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Original Communications.

ON THE STUDY OF INDIGENOUS DRUGS.

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OUR knowledge of indigenous drugs has been derived from several sources. To trace the history of the subject, we have to turn to remote antiquity, to the primitive stage of mankind. In fact, we have to trace the growth of the healing art. In the early stages of civilization, when the healing art is not brought to a scientific basis, diseases are looked upon as particular entities; they are held as manifestations of God's wrath. In the savage state of society, there is no separate profession of medicine, but priests combine the office of physicians. Prayers and incantations are offered to cure a man of his disease. This is the mythological age. The substances which are used as medicines are not supposed to possess any inherent efficacy to cure diseases, but to destroy the wrath of some enraged deities.

In process of time, man makes use, for art and for medicine, those substances which he can procure easily. To him plants by the prominent and conspicuous shapes and color of their leaves, fruits or flowers, would be the first to suggest themselves for use as medicines. Accordingly, we find amongst all the races of mankind, the use of vegetable medicines. The herbalists exist in all climes and nations. Herbalism prevails more or less in all parts of the world. Another factor that has contributed to the extensive use of plants as medicines is to be found in what is commonly designated "Doctrine of signatures." Man notices the resemblance in shape or color of some product of the vegetable kingdom with some organ in the animal economy. In the ignorance of anatomical or physiological data to work upon, he thinks that these articles probably possess some actions on those organs of the animal economy which they resemble in shape, size or color. This is what is understood by the doctrines of signatures. The doctrine of signatures not only holds its sway in the savage and uncivilized period of mankind, but prevails more or less amongst the civilized nations also.

From the Rig-Veda, we learn that there was a time, when the Indo-Aryans used water only as medicine. It was the first thing that was used medicinally by them. But in process of time, they came to use plants for medicinal purposes. *Soma* by the hymns that have been chanted in its praise by the Vedic Rishis and the prominence it occupies in the Vedic literature, seems to have been the first plant used medicinally by them. It is difficult at the present day to identify the plant. From the hair splitting discussions that have been spent on its identification by oriental scholars on the one hand and botanists on the other, and also remembering that not frequent allusion is made to this plant in the post-vedic Sanskrit literature, I am of opinion, that it was not an indigenous plant of this country. Besides *Soma* there are several other medicinal plants mentioned in the Vedas. The word *Oshadi* (literally meaning heat-destroyer) which originally might have been used in reference to *water* by its lowering the bodily temperature in fever, came to be synonymous with herbs and medicinal plants. But the number of plants used medicinally in the Vedic time was not very large.

When we turn to the works of Charaka and Sushruta we find that the Indo-Aryans were acquainted with a large number of medicinal plants. In Sushruta are recorded the properties and uses of some 700 medicinal plants; all of them were not indigenous to India. Some foreign drugs were imported into this country. In ancient times there was a trade in drugs between the Hindoos and other nations. Liquorice, which does not grow in this country, was extensively used in Hindoo medicine. This grows in Asia Minor and Central Asia, and was brought to this country by the nomadic tribes of Central Asia. We find mention of it in Charaka and Sushruta. The majority of the medicinal plants mentioned in these works were indigenous to this country. Their properties were known by empirical means. Information regarding their medicinal uses was gathered from hunters and shepherds. For this purpose, physicians were enjoined to penetrate forests and climb mountains.

The works of Charaka and Sushruta appear to have been composed in the pre-Buddhist era. The rise of Buddhism gave an impetus to the study of medicine in ancient India. The edict of Asoka provided the establishment of hospitals at all principal towns and cities of India for the sick and the wounded. The Buddhist missionaries penetrating the dreary wilderness of Siberia and Central Asia preaching the tenets of benevolence and humanity to the savage tribes, also attended to treating the sick and wounded. They were in one sense medical missionaries. Teachings of the Hindoo system of medicine were also spread to the countries which adopted

Buddhism. The Buddhist missionaries brought with them drugs of other nations to India, and thus enriched the materia medica of the Hindoo physicians.

The Greek invasion was not without influence on the medical practice of ancient India. The Savants who accompanied the army of Alexander learnt much of the metaphysical, philosophical, and medical systems of the Hindoos. The successors of Alexander brought Greece and India into closer contact. Commerce was established between the two countries. It was thus that a large number of drugs of Central Asia and Asia Minor found their way to India. Greek physicians also came to know several medicinal plants of this country. As the Greeks learnt much of the healing art from the Hindoos, so the latter were indebted for their knowledge concerning several foreign drugs to the Greeks.

The rise of Muhamadanism brought about a new era in the history of civilization. The Arabs paid great attention to the cultivation of science and art. Although they did not discover or invent anything new, yet they preserved all the known sciences of the ancient world. Without them, it is doubtful if the modern world would have been in possession of the philosophical and scientific lore of the Greeks or the Hindoos. The Hindoo physicians adored the court of the rulers of Bagdad. Medical works of the Hindoos such as Charaka, Sushruta, Nidāna, &c., were translated into Arabic. The teachings of Hippocrates, Democritus, and other Greek physicians were made known to the world by the countrymen of Muhamad. When India came to be under Islam power, Muhamadan physicians were patronized by the court. The Hindoo system of medicine received a death shock at the hands of the Muhamadan rulers. The Muhamadan physicians known as Yunāni Hakims were versed in the medical lore of the Greeks. They brought with them the teachings and doctrines of the Greek masters of healing art. They also made known the properties and uses of several drugs of Central Asia. The Hindoo system of medicine on the rise of the Muhamadan power came to a stand-still; but the Hindoos were not slow in making use of those drugs which their Muhamadan conquerors had made known to them. Of all the drugs perhaps the most important one imported into India by the Muhamadan was opium. Before the Muhamadan supremacy in India, there is hardly any mention of opium to be met with in Hindoo works of materia medica. The principal works of Hindoo Materia Medica composed during the Muhamadan period of Indian history are:—

(1) *Raja Nighantu*, by Narahari Pandita. Regarding this work, Professor H. H. Wilson writes that "from the frequent occurrence of the Dakhini terms in explanation of his Sanskrit text it is inferred that he was an inhabitant of the south

of India." The date of composition of this work has been fixed by the same authority some time between the 12th and 13th centuries. (*Vide* H. H. Wilson's Works, vol. V, p. 237.)

(2) *Madana Pāla Nighantu*, by Madana Pāla, a king of Kanouj. The late Raja Rajendra Lal Mitra placed the date of composition of this work somewhere in the twelfth century (*vide* R. L. Mitra's Notices of Sanskrit MSS. II, p. 264).

(3) *Bhāva Prākasha*, by Bhāva Misra. It treats of Anatomy, Physiology, Medicine, Surgery, Materia Medica, and Therapeutics. Its date has been fixed at about the sixteenth century.* This work gives a very concise and clear account of all the medicinal plants and other animal and mineral substances used medicinally by the Hindoo physicians.

The Yunāni Hakims, that is the Muhamadan physicians of India, also have written a great deal concerning the indigenous drugs of this country. The encouragement accorded to the Muhamadan physicians by their rulers led them to produce many meritorious works on medicine. Under the patronage of the court of Dehli, the Yunāni Hakims vied with one another in paying attention to the study of indigenous drugs. Their works are not of any antiquity, hardly a century or two old. *Taleef Sheriff* is a monograph, clearly setting forth the views of Yunāni Hakims on indigenous drugs. *Mahzan-ul-Adirya* which has been made much use of by Dr. Dymock in his *Vegetable Materia Medica* of Western India is also another important work on the subject. There are several other works by Muhamadan physicians, some in Persian, and others in Urdu treating of indigenous drugs.

It is during the European period of Indian history, that our knowledge regarding indigenous drug has been much increased by the investigations and labors of botanists and physicians. The three myrobalans of the East were eagerly sought after by the early Portuguese discoverers of the sea-route to India. Indian spices were also made known to Europe by them. Informations concerning the drugs of this country are scattered in the works of European travellers and navigators to this country during the sixteenth and seventeenth centuries. At the same time several foreign medicinal plants, especially of America, were brought and naturalized in India by the Portuguese, Dutch, and other maritime nations. *Agave Americana*, *Ananasa Sativa*, *Anona Squamosa*, and several other native plants of America are now to be met with throughout the peninsula of Hindostan. Van Rheede tried to gather all the informations about the medicinal uses of the plants of this country in his *Hortus Malabarica*, which should be looked upon as the first systematic work by an European,

* The late Dr. W. C. Dutt has given strong reason for the work being a production of the sixteenth century, see Introduction to his *Materia Medica* of the Hindoos.

giving the medicinal uses of the plants of this country. But little attention was paid to the medicinal plants of this country till the foundation of the Asiatic Society of Bengal. The Society was established mainly through the exertions of Sir William Jones, who was its first president. He was as great a botanist as a classical scholar. He looked upon the Society as corresponding in its aims and objects to the Royal Society of England. The Asiatic Society has fulfilled the expectations of its gifted founder. Sir William Jones himself pointed out the importance and necessity of studying the Indian medicinal plants in a paper on the design of a treatise on the plants of India, read by Sir William Jones before the Bengal Asiatic Society, he said that "Some hundreds of plants which are yet imperfectly known to European botanists and with the virtues of which they are wholly unacquainted, grow wild on the plains and in the forests of India. The *Amarkosh*, an excellent vocabulary of the Sanskrit language, contains in one chapter the names of about 300 medicinal vegetables; the *Medinī* may comprise many more; and the *Dravyā Bhidāna* or Dictionary of natural productions includes, I believe, a far greater number, the properties of which are distinctly related in medical tracts of approved authority."*

The example set by Sir William Jones was not lost upon his successors. Roxburgh, the Linneus of Indian Botany, collected all the information about the medicinal plants of this country in his *Flora Indica*. Professor Lindley in his work on *Flora Medica* has gleaned all his information about the medicinal plants of this country from Roxburgh's *Magnum Opus*. Roxburgh's *Flora Indica* was an authority on the medicinal plants of this country till the publication of the *Pharmacopœia of India*. Mr. Clark in his edition of Roxburgh's *Flora Indica* writing in 1874, truly observed that "Roxburgh contains all the Economic Indian Botany known to him, and we have added very few economic facts since. . . . We have had plenty of Government and other reports, some very large and expensive ones it is true, but we have very little economic work by persons competent as botanists. . . . Roxburgh is most trustworthy in his Economic botany, and contains virtually all that is known on the subject." †

In the beginning of this century, John Fleming contributed a valuable paper on the medicinal plants of this country. It was a monograph of no inconsiderable value and was published in the *Asiatic Researches* Vol. XI for 1810 under the title "A Catalogue of Indian Medicinal Plants and Drugs with their names in Hindustani and Sanskrit. For the first time, the scattered information on the subject was

collected and placed before the medical profession.

The most important work, a work which is referred to by all writers on indigenous drugs composed during the early part of this century was the *Materia Indica* of Ainslie. He spent the period of his Indian exile in Madras, and has given a very satisfactory account of the drugs in common use in the Madras Presidency.

The formation of the Medico-physical Society of Calcutta, contributed not a little to the study of indigenous drugs. In the *Transactions* of that Society were described for the first time some of the vegetable drugs of this country. Wallich, Horace Hayman Wilson, Dewan Ram Comal Sen, and several others brought to the notice of the profession several native remedies.

The labors of Royle deserve special mention, to him Indian botany is much indebted. He paid especial attention to economical plants of this country. The Botanical Gardens of Saharanpore owe a great deal to his labors. In his works on the Antiquity of Hindoo Medicine, *Materia Medica*, and Botany of the Himalayan mountains, he brought to notice of the medical profession several medicinal plants in common use amongst the inhabitants of this country. The advantages which Saharanpore possesses for naturalization of plants of the colder regions induced him to try and cultivate medicinal plants of other countries. He also contributed an excellent paper on the Bazar medicines of this country to the *Journal of the Bengal Asiatic Society*. ‡

Allusion should also be made to the labors of the Agri-Horticultural Society. The Society with its branches in different parts of India has rendered some help to the cause of indigenous drugs, as is evidenced by the *Transactions* of the Society.

Sir William O'Shaughnessy, who was the first Director of Telegraphs in India and occupied the chair of Chemistry at the Medical College, Calcutta, spent many years in investigating the subject of indigenous drugs. Several drugs were for the first time chemically analysed by him. Dr. Wallich, who was at that time in charge of the Calcutta Botanical Gardens, rendered him much help in identifying the medicinal plants of this country. The combined labors of O'Shaughnessy and Wallich have produced the valuable *Pharmacopœia of Bengal*, published under the authority of the Government of Bengal in 1844. No pains were spared by O'Shaughnessy to make use of the labors of his predecessors. The publication of this work gave a fresh stimulus to the study of indigenous drugs. The subject even engaged

* Sir Wm. Jones' Works, London, 1799, vol. II, p. 2.

† Clark's edition of Roxburgh's *Flora Indica*, Calcutta, 1874, Preface, p. iii.

‡ This paper was published under the title "Articles of *Materia Medica* obtained in the Bazars of India," in the first volume of the Bengal Asiatic Society's Journal.

the attention of chemists and pharmacutists of Europe, and several drugs were admitted as official in the pharmacopœias of other countries.

The holding of exhibitions has been the most important means in increasing our knowledge of indigenous drugs. I doubt if the amount of information which we possess at present about indigenous drugs could have been derived from any other source. The idea of exhibitions originated with the late Prince Albert, under whose auspices the first one was held in London in 1851. Dr. Royle was placed in charge of indigenous drugs, but I do not think the first exhibition which was more a trial, made any material addition to our knowledge about indigenous drugs. In the second International Exhibition in London of 1862, Dr. Watson was placed in charge of the indigenous drugs. For the first time, several indigenous drugs were brought to light. Kanay Lal Dey was the principal contributors to that exhibition. The catalogue of drugs exhibited by him was subsequently published in a book form in 1866.

In the interval between the first exhibition of 1851 and the second one of 1862, several exhibitions were held in different parts of this country. But I do not think they added anything to our knowledge of indigenous drugs.

The publication of the Pharmacopœia of India under the authority of Her Majesty's Secretary of State for India marked an epoch in the history of the subject. To this day, that stands out alone as the authoritative work on the native remedies of this country. "With the view, firstly, of bringing to the notice of the profession in India those indigenous drugs which European experience has proved to possess value as medicinal agents, and which may be employed as efficient substitutes for imported articles; and, secondly, of remodelling the Bengal Pharmacopœia of 1844, Her Majesty's Secretary of State for India in Council was pleased to sanction the publication of a Pharmacopœia for India based upon the British Pharmacopœia, which, while affording all the information contained in that work of practical use in India, would embody and combine with it such supplementary matter of special value in that country as should adapt it to meet the requirements of the Indian Medical Department."*

The information that was scattered through a large number of periodicals was brought together in this work and made accessible for reference to the medical officers serving in this country. Between the publication in Calcutta of the Bengal Pharmacopœia in 1844, and the issue of the Indian Pharmacopœia in 1868, that is during the period of twenty-four years great advances were made regarding the medicinal properties and therapeutic uses of the indigenous drugs.

The establishment of Medical Colleges and Schools in this country also advanced our knowledge of indigenous drugs. The graduates whom the colleges turned out directed their attention to the subject. Kanay Lal Dey, Uday Chand Dutt, Moodeen Sheriff and several other graduates of the Indian Medical Colleges, were not slow in recognising the importance of the study of indigenous drugs. There were other laborers also in the field. Dr. Waring, who edited the Indian Pharmacopœia so creditably, was one of the most painstaking and careful observers of the properties and uses of indigenous drugs. His attention was drawn to the subject when serving out in Burma. The stock of his European medicines having been exhausted, he was in great perplexity and hardly knew what to do. In such a crisis, he turned to the medicinal plants of the country. His knowledge of Botany helped him greatly. He found indigenous drugs to answer his purpose as satisfactorily as the costly imported medicines of Europe. The series of papers under the title, "Notes on some of the Principal Indigenous Tonics, Anthelmintics, &c., of India," published in the early volumes of the now defunct "Indian Annals of Medical Science" shows the careful and painstaking manner in which he had studied the subject.

The use of the Pharmacopœia as a text-book in the colleges and schools of this country, has also been productive of some good. The Pharmacopœia Committee was not wrong in imparting an educational character to their publication. The native remedies having been rendered familiar during the period of studentship, have been often made use of by the full fledged Indian Medical graduates.

Mention should also be made to the establishment of Forest Department and Schools of Forestry in this country in increasing our knowledge of indigenous drugs. The forest officers have brought to light several plants used medicinally by the natives of this country. The late Dr. Stewart in his Punjab Plants, mentioned the large number of medicinal plants used by the rustics and villagers of the Panjab. Mr. Gamble and other forest officers have also noticed the medicinal plants of other parts of India. The increase in our knowledge of the properties and uses of the indigenous drugs by these means has not been inconsiderable.

The Calcutta International Exhibition of 1883-84 has done much towards the study of indigenous drugs. Credit is due to Mr. T. N. Mukerjee and Dr. George Watt who spared no pains to make the Exhibitions of indigenous drugs as complete as possible. The catalogue of the medicinal products of this country prepared by Drs. Watt and Warden is the most complete list of the indigenous drugs. The Government has deputed Dr. Watt to prepare a

* Preface to the Indian Pharmacopœia, p. vi.

Dictionary of the Economic Products of India. In compiling this work, information has been collected from all possible sources, and it is needless to add that it will prove highly serviceable to those who are interested in studying the subject.

The principal factors then which have contributed to increase our knowledge of indigenous drugs during this century, have been the labors of men like O'Shaughnessy, Waring, and Kanay Lal Dey, the holding of Exhibitions, the works of botanists and forest officers; and lastly, the various Scientific Societies, notably the Bengal Asiatic Society, the Calcutta Medico-Physical Society, and the Agri-Horticultural Society.

CLINICAL NOTES ON DISEASES OF THE THROAT, NOSE, AND EAR.

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Post Nasal Growths.—Considering their prevalence in Bengal and especially among its lower districts, diseases of the throat and nose have not met with that attention which their importance deserves. My experience has shown me that among the out-door patients of the Bengal dispensaries, affections of the throat are very common indeed, a not unusual result of what I shall describe later as the commonest of these diseases, is suppuration of the tympanic cavities with perforation of the membranes. The presence of pus or crusts in the external meatus directs attention to the ear, and some form of local medication to that organ is generally the only treatment followed. In more than three-fourths of these patients the throat, if examined, would have been found affected. In children it is nearly always so. The exciting cause in them is, as a rule, adenoid vegetations of the pharynx or, as they are commonly called, Post Nasal Growths. In a few it is tonsillitis, rhinitis or pharyngitis.

The frequency with which these cases of post nasal growths came under my observation startled me at first. In Burdwan I operated on over thirty cases in less than five months, but this does not nearly represent the total number who were found to have them; some refused surgical interference; in others not enumerated, the growths were so slight that scratching with the finger nail effected all the help required. The average age of my patients was seven years. The youngest was a girl of three, a private patient, who was brought to me for suppuration of the middle ear on both sides, with perforation. This case curiously enough was the only one in which the growths recurred. I attribute this to their faulty removal by means of a specially light pair of forceps made by Mayer and Meltzer after a design of their own. My oldest case was a lad of eighteen, the son of the medical officer of the Burdwan Raj Hospital. This lad

suffered from a congested and painful pharynx which I found to be granular. The vegetations were distinctly visible by the aid of a post nasal mirror, and seemed partially atrophied. No operation was permitted.

In no case was the nature, or even the situation of the disease suspected by the patient or his friends. In the majority there was suppuration of the middle ear with, or preceding perforation; in others, there was simple depression of the membranes with deafness; in a few, the tonsils, which are usually enlarged in this condition were inflamed, and several were diagnosed by the expression of face so characteristic of post nasal growths. In all, however, enquiry elicited symptoms of nasal stenosis, such as impaired phonation snoring, buccal respiration and restlessness at night.

The worst case I operated on was in the last class of those mentioned above. It was that of a beggar boy of eight, who used to occasionally favour the Burdwan dispensary with a visit for an enlarged spleen, although complicated with a posterior hypertrophy of the turbinated, he made a most excellent recovery and was highly delighted at being able to breathe through his nose once again.

In curious proof of the opinion advanced by some specialists that these growths are a cause of mental dulness, I should mention that within the last week two under-trial prisoners were sent me by different Magistrates to report if they were idiotic or imbecile. In both—their ages were 15 and 17; the naso-pharyngeal space was choked with pendulous masses of adenoid tissue. They were dull, but in no sense idiotic. In both there was deafness.

In every case of well marked post nasal growths, if permitted, I put the patient under chloroform, and remove all excess of tissue by forceps. I have hitherto almost exclusively used Lowenberg's, but it is my intention in future to try Meyer's or Gottstein's Curettes in cases where the space between the pillars of the fauces is limited. The former ought to be useful in out-patient practice, and the latter where the growth is in the form of a cushion occupying the naso-pharyngeal vault instead of in detached growths. Where the orifices of the Eustachian tubes are overlapped or encroached upon, forceps only should be used. The hæmorrhage is invariably severe, but there is seldom any danger, and at the outside the patient experiences no inconvenience after three or four days. The rapidity with which all ear troubles disappear after this operation is instructive.

I have not given any account of the causes and nature of these growths. A reference to any of the later works on Diseases of the Throat and Nose will be found to give all the information required. Perhaps that in Bosworth Vol. I; pp. 539-569, is the best.