

## A RECENTLY DISCOVERED MANUSCRIPT BY LINNÆUS

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IT is a well-known fact in medico-historical research that the pharmacopœia, which was published in Stockholm in 1775 under the title of "Pharmacopœia Svecica", and at that time received with much enthusiasm both in Sweden and abroad, was prepared with the co-operation of Linnæus himself. The keen interest which the great botanist displayed in the production of a newer work, that might be substituted for the antiquated "Pharmacopœia Holmiensis", published in 1686, was also proved in many ways. (For the last-mentioned work see S. Lindroth in *Lychnos*, 1943, and E. L. Backman in the *Proceedings of the Uppsala Medical Association*, 1923/24.) That Linnæus already in his youth had his attention directed to this subject is shown by a small manuscript, which, like the bulk of his manuscripts left, belongs to the Linnean Society of London, and which just bears the title "Pharmacopœia Holmensis"; and in the correspondence exchanged for many years with his intimate friend, Dr. Abraham Bäck, president of the Collegium Medicum in Stockholm, the question is raised repeatedly from 1749 onward of a fresh and improved pharmacopœia. "You, my friend, who are the only person at the Collegium Medicum, if anything can be done, should touch up the pharmacopœia", writes Linnæus on October 23, 1749, and a month later Bäck sent a list of the medicines of animal origin in the older pharmacopœia, from which he wishes to delete more than two thirds. After the College some years later (1753), in conformity with a royal decree, had seriously attacked the task of compiling a new "dispensary book", Linnæus probably followed the development of the scheme with constant interest; this is seen *inter alia* from the academic dissertations ventilated during his presidency; for example, "Plantæ officinales" (1753), "Censura medicamentorum simplicium vegetabilium" (of the same year), and several others.

It must, however, be said for the Medical College that serious difficulties arose which prevented a start being made with the work. A circular letter which had been sent to the medical faculties, physicians and apothecaries of the country had certainly caused all sorts of proposals and suggestions to be sent in, and contributions of varying value. These—the greater part of them preserved in MS. No. 151 at the Caroline Institute's Library (Stockholm)—had in their turn been sent to the members of the College; but when the manuscript proper was to be prepared, it consisted of a series of beginnings. In 1755 the various parts were certainly distributed so that each and every one should deal with a certain section, and it was also from the start agreed that in the first instance the British dispensatories, the Pharmacopœia Londinensis and the Pharmacopœia Edinburgensis, were to serve as prototypes. But as easily and often happens, when it is a question of collective work and divided responsibility, none seemed to take the matter seriously—at any rate nobody but the president, Bäck. His admonitory voice was heard time and again at the College, but his appeals to his colleagues were apparently without effect. After eight years had thus passed without the work having advanced, Bäck, in the year 1761, found it necessary himself to undertake

the task of drawing up a proposal, which of course was received with approbation by his colleagues. For Bäck, who was very busy, partly as a medical practitioner, partly in his capacity of physician to the royal family, and was forced to stay for lengthy periods at the royal palaces outside Stockholm (Drottningholm, Ulriksdal), the acceptance spelled a serious amount of labour; and it can be understood that for that reason he was forced to seek assistance from his friend, Linnæus. The latter entertained a keen interest in pharmacology, particularly that part of it concerned with simples (simplicia), that is, materia medica; he had published Part I of a work dealing with the vegetable substances, and with a certain regularity there occurred a course of lectures on this subject in his academical teaching at Uppsala. At Bäck's request, he has now clearly undertaken to elaborate this part on Bäck's behalf. This is apparent from his letter to the latter, dated November 17, 1761, in which he begs Bäck insistently to procure a royal mandate for the patent of nobility which King Adolf Frederik had promised him, and for his part, he makes the following promise: "I on my part shall do my best that Materia medica will be to your credit and honour". In December of the same year he had sent to Bäck the promised manuscript; for he relates, in a letter of December 22, that he has sacrificed two nights for fair copying, which had therefore been done somewhat hastily, and that in such circumstances a further examination might be found necessary, etc.

As is easily understood, there has been some curiosity regarding the particular nature of Linnæus' manuscript; but it has been generally assumed that it had not only formed the basis for the section on materia medica as this appeared in the completed pharmacopœia when it was eventually published, but also that it was in every particular identical with this version. But there need no longer be any doubt about this point, since I have succeeded in showing that the original manuscript in question is still preserved in perfect condition, although it has hitherto been overlooked by investigators. It consists of 26 foolscap pages, comparatively well written, and is inserted in the previously mentioned volume No. 151 in the library of the Caroline Institute—perhaps the fact that the manuscript happened to be bound up with the previously noticed papers from the early years 1753–54 has contributed to its real nature being overlooked. In this case, too, it is the vegetable substances that are listed. The botanical kingdom quite as a matter of course occupied the foremost place in the heart of 'Princeps Botanicorum'. It should be added, however, that in another manuscript in the same collection (No. 42), there is a sheet in quarto which, in Linnæus' handwriting, contains a fairly hastily made summary of *Animalia* and *Lapidea*, that is, medicines derived from the animal and the rock kingdoms.

It has been possible for me now to show by a detailed comparison with the final version that Linnæus' contribution was not accepted without any further ado, but has been subjected to quite a thorough treatment, including both deletions and additions; but it is impossible to enter upon this matter here in detail. It is not without interest to have been able to ascertain that the revision was carried out by Anders Jahan Retzius, who, in 1769, assisted Bäck in his work on the pharmacopœia—for it was not until that year that the work was finished on Bäck's part. Retzius was eventually

appointed professor at the University of Lund, where he carried out pioneer work in several branches of natural history and took the initiative in the foundation of the Royal Physiographical Society; he also founded a family which has produced several prominent natural scientists.

Although the manuscript here mentioned can scarcely be counted as particularly remarkable, the discovery must yet from a Swedish point of view be considered as valuable. For Sweden's national treasure of Linnæan manuscripts was, as is generally known, in the year 1784 so greatly reduced through the indifference of the Swedish authorities and the enthusiasm of James Edward Smith, that every addition is welcomed with satisfaction.

## KILIMANJARO: CRATER FUMAR- OLES OF KIBO AND SEISMIC ACTIVITY DURING 1942-45

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**I**N view of the interest aroused by the activity of Kibo, after several groups of fumaroles had been located in its crater in 1942, it may be useful to give an account on further developments which have taken place on Kibo lately. Full reference to the activity of Kibo's fumaroles in October 1942 and their increased number in February 1943 (see Fig. 2) was made by the writer in a paper on Kibo, past and present, which was sent for publication in July 1943 to the *Journal of the East African Natural History Society*. This paper is as yet unpublished, through printing delays due to the War.

The occasional observations of 1942-43, made in spare time, and the scanty information obtained from the few mountaineers who visited the true crater, were of little value. Only patient observations, requiring time, would permit more precise deductions on events on Kibo. Despite great difficulties attached to regular observations made on a mountain nearly 20,000 ft. high, the indispensable periodical readings of the fumaroles temperature of Kibo were arranged at the beginning of 1944. I was greatly assisted in this by the honorary secretary of the Mountain Club of East Africa, Mr. J. W. Smethurst of Marangu, who put at my disposal the well-known guide Johane, who accompanied me to Kilimanjaro on several occasions. Johane and an assistant, after having been shown how to take temperatures, ascended Kibo once every month (weather permitting) to record temperatures at five selected spots in the crater. They also checked up the amount of precipitation from four rain-gauges or totalizers installed by me in 1943 on Kilimanjaro, after consultation with Group-Captain A. Walter and suggestions made by Mr. C. Gillman in 1938. These rain-gauges were situated at altitudes of 7,200 ft., 9,400 ft., 12,500 ft. and approximately 16,000 ft. The instrument

at 16,000 ft., being unsuited for the collection of snow, was brought down this year at 14,000 ft., on the saddle west of Mawensi, and I took up and installed on March 10, 1945, two snow-gauges at 16,000 ft. and 19,100 ft. for the British East Africa Meteorological Service.

The readings of the temperatures of the five fumaroles mentioned will be extended to nine in future. These five fumaroles were selected, among other reasons, for their positions south, south-east, south and west in different sectors of the crater, rather than for their high temperatures. These regular readings are sufficient to indicate important changes, should these take place. The monthly readings in 1944 give the averages shown in curve A of Fig. 3.

The slightly fluctuating curve shows a maximum temperature of 67° C. in February 1944 and a minimum of 47° C. in April 1944, making a difference of 20° C. The variation in temperature between the first and the last month of the readings is 6° C. (lower). When the precipitation figures B from the two highest stations—Peters hut, 12,500 ft., and Kibo hut, 16,000 ft.—are examined, it would seem that in the first months, the fumaroles, in other words, the thermic gradient of the volcanic plug of Kibo on the periphery of which (with the exception of fumarole No. 1) the fumaroles are placed, were affected by weather fluctuations. This is most unusual on deep-seated fumaroles as against so-called 'secondary fumaroles' the temperature of which may change very much according to the amount of precipitation. For Kibo, however, this seems disproved by the behaviour of the fumaroles later in the year.

The approximate upper-air temperatures (curve C) taken 20,000 ft. above Nairobi on the same dates as the temperatures of the fumaroles are unlikely to have been very much different from those prevalent above Kilimanjaro. They give the same evidence: that the outside influence on the fumarole temperatures is mere coincidence.

The figures obtained from the fumarole temperatures cover too short a period to allow a definite interpretation at this juncture. One has to keep in mind that fluctuations of a still greater order than



Fig. 1. TOP OF KIBO, CALDEIRA AND NORTHERN CRATER IN 1943.  
PHOTO: E. ROBSON, NAIROBI.