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## NORMAN GILL : THE PIONEER HORTICULTURIST OF THE HILLS OF UTTAR PRADESH - A TRIBUTE

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Present article, in brief, deals with the major works of Norman Gill in the field of horticulture and botany (which he conducted in the hills of U.P., India) during his service as Superintendent, Government Kumaun Gardens at Jeolikote (Nainital). His scientific work was not published in any scientific journal but it came out in the form of a report published by the U.P. Government for their own records. Hence, his pioneering contributions in the field of horticulture and botany did not receive any attention and remained unrefereed to.

**Key Words :** Contributions to horticulture, Kumaun Gardens, Norman Gill

### INTRODUCTION

Like unsung heroes there are many unsung scientific workers whose achievements are entombed in the pages of history and one such example is Norman Gill, a pioneering horticulturist and botanist. He came to India in the year 1900 and served the country till 1922. His research work did not receive the recognition that it really deserves as he did not publish his work in any of the scientific journals of that time. Details of his work however, are only available in the '*Annual Reports of Kumaun Government Gardens* brought out by the United Provinces Government Press, Allahabad. As this was not a well circulated publication, his contributions remained unnoticed by the fellow research scientists working in the field of horticulture, medicinal plants and agriculture. Even his name was not mentioned in Burkil's *Chapters of Indian Botany* and to the compilers of *Wealth of India*, a publication of CSIR. This article is a tribute to Gill who made exemplary scientific contributions and achievements in the field of horticulture and botany.

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## EARLY HISTORY

Norman Gill was born at Penryn Falmouth, a countryside in England in the year 1878. He was the second son of Richard Gill whose work on the Himalayan Rhododendrons was well known. He started his career as a gardener under his father, who at that time was at Tremough Garden, which supplied the large specimens of *Rhododendron arboreum* for the Himalayan House at Kew in 1898. From Tremough he went to Royal Botanic Garden at Kew, where he served for two years. In The year 1900 he was appointed Assistant Curator in the Calcutta Botanic Gardens (now under Botanical Survey of India) and later he came to Uttar Pradesh and worked at Agra, Lucknow, Kanpur and Allahabad Botanical Gardens (Anonymous 1924; 1925; Shah 1992).



AT KUMAUN GOVT. GARDENS, U.P.

In the year 1908, the Department of Industries, Government of United Provinces (now Uttar Pradesh) decided to open a horticultural research station in Kumaun Hills at Douglas Dale, an estate in Jeolikote about 17 km from Kathgodam railway station. The Jeolikote garden, the Terai & Bhabar Gardens at Haldwani, Ramnagar and Kitcha, the Sukhatal Display Garden, the Kutchery Garden (near Commissioner House), and Government House Garden at Nainital were collectively known as Government Kumaun Gardens and had its headquarters at Jeolikote. Davies, the then officer-in-charge of the Lucknow Botanic Garden, (now National Botanical Research Institute) was asked to take over charge of this newly established garden and he worked there for a very short period. Norman Gill, who was working at Allahabad Botanic Gardens at that time took over the charge of the Government Kumaun Gardens on March 22nd 1909. He was instructed to encourage fruit-growing in the hills. This marked the beginning of an important chapter in the history of horticulture in the hills of Uttar Pradesh.

## INTRODUCTION OF HORTICULTURAL CROPS IN KUMAUN

Various varieties of a number of fruit crops like grapes, strawberries, oranges, nectarines, plums, apples, pears, cherries and apricots were introduced by him from different nurseries of Washington, U.S.A. Of seven varieties of grapes with a view to explore the possibilities of establishing wine industry, the Red and White ones imported from Italy were very successful. Strawberries with large sized fruits and very good flavour were introduced from England. He has also introduced early, medium and late growing varieties viz. Royal sovereign and Noble. According to him rich loamy soil with plentiful water supply and sunny aspects were very important for successful strawberry cultivation. Even now Jeolikote, which is on the bus route to the famous hill station Nainital, is famous for strawberries.

Gill introduced 19 varieties of oranges. He had a large stock of young trees of Tangierins, Mandarins and Selvilles varieties, which were introduced for developing citric acid (at that time synthetic citric acid was not much known) and canning industries. About his experiences on orange growing he remarked, "I am confident that there is future for the orange in the localities of lower hills, where there is good soil and water for irrigating purposes; the chief difficulty is to find a suitable land with necessary rich soil and adequate water supply".

He has also tried to introduce a number of varieties of olive trees from France; but in spite of his repeated efforts and experiments, the olive trees failed to fruit at Jeolikote, even though they flowered well (Now these have fruited at Jeolikote). He attempted the grafting of imported scions of olive on locally growing wild species of *Olea cuspidata* but could not succeed, leading him to remark that the locality of Jeolikote and even Chaubattia (which came under him later) were not suitable for olive cultivation.

A number of varieties of bananas from Bengal, Burma and China were also brought under cultivation by him in Kumaun hills.

Avacado pears (*Persea gratissima*) and Japanese persimmon (*Diospyros kaki*) were also introduced, and both fruits were liked by the Britishers but after their departure in 1947, the demand of the fruits fell down. Now these are seldom seen in the market.

## MEDICINAL CROPS

Gill also tried to introduce saffron in Kumaun hills. As he failed in his attempt to get the corms (seeds) from Kashmir, 5000 corms were imported from Holland and planted at Jeolikote and Nainital. The corms at Jeolikote rooted and died but these at

Nainital flowered well. The flowers, however, perished due to excessive rainfall. He was of the opinion that saffron may thrive well on the sandy slopes between Ranikhet and Almora, where the soil is sandy loam and the rainfall is much less.

Belladonna roots and leaves were in good demand in those days, as the tincture and alkaloid extracted from them were used in various pharmaceutical specifics suitable for the treatment of a number of diseases related to nervous system. Its another main use was in belladonna-plaster much used for controlling muscular inflammations. Gill wanted to grow this herb and for this he made several enquiries about the wild growing belladonna, which was reported to occur in western Himalayan region and Kumaun hills-also a part of this region. At that time, he did not know that belladonna (*Atropa acuminata*) occurs only in Kashmir and Punjab (now Himachal Pradesh) Himalayas and not in U.P. hills. Nevertheless, he procured the seeds of European belladonna (*Atropa belladonna*) and successfully cultivated it at Kutchery Garden, Nainital and Government Garden, Chaubattia. These plants contained high percentage of total alkaloids (Shah 1970). He also wanted to establish an extraction unit for the belladonna alkaloids. During 1920-21 the cultivation of belladonna was discontinued due to short fall in the market-demand.

Gill tried to introduce Ipecac (a famous drug for amoebic dysentery) from Mungpoo, Darjeeling (West Bengal). The plants rooted at Jeolikote and died due to insect infestations. He also introduced Roman Chamomile (*Anthemis nobilis*) reputed for its anti-inflammatory and antispasmodic properties from Paris. This herb did not do well at Jeolikote but flourished well at Nainital. Due to the absence of a good market available the growing of Roman chamomile was subsequently abandoned. However, a voucher specimen collected by Gill from the plants cultivated by him is lodged in the herbarium of National Botanical Research Institute, Lucknow, along with his other collections. He was also successful in growing of *Mentha pulegium* (Penny royal) with good quality of essential oil.

#### ESTABLISHMENT OF CHAUBATTIA AND SITHOLI GARDENS

Even while conducting experiments at Jeolikote, Gill felt the need very much for establishing an experimental station in higher hills. He wrote, "My ambition is to see a government orchard (suitably situated) established, where I could demonstrate to prove by scientific cultivation that Kumaun is capable of producing many kinds of fruits that would bear favourable comparison with that produced in any part of the world, and I am morally certain that I should succeed". He persuaded the Government of United Provinces for a garden in the upper hills and in 1914 Chaubattia Garden and in 1915 Sitholi Garden (Almora) were transferred to him.

## INDUSTRIES IN KUMAUN HILLS

Gill wanted to establish a number of industries based on the plants grown by the hill farmers. They were : basket making, silk rearing and canning of fruits.

To develop basket making industry he introduced several species of *Salix* (Majnu) viz. *S. nigricans*, *S. elliptica*, *S. viminalis*, *S. potandra*, *S. purpurea* in Jeolikote and Nainital. These species grew well there but unfortunately the local people did not take any interest in this project. Similarly, he introduced Mulberry (*Shahtoot*) from France, Kashmir and Pusa to rear Eri silk-worms, brought from Assam, Sisal (*Agave* sp.) 'rambans' from Kanpur and later from West Indies were introduced by him to develop fibre and rope industry in the hills. He was of the opinion that 'Sisal' plantation along the hedges and waste banks should be encouraged.

Commenting on Eri silk-culture industry, he wrote, "The Mulberry is very easily and cheaply propagated, and if orders were received well in advance I could supply practically unlimited quantities, I cannot induce our local cultivators to grow Mulberry or to rear Eri silkworms, the reason advanced being that they and their family members are too busily engaged with their lands and cattle. This condition of things is not peculiar to the district of Kumaun, although perhaps the *pahari* cultivators may be considered as belonging to one of the most conservative classes in India: what suited their forefathers had necessarily been the best for them, and any suggested divergence from the well trodden paths of their ancestors is looked upon with a certain amount of suspicion. There are, of course exceptions to the rule, and it is to the more enlightened members of the community that, we must look for a lead in the matter of discarding old grooves and the adoption of the scientific (and incidentally more profitable) methods of cultivation, I am constantly demonstrating".

Gill was the first to think about the establishment of a well equipped factory for canning and extraction of juices, oils and essences from the fruits grown by the private cultivators of different localities. He identified Ramgarh as the most suitable locality for this purpose. He constantly persuaded the government and was able to get a sanction of Rs. Eight thousand in 1920-21 for establishment of the factory and for purchase of equipments. Unfortunately, the funds had to be surrendered as the processing equipment could not be imported from U.S.A. (Later in 1955 a processing factory was established at Ramgarh by the Directorate of Fruit-Utilization U.P. Hills and came to a close in the year 1970 due to ill-management).

## COLLECTION OF WILD PLANTS

Gill had his training in collection and identification of plants at Kew Botanic

Gardens. So, as his hobby, he made numerous excursions in Almora, Nainital, Pauri Garhwal and Tehri Garhwal and also in the Bhabar and Tarai regions and collected a number of interesting wild plants, which he identified himself and established a herbarium of his collections under *Flora of Kumaun* at Jeolikote. In the year 1918, Sri Ram Lal Sah, a young man who was appointed as a clerk under him at Chaubattia took interest in Gill's plant collection and identification work. Seeing his interest, Gill also trained this young man in the art of collection and identification of wild growing plants and made him incharge of the small herbarium of his own collection. In 1922, when Gill left for England on medical leave due to his ill health, he gave away his collection to Sah. Sah not only maintained his collection but also added his own to it.

In the year 1948, Prof. K.N. Kaul, a Kew trained botanist and founder director of National Botanic Gardens (now National Botanical Research Institute) Lucknow, visited Government Gardens, Chaubattia and met the then Superintendent, V. Sane, who later became the founder Director of the department of Fruit Utilization, U.P. Hills. During discussions Prof. Kaul came to know from Sane, about Gill's collections, which was being maintained by Sah for more than 26 years. Prof. Kaul persuaded Sah to donate the collection to the newly established National Botanic Gardens, Lucknow. Sah presented Gill's collection on October 19, 1948, where it is available now for consultation and study under *Gill's collection*.

#### AGRICULTURAL CROPS

Gill had not only introduced horticultural crops but also introduced a number of agricultural crops like groundnut, soyabeans, ginger, cardamom, potatoes, etc. He was successful in introducing ten new varieties of potatoes in Kumaun hills. Out of these, the variety 'Long keeper' has become very popular in Kumaun. He concluded that potato cultivation should under no circumstances be allowed on the same land continuously for more than two years to avoid impoverishment of the land.

Gill introduced eight varieties of soyabeans for experimental purpose and had arrived at the following conclusions on soyabean cultivation in hills-the best varieties of soyabeans can only be grown in very rich soil; the hilly nature of the district, poor soil, and the cost of transport are the factors that would prevent profitable cultivation of the soyabean, the best use to which soybeans can be applied in Kumaun is for green manuring; the most useful varieties for manuring are 'Black seeded', 'Bhat' and Nagpur varieties, which can grow freely in comparatively poor lands, where the large seeded and oil producing varieties fail entirely. His other introductions of vegetables were Asparagus, Sea-kale (*Crambe maritima*), sugar-beet and edible mushrooms, after many successive experiments.

## ORNAMENTALS

Gill did considerable work in the field of ornamental plants and a number of imported ornamentals were introduced at Sukhatal Display Garden, Kutchery Garden at Nainital and at Jeolikote. Amongst such plants introduced were hybrids of *Rhododendrons*, *Clematis*, Japanese Maples, *Magnolias*, *Spiraeas*, Flowering thorns, *Hydrangias*, *Clianthus*, *Paeonias*, *Dracaena* species etc. The introduction and domestication of *Primula winteri* from the wild, as an ornamental plant was one of his important contribution to horticulture (Anonymous 1924).

## OPIUM POPPY

In the year 1915-16 the Opium Department requested Gill to conduct experiments on opium poppy and find out the high opium yielding varieties. Experiments on opium poppy were conducted and 102 varieties were introduced to find out maximum morphine yielding varieties. Gill discovered that the 'Tibetan' variety from Tibet was the highest yielding variety and this was recommended for cultivation.

## TERAI AND BHABAR GARDENS

In Terai & Bhabar Gardens, Gill found that it is profitable to grow coffee plants under mango trees. The other experiments, which he conducted in these gardens were the introduction of three species of *Datura*, Negroe Coffee (*Cassia auriculata*) and Cape Gooseberries.

## DEPARTURE FROM INDIA

Norman Gill had been persistently requesting the government to open a school of horticulture in Uttar Pradesh. Before this materialized, he had to leave for England on 23 September, 1920 on privilege leave. He returned from England after availing the privilege leave but again he had to go on leave in 1922 on medical ground. When Norman Gill reached England he fell ill and the disease diagnosed was gastric carcinomatosis (Cancer of Stomach). Norman Gill died on 14 April, 1924 leaving behind his wife Nora Gill and two sons aged 15 and 7 years. The financial condition of Gill family was not so good therefore, Nora Gill wrote to the Govt. of U.P. for pecuniary assistance for the education expenses of her sons. She pleaded that if Norman Gill would have survived for 10 months more, he would have been entitled for a pension of Rs. 400/- p.m. Her correspondence with Govt. of U.P. lasted from 1924 to 1926. At last she was sanctioned Rs. 5000/- only which were paid in two instalments.

Gill is no more, but he has to be remembered for his untiring zeal for work and significant contributions for the development of horticulture and agriculture in Kumaun Hills. We owe him a great deal for initiating various scientific horticultural studies in the region and training a number of workers. He was truly an avid and highly skilled horticulturist and botanist of the bygone days.

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