(Reprint herewith)
- ③ A plea for the reorganisation of Botanical
Survey of India — Editorial in Science & Culture 11: 105
(~~1945~~^{Sept.} 1945)
Reprint not available: librarian may be
requested to send this number (Sept. 1945)
- ④ Botanical Survey of India
— Editorial comments on annual report for
1947-48 Science & Culture 15: 275 (1950).
- ⑤ Botany in India: Present position and prospects
— A.C. Joshi in Science & Culture 14: 395 (1949)
- ⑥ Biological Research and Teaching
Editorial comments in Science & Culture 14: 393 (1949)
- ⑦ Department of Scientific Research - 2
Editorial comments in Science & Culture 14: 85 (1948)
- ⑧ National herbarium for India
D. Chatterjee and A.K. Ghose in Science &
Culture 13: 328 (1948)
- ⑨ Botanical Survey of India; past - present and the
future — K. Biswas
Presidential address to the Botanical Society of
Bengal (copy sent herewith)
- ⑩ Botany in India — Paper cutting dated 1.1.51.
of a Calcutta paper
(copy herewith)

Object of Botanical Survey:—

1. Survey of the natural vegetation of the country including raw materials for industry.
2. Maintenance of Industrial section of the Indian Museum for the public. This is of considerable educative value.
3. Maintenance of a National Herbarium
4. Introduction of ~~ornamental~~ plants on very limited scale (ornamental plants only)
5. Preparation of a new flora of India and flora of different Indian States.
6. Exploration within and outside India.

- In all countries Botanical Surveys do not exist.
- (a) In South Africa, there is a well organised botanical Survey under the Union's Ministry of Agriculture. The present Director is Dr. R.A. Dyer. He is assisted by eight officers trained in Systematic Botany. Two of his assistants were trained in the Kew Herbarium.
- (b) The Belgian Govt. have organised a ^{botanical} Survey of their colony Belgian Congo in Africa under the ministry of agriculture and Professor W. ~~Robyns~~ Robyns of Brussels with a field staff stationed in Africa is compiling the flora of Congo.
- (c) For East Africa (Rhodesia, Tanganyka etc), proper Botanical Survey has been taken up very recently through the help of the British Colonial Office. Previously the Forest Department did some survey work. The Survey work is now progressing under two Kew trained staff (Mr. A.A. Bullock and B. Verdcourt). An well-known forest officer who has done some wonderful exploration work in East Africa and is responsible for the discovery

of many new timber trees and some new genera is Mr. P. J. Greenaway.

(d) In Malay Peninsula considerable Botanical exploration and survey were done ~~through~~ ^{by} the staff of the Singapore Botanical Garden (Ridley, Burkill and Holttum). The Botanical Survey of the Malay Peninsula has been most thorough in South East Asia.

(e) The Dutch and the Americans have also made fairly good botanical survey of the Dutch East Indies and the Philippines. Notable names for this area, are Blume, Merrill, Lam, Van Steenis etc.

(f) In Australia, the Botanical Survey work appears to be divided into three or four zones and categories

(i) Plant Introduction Section
with Dr. W. Hartley as Principal Officer
with research officers for agronomic
trials and systematic botany.

(ii) Division of Science Service

↓
Botanical Science

↓
National Herbarium, Sydney.
(New South Wales)

Dr. R. H. Anderson - Chief Botanist;
assisted by six botanists.

(iii) Queensland

↓
Govt. Botanist, Brisbane

(Dr. C. T. White; He is assisted by
four botanist who work on pasture
plants, poisonous plants, rainforest trees
and grasses and sedges.

It will be evident that in (a), (b) and (c) above, Botanical Survey of some form exists. In (d), (e) and (f), the work of the Survey is managed in different ways. A common factor in all cases is the presence of really good and well ~~ex~~ equipped Herbarium with highly trained men in Systematic Botany. Presence of a Association of a botanical garden with a good herbarium is addition help.

But it should be clearly borne in mind that even ~~without~~ in the absence of a botanic garden ~~all the~~ most of the objects of a botanical survey can be achieved provided there is a well equipped Herbarium and a library.

Above is only a brief note about the Botanical Survey. If Director wishes, another note will be submitted to elaborate some of the above points.

D. Chatterjee
9. 1. 51.

The work of the Royal Botanical Gardens at Kew, England was ^{originally} ~~aiming~~ the botanical survey of the British Empire and collection of all records regarding the raw materials of all countries. At present, this institute is to be regarded as the most authoritative institute for critical taxonomic work on plants including economic plants of India.

THE BOTANICAL SURVEY OF INDIA

By DR. D. CHATTERJEE

The Herbarium, Royal Botanic Gardens, Kew

PROF. MUNRO FOX¹ has recently given an admirable account of the Zoological Survey of India. This department has had a glorious past when viewed in the light of scientific achievements; but as the result of various restrictions of the Central Government in India, its activities during the past fifteen or twenty years have only been a shadow of those which preceded them. Its sister department—the Botanical Survey of India—has also suffered from lack of funds and retrenchment of staff, and at present is in a far worse condition than the Zoological Survey.

The Botanical Survey of India is one of the oldest of the scientific departments of the Government of India, for it was created² in 1892. At that time, the science of botany was served by the independent efforts of botanists scattered throughout India. The object of the Survey, as an organisation, was to co-ordinate work on plant surveys which was being carried on in institutions under the Central and the different Provincial Governments. These were: (1) the Office of the Reporter on Economic Products with the Government of India, Calcutta; (2) the Royal Botanic Garden, Calcutta, (3) the Botanic Garden, Saharanpur, (4) Office of the Government Botanist, Madras; and (5) Office of the Government Botanist, Bombay. The Botanical Survey was started with King (the late Sir George King) as the director and leading botanist, and all other departments joined him and were subordinate to him with the exception of the Reporter on Economic Products—who maintained his independent office. There were roughly four zones of the Survey.

In the north, Duthie was the director of the Saharanpur Garden. This garden—established by the East India Company—flourished so well in those days that it was often compared with the Royal Botanic Garden at Calcutta. The great reputation of the Saharanpur Garden was due to Duthie and his predecessors Royle, Falconer, King and Jameson.

All of them were responsible for building a fine herbarium and putting together a good collection of Indian plants, mainly from northern India and the north-west Himalayas.

In the west, Cooke was the government botanist, Bombay, and he collected widely in the Presidency and housed his collection in the herbarium at Poona. Unfortunately, this collection was largely destroyed by a fire in 1902 and a duplicate herbarium had to be organised at the Agricultural College, Poona. This herbarium still exists. Cooke was followed by Woodrow and Gammie. Others who enriched our knowledge of botany of this part were Stocks, Ritchie, Dalzell and Gibson³.

In the south, Lawson was the government botanist, Madras, and he was succeeded by Barber. They organised a representative herbarium of South Indian plants at Madras. This collection was transferred to Ootacamund in 1898 and was taken back to Madras after four years. But in 1910, the bulk of this herbarium was transferred to Coimbatore, where it still exists. The botany of south India was further supplemented by some good collections by Bourne, Gamble, Fischer, Fyson and Ramaswami.

In the east, the activities of the Royal Botanic Garden, Calcutta, were increased to cover areas in the east like Assam, Burma and the Andamans. Prior to the organisation of the Botanical Survey this was not possible, and planned exploration of the country was not done. The Lushai Hills of Assam were visited by Gage in 1899, the vast deltaic regions of the Ganges called the Sundribans were explored by Prain in 1902, an expedition to Central Burma was carried out by Gage in 1903, and Burkill explored the Abor Hills in north-east Assam during 1911-12. Owing to their semi-wild conditions Burma and the Andamans presented some difficulties in those days, but King was especially interested in obtaining plants from these areas. He took up the work by sending a trained collector to live and do plant-collection work in Central Burma. He also succeeded in training two convicts in plant-collection work in the Andamans. In 1899, Prain visited the Andamans with his Indian collector Shaik Mokim and brought back to Calcutta a fine series of plants. In Burma the work was greatly supplemented by the collections made by other individuals, and mention should here be made of persons like Prazer, MacGregor, Cubitt, Robertson, Rodger and Meebold. The Forest Department of Burma early in this century organised a forest

herbarium at Maymyo, and this was maintained in excellent condition mainly through the efforts of Lace and Parkinson⁴. Thus the results of all these explorations were published and are now available in the first five volumes of the *Records of the Botanical Survey of India*. Besides this, the main herbarium at Calcutta received considerable addition to its collection, and some of the duplicates of sheets were sent to Kew, Edinburgh, and other herbaria in Europe.

It will be evident from the above that, from its inception until about 1923, the Botanical Survey met, in very large measure, the needs for which it was created. The possibility of overlapping of work of this Department with the Forestry and Agriculture Departments was guarded against by the creation of a Board of Scientific Advice in 1903. This Board, however, did not meet as frequently as was expected, and as a result the Forest Department gradually gained ground at the expense of the Botanical Survey. The great objective of a complete knowledge of the vegetable covering of India and her bordering countries had to be sacrificed, and the study of geographical botany had to be greatly restricted in favour of forest botany. This is amply clear from some of the changes that followed one after the other. In 1903, Duthie retired and his post of director of the Saharanpur Garden was abolished. The herbarium was taken over by the Forest Department, and the whole collection was transferred to the Forest Research Institute, Dehra Dun, in 1910. In 1912, the Reporter of Economic Products retired and his post was also abolished. The commercial and trade problems connected with plant resources, which was previously dealt with by the Reporter, were transferred to the Botanical Survey and were dealt with by an officer entitled the Curator of the Industrial Section. The Board of Scientific Advice ceased to function and the co-ordination of plant exploration work with South India and Bombay broke down. The annual exploration grant of Rs.5,000 (about £375) was discontinued, and in 1932 a post of a botanist attached to the Calcutta Garden was withdrawn. The final blow came in 1937 when the director's post was abolished. As a result of all these, the present staff consists of only two officers and the department has languished to a state of complete stagnation.

In 1938, some Indian men of science met to consider this unhappy situation and suggested steps to be taken for the improvement of the Botanical

Survey⁵. It is, however, easy to comprehend the great importance of a well-organised department like the Botanical Survey. Such a department with a central herbarium with its library and museum and some six regional herbaria would serve as a key department for the dissemination of knowledge to agriculture, forestry, pharmacology, horticulture and other departments. The problem of soil-conservation in drier parts of India could be tackled by this department. It could also assist workers in plant genetics, ecology and those interested in the introduction of exotic plants. The central herbarium should form the basis of a National Herbarium of India and should be staffed with first-class personnel. Some of these men should be specialist taxonomists on certain plant groups and others should be specialists on the geographical botany of limited areas. On a modest estimate some two dozen officers would be necessary for the central and the regional herbaria. It must be admitted that it will be difficult to find these men, and I agree with Prof. Fox's statement that there are "very few field naturalists in India". I understand that under a Government of India scheme a few young university graduates in botany are being trained in Calcutta; but beyond this, nothing is clearly known about when the Government intends to revive the Survey. This revival needs a central direction, and unless this is done at an early date, there can be no progress and consequently no benefit from botanical exploration and research.

I hope that in the new India the Government will possess men in authority with the foresight and the vision to effect among other things the early revival of the Botanical Survey of India. If it is possible to recruit men of the knowledge and qualities of those giants of the past like King, Prain, Duthie and Gage, no man of science in India need doubt that the revival of the Survey would be of the greatest help and of far-reaching benefit to India.

¹ *Nature*, 159, 865 (1947).

² From the available records the year of creation of the Botanical Survey appears to be 1892, but in *Science and Culture*, 9, 110 (1945) this was given as 1889.

³ During the last twenty years the late Rev. Blatter and his successor, the Rev. Santapan, have organised another good herbarium of western Indian plants at the St. Xavier's College, Bombay.

⁴ A second herbarium was established by Rhind at the Agricultural College, Mandalay, Burma. Unfortunately, both these herbaria at Maymyo and Mandalay were completely destroyed by the Japanese during their occupation of Burma (1942-45).

⁵ These were discussed in *Science and Culture*, 9, 109 (1945).

EARLY HISTORY OF THE ROYAL BOTANIC GARDEN, CALCUTTA

By DR. D. CHATTERJEE

c/o Royal Botanic Gardens, Kew

A GENERAL account of the Royal Botanic Garden, Calcutta, has been given by Biswas¹, and some of the detailed incidents connected with the formation of the Garden are also available in the published papers by Anderson² and King³. The Calcutta Garden is perhaps one of the oldest gardens in Asia, and it is not generally realized that it was established by the Honourable East India Company as early as 1787, essentially for the purpose of increasing the commercial riches of the Company, and *not* for the advancement of botanical knowledge in India and elsewhere. It was cleverly planned by an army officer, and the proposal was so attractive to the directors of the Company that they readily agreed to the establishment of such a garden. The detailed correspondence on the subject is preserved among the old records of the East India Company. This was made available to me through the courtesy of the Keeper of Records, India Office, London. Some of these letters have been published both by Anderson² and King³, and it is not intended, therefore, to re-publish them here. The remainder of the letters afford other valuable and interesting information, and the purpose of this note is to reveal some of the lesser known facts regarding the origin and development of this garden.

Unfortunately the exact date on which the Garden was started is not clearly known. Carey⁴ says that it was started in March 1786—a statement which seems to be wrong from an examination of the correspondence, and which has been corrected by Anderson. Prior to the official sanction by the East India Company, part of the Garden existed around the country house of Lieut.-Colonel Robert Kyd. This plot of land formed the eastern part of the Botanic Garden after its formation and has been referred by Roxburgh⁵ in connexion with a tree—*Garcinia cornea* Willd. The actual proposal for the establishment of a botanic garden near Calcutta was submitted to the then Governor-General (Sir John Macpherson) at Calcutta by Lieut.-Colonel Kyd on June 1, 1786⁶. It was clearly stated in this letter that the idea of establishing a botanic garden is 'not for the purpose of collecting rare plants as things of mere curiosity,

but for establishing a stock for disseminating such articles as may prove beneficial to the inhabitants as well as to the natives of Great Britain, and which ultimately may tend to the extension of the national commerce and riches". It was suggested that the proposed garden would grow teak for ship-building, various spices (such as cinnamon, cardamon, clove, black and white pepper and nutmeg) for sale in Europe, and other articles of commerce (such as cotton, tobacco, indigo, coffee, camphor, gum-yielding plants and tea). The proposal was duly supported by the Governor-General, who wrote by way of recommendation to the Directors of the East India Company, "the garden may be formed as a general plantation or nursery where the cultivation of the cinnamon and the different articles mentioned by Col. Kyd may be attempted". The cost of maintaining this garden was suggested by Kyd at the low figure of Rs. 150-200 per month⁷.

Kyd derived this inspiration, which led to the suggestion of forming a botanic garden, possibly from two sources: (1) in the garden of the previous Governor-General (Warren Hastings), he found some flourishing cardamon trees growing, and also some natural seedlings which promised a "rising plantation"; (2) Kyd himself was a keen gardener and at that time collected and grew, in the compound of his country house at Salimar, many foreign plants of economic and horticultural value. He used to secure these plants from the captains of the Company's ships returning from voyages to the Far East. Hence, his own experience had convinced him that some of the spices of the East Indies could be grown in India. If this could be achieved, it would have a further advantage, namely, the Dutch monopoly of the highly prized cinnamon and other spices would be broken.

The Court of Directors, too, as clever business heads of a commercial organisation, were alive to the benefits of this scheme. In their letter of approval, dated July 31, 1787, they duly stressed among other things the cultivation of cinnamon. This portion of their letter runs, "The experiment respecting the cinnamon tree in particular must be made in different parts and soils of those extensive provinces in order to ascertain with certainty whether this spice can be produced in Bengal equal to that which grows on the island of Ceylon". We are aware that by extending your experiment too far, the expenses may increase to an amount of which you may not at present have any idea. But so sensible are we of the vast importance of the objects in view, that it is by no means our intention to restrict you in point of expense in

the pursuit of it. In the cultivation of cinnamon tree in particular, we foresee a great source of wealth to the Company and of population and opulence to the provinces under your administration. Most earnestly therefore do we recommend it to you to proceed in your endeavours to propagate this spice in different places, and that you avail yourselves of the abilities and zeal of Lieutenant-Colonel Kyd herein."

The next step was the selection of a site and the acquisition of the land. This presented some difficulties. In his letter dated August 10, 1786, Kyd said that he, in company with a Mr. Hay, examined a plot of ground on the western bank of the river in the vicinity of Calcutta. One area which seemed suitable was not available, as on inquiry from Mr. Jonathan Duncan, the revenue officer, Kyd learnt that the ground had been allotted to the followers of Tishore Lama of Tibet, and had been consecrated for religious purposes. Kyd had of necessity to forgo this plot and chose a second area where the fort of Muggah Tannah and the barracks of the Moorish garrison formerly stood. This fort fell to the British under the leadership of Clive at the time of recapture of Calcutta. It was then demolished by mining. The condition of part of this ground was stated to be "perfect wild, overgrown with brush wood and subject to the overflow of the tide". This ground was adjacent to a plot of land which Kyd already possessed, and where he had his country house with his garden. A portion of this area fell within the limits of the Burdwan district (the extended limit of that time), and the Burdwan land was acquired from the Zamindar by exchanging an equivalent portion of East India Company's land elsewhere. Other lands of the Company, measuring 148 *bighas* 9 *cottahs*, were given to the residents of the ground, to induce them to leave the area, and the amount of compensation granted to them for their huts and personal effects was Rs. 3,166/4/0. Having obtained the ground, Kyd with 109 labourers started to dig a ditch round the plot of land and also erected a fence. The fence was necessary to exclude wild buffaloes, which frequently visited the area. The monthly cost of this work, excluding the bamboo fencing, amounted to Rs. 384/0/0, and the work must have taken several months, for we read in a letter of the Treasury Officer (Buxey), dated May 1, 1787, that Kyd has drawn "one thousand sicca rupees" for this purpose. This amount appears to be only an instalment.

Those readers who have visited the Royal Botanic Garden, Sibpur, Calcutta, will recall that the ditch made by Kyd still exists, and is fairly continuous

around the Garden, even now. A part of the ditch, that is, the ditch which now separates the Bengal Engineering College from the Botanic Garden, existed earlier, as this ditch formed part of the boundary of the old fort of Muggah Tannah. The portion of land, east of this ditch, that is, part of the present area of the Bengal Engineering College, was Kyd's personal land. This was given (at least, the major part of it) to the Botanic Garden at the time of its formation (1786-87), and remained so until 1820. In that year the same portion was given to the Lord Bishop of Calcutta for the establishment of a College. It appears that this old ditch of Muggah Tannah thus formed a ditch of convenience at the time of handing away a part of the garden land for the purpose of Bishop College, and the same holds good as a good demarcating line even now. The original ground of Kyd's garden house was known under various names, such as Kyd's Garden, Royd's Garden, Barwell's Garden, and in 1819 as Metcalf's Garden.

The next stage was to lay out the Garden and to start the commercial plantation of cinnamon and other spices. In this, Kyd was unusually ambitious but he was never a botanist. These two facts led to the complete failure of the enterprise after a few years of experiment. His ambitious aspect is evident from the fact that he wanted to grow every desirable economic plant of every country in his Garden. By a voluminous correspondence with British agents in different parts of Asia, he secured an amazing variety of plants, such as Persian dates, Persian tobacco, Chinese tea, oranges, English apples, cherries, apricots, sandalwood from the Malabar coast, and other plants like black pepper, bread-fruit, and a number of gum-producing plants. All these were duly planted out; but, as was to be expected, most of them perished in the uncongenial climate and soil of Calcutta. The cultivation of teak was also abandoned for the same reason in later years¹¹.

Kyd's term of honorary superintendentship of the Company's Botanic Garden was not a long one. His failure to grow so many commercial and economic plants should not be regretted by the present botanists of India, as his success (if it could have happened) might have altogether changed the destiny of the Garden. It appears to me that by his failure he paved the way to a botanic garden, which in the hands of his able successor played a very important part in the advancement of Indian botany. The name of Kyd should, however, be remembered with reverence as the founder of the Calcutta Garden which was destined to become a botanic garden and not a cinnamon plantation of the tea-garden type, on which so

much stress was laid from the beginning, and at every stage.

Kyd died on March 26, 1793, and was buried in the South Park Street Cemetery in Calcutta. Two years later a memorial was erected in the Botanic Garden and a marble urn was placed on it. The site for this memorial was selected by Roxburgh, and the inscription on the urn says, "To the honour of Robert Kyd, an officer of the army and founder of this garden; placed by A. K. 1795" ("Roberto Kyd, mil. trib. horti fundatori posuit A. K., MDCCXCV"). The initials A. K. refer to his relation, Alexander Kyd, who was then a major in the Bengal Engineers, and who later constructed the Kidderpore docks.

Kyd was succeeded by Dr. William Roxburgh, who on November 29, 1793, was appointed the first salaried superintendent of the East India Company's Botanic Garden. It was Roxburgh who got a sanction of Rs. 15,000 to build quarters for the Superintendent. This house was completed after 1795, and Roxburgh's request for a further sum of Rs. 5,000 (presumably over-spent in building the house) was refused by the Company. This house is a three-storied building on the river-bank and is still occupied by the Superintendent of the Garden.

During and since Roxburgh's tenure of office, the Botanic Garden near Calcutta has attracted the attention of the scientific world, and the scientific study of Indian plants dates from his time. (A few years prior to Roxburgh, Dr. Koenig was in India. Roxburgh regarded him as an intimate friend and also his preceptor. Koenig was essentially a plant collector who sent his plants to Linnæus (father and son) and Retzius.) Roxburgh has been, therefore, rightly called the 'father of Indian botany'.

It will be easily understood that, under the direction of a man of science such as Roxburgh, devoted to the scientific study of Indian plants, the original aims of the Garden as emphasized by the directors of the Company were not followed. Much about the same time the East India Company was being gradually eclipsed by the British Government. This was being done through the provisions of Pitt's India Act, and as such the control over Roxburgh became less and less effective. This allowed him to carry on as he liked.

For official purposes, the date of actual sanction to the proposal of establishing a botanic garden by the court of directors of the East India Company (that is, July 31, 1787) should be regarded as the beginning of the Garden. Prior to this date only a part of the Garden existed around Kyd's country house, which was included later within the botanical garden com-

pound in 1787. On the basis of this date, the Royal Botanic Garden, Calcutta (as it is now known), completed its 150th year on July 30, 1937, and this was celebrated in a fitting manner on January 6, 1938. The latter date was apparently fixed for the sake of convenience only, as many British and foreign men of science, including the Director of the Royal Botanic Gardens, Kew, happened to be present in India at that time.

The East India Company during the years 1786-87 governed the country, collected the revenue, and administered law and order. Yet constitutionally its position was like that of landlord under the Nawab of Bengal. The Company at that time was still a private trading company, and could not be regarded as a part of the British Government. Robert¹⁰ says, "the constitutional relation between the Nawab of Bengal and the East India Company at that time was indeed complicated. The Company secured the administration of military power and criminal justice (*Nizamat*) from the Nawab, and the power to collect revenue and administer civil justice (*Diwani*) from the Moghul Emperor." The above statement clearly shows that the East India Company was actually ruling the country under the shadow of the Nawab of Bengal. The Nawab was relieved of this heavy responsibility, as he got annually more than 40 laacs of rupees from the Company as lease-money. This position was cleverly stated by Clive thus, "the Nawab had only the name and shadow of authority, yet this name . . . this shadow, it is indispensably necessary that we should venerate".

This relationship should be clearly understood, as this represented the last days of the Moghul period, a dark period of the East India Company, and the formative phase of the British rule. Unless this is understood, one is liable to assume that the East India Company really represented the British Government at that time.

¹ Biswas, K., "150th Anniversary Volume of the Royal Botanic Garden, Calcutta", 2-12 (1942).

² Anderson, T., *J. Agric. Hort. Soc. India*, N.S., 1, 169 (1869).

³ King, G., *Ann. Roy. Bot. Gard., Calcutta*, 4, Pt. 1, i-xi (1893).

⁴ Roxburgh, W., "Hortus Bengalensis", 2 (1814).

⁵ Roxburgh, W., "Flora Indica", 2, 629 (1832).

⁶ This date is given as January 1, 1786, by Biswas (*l.c.* 2). This is probably a printer's error.

⁷ An idea of the present-day cost can be formed from the amount spent in 1944-45, which was Rs. 1,20,928.

⁸ At that time Ceylon was under the Dutch Government.

⁹ Biswas' statement on this point is contradictory (*l.c.* 2). King says (*l.c.* 3) that this site was selected by Roxburgh and not by Kyd himself, as stated by Biswas.

¹⁰ Robert, P. E., "Historical Geography of the British Dependencies", 7, India, Pt. 1 (1916).

¹¹ King, *l.c.*, iii.

Amrita Bazar Patrika; Calcutta
1. 1. 51.

BOTANY IN INDIA

Sir.—In the recent Indian Cabinet reshuffle and re-allocation of portfolios the newly created Ministry of Natural Resources and Scientific Research will handle Mines and Geological Survey of India, while the Botanical Survey of India has been left in charge of the Ministry of Food and Agriculture. It is not known on what rational basis this distribution of subjects has been made.

It is strongly felt that the expansion and improvement of the present condition of the Herbarium and the re-organisation of the Botanical Survey of India to advance the cause of botanical science should not wait any longer, as the loss of authentic specimens means loss not only to India but also to the botanical world. Deferment of the expansion of the Herbarium and exploration work is positively detrimental to the development of many industries based on the vegetable resources of the country.

It is, therefore, earnestly hoped that the Government of India will take immediate steps to revive the activities of the Botanical Survey of India under the newly-created Ministry of Natural Resources and Scientific Research by extending the Herbarium, so that it can serve the cause of science and humanity at large in our progress towards national development.—P. K. BOSE, Hony. Secretary, Botanical Society of Bengal, Calcutta.

Present activities of the Botanical Survey of India

An idea of the present activities of the Botanical Survey of India could be obtained from the annual reports of the last five years. It has to be admitted that considering the wonderful work done in the early days of the Survey the present activities cannot be even compared. Commenting on the annual report of 1947-48 of Botanical Survey of India, the Science and Culture 15: 275 (1950) says "Report will no doubt indicate that the affairs of the Survey ~~has~~ were not being attended to in the right direction. The Survey in fact exists in name only with one officer maintained by the Government of India at its headquarters at Sibpur and another officer, who is in charge of the Industrial Section of the Indian Museum.....It is all the more distressing when one notes that botanists from far and distant countries are constantly hunting for Indian plants and we are yet unconcerned over the matter....."

It is unfortunate to note that due to lack of properly qualified men and necessary funds, the Botanical Survey of India is in a state of stagnation. With practically no trained staff it has been stated that they had been doing plant introduction. It appears that the amount of work involved in doing this work on a scientific basis i.e. replicated trial, trial in the states selection of special types for special areas, assessment of their value, utilization in breeding programmes with available Indian relatives etc. is not clearly understood. Nothing whatsoever is done on these lines and no records or reports on these points are ever published.

A department like the Botanical Survey of India should concentrate on the following :-

- (a). Actual survey of unexplored areas of India. This should be planned in consultation with the Central Agricultural Research Institute, so that along with the survey some ideas of the methods of agriculture in these regions and types of crops cultivated could be available.
- (b) ~~Ind~~ Identification of collections by Herbarium taxonomists
- (c) Preparation of floras and revision of existing floras
- (d) Exchange of at least 4,000 to 5,000 specimens with 15 or 20 leading herbaria of the world.
- (e) Regular publication of these results.

A careful.....

A careful investigation on all these points will show that major part of the above work is not done and papers on atom bomb experiment in pacific ocean - a subject of very little significance to the Botanical Survey of India being contributed by some of the officers (Science & Culture 12: 500; 1947)! The importance of Botanical Survey of India can only be kept alive if the work is concentrated on the above broad lines and the survey is immediately reinforced by couple of first class trained men on reasonable salary. Fuller expansion may wait till better times. There has been lot of public criticism about the Survey. So far as I know there was no T.A. grant for plant exploration work. The original amount ~~of~~ was Rs 5,000/- per annum which has been stopped since 1932. Because the Survey work is restricted due to the absence of funds, consequent work in the herbarium is also restricted due to the absence of collected specimens. The quality of the trained personnel is also not very high and it is not surprising that the standard of productive work is poor.

(a) ~~No~~ uptodate work on regional floras was published during the last ~~via~~ five years. Yet Dr.H.F.Mooney working in a far off place (Sambalpur), with no herbarium has published a first class flora (Supplement) of Bihar and Orissa.

(b) The most important work on which much of the future industrial development of the country will depend, is a revised flora of India. Nothing has been done in this direction nor any proposal submitted. When the original flora of British India was published in (1872 onwards) it took more than 20 years to complete. Urgent steps are necessary to start this work, as the old flora is completely out of date and of not much use now. It might easily take another 20 years to revise the flora and make it uptodate.

(c) Exchange of specimens with other herbaria must be organised.

(d) Publication of really good taxonomic papers in the Records of Botanical Survey of India. This journal is so irregular that many scientists outside think that it has stopped.

(e) A good account of the Calcutta herbarium itself, its history, details of its collections, ~~xxxx~~ number of type and co-type

sheets etc. may be published.

(f) Full review of botanical work (Phanerogams and Plant Geo-
-graphy) done in India during the last ten years may be published.

BOTANICAL SURVEY OF INDIA

Recent Papers:

- (1) Botanical Survey of India - D.Chatterjee, Nature 160:387(1947)
(Reprint herewith)
- (2) Early history of Royal Botanic Garden, Calcutta -
D.Chatterjee, Nature 161:362 (1948) (Reprint herewith)
- (3) A plea for the reorganization of Botanical Survey of India -
Editorial in Science & Culture, 11:105 (Sept.1945)

(Reprint not available: Librarian may be requested to
send this number (Sept.1945).
- (4) Botanical Survey of India - Editorial comments on Annual
Report for 1947-48 Science & Culture 15:275 (1950)
- (5) Botany in India : Present position and prospects -A.C.Joshi
in Science & Culture 14:395 (1949)
- (6) Biological Research and teaching ; Editorial comments in
Science & Culture 14:393(1949)
- (7) Department of Scientific Research -2Editorial comments in
Science and Culture 14:85(1948)
- (8) National herbarium for India ; D.Chatterjee and AK Ghose in
Science and Culture 13:328(1948)
- (9) Botanical Survey of India; past - present and the future -
K.Biswas, Presidential address to the Botanical Society of
Bengal (copy sent herewith)
- (10) Botany in India - Paper ~~in~~ cutting dated 1.1.51 of a Calcutta
paper (copy herewith)

Objects of Botanical Survey:

1. Survey of the natural vegetation of the country including raw
materials for industry
2. Maintenance of Industrial Section of the Indian Museum for
the public. This is of considerable educative value.
3. Maintenance of a National Herbarium.
4. Preparation of a new flora of India and flora of different
Indian States.
5. Exploration within and outside India
6. Introduction of plants on very limited scale (ornamental
plants only).

In all countries Botanical Surveys do not exist.

(a) In South Africa, there is a well organized botanical ~~x~~
survey under the Union's Ministry of Agriculture. The present
Director is Dr.R.A.Dyer. He is assisted by eight officers
trained in Systematic Botany. Two of his assistants were trained
in the Kew Herbarium.

(b) The Belgian Government have organized a botanical survey
of their

of their colony Bengian Congo in Africa under the Ministry of Agriculture and Professor W.Robyns of Brussels with a field staff stationed in Africa is compiling the flora of Congo.

(c) For East Africa (Rhodesia, Tanganyka etc.), proper Botanical Survey has been taken up very recently through the help of the British Colonial office. Previously the Forest Department did some survey work. The survey work is now progressing under two Kew trained staff (Mr. A.A. Bullock and B. Verdcourt). An well-known forest officer who has done some wonderful exploration work in East Africa and is responsible for the discovery of many new timber trees and some new genera is Mr. P.J. Greenaway.

(d) In Malay Peninsula considerable Botanical exploration and Survey were done by the staff of the Singapore Botanical Garden (Ridley, Burkill and Holttum). The Botanical Survey of the Malay Peninsula has been most thorough in South East ~~Afr~~ Asia.

(e) The Dutch and the Americans have also made fairly good botanical survey of the Dutch East Indies and the Philippines. Notable names for this area, are Blume, Merrill, Lam, Van Steem's etc.

(f) In Australia, the Botanical Survey work appears to be divided into three or four zones and categories

(i) Plant Introduction Section

sith Dr. W. Hartley as Principal Officer with research Officers for agronomic trials and systematic botany.

(ii) Division of Science Service

Botanical Science
National Herbarium, Sydney
(New South Wales)
Dr. R.H. Anderson - Chief Botanist;
Assisted by six botanists.

(iii) Queensland

Govt. Botanist, Brisbane
(Dr. C.T. White; He is assisted by four botanists, who work on ~~pl~~ pasture plants, poisonous plants, poisonous plants, rainforest trees and grasses and sedges.

It will be evident that in (a), (b) and (c) above, Botanical Survey of some form exists. In (d), (e), and (f), the work of the the Surve is managed in different ways. A common factor in all cases is the presence of really good and well equipped Herbarium with highly trained men in Systematic Botany. Association of a botanical garden with a good herbarium is addition

additional help. But it should be clearly borne in mind that even in the absence of a botanic garden most of the objects of a botanical survey can be achieved provided there is a well equipped herbarium and a library.

The work of the Roybal Botanical Gardens at Kew, England was originally the botanical survey of the British Empire and collection of all records regarding the raw materials of all countries. At present, this institute is to be regarded as the most authoritative institute for critical taxonomic work on plants including economic plants of India.

Above is only a brief note about the Botanical Survey. If Director wishes another note will be submitted to elaborate some of the above points.

Sd/-D.Chatterjee
9.1.51.