

Millenary of  
Abū Raihān Muḥammad Ibn Ahmad Al-Birūni

THE KITAB AL-SAYDANAH  
STRUCTURE AND APPROACH  
by  
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THE KITAB AL-SAYDANAH ; STRUCTURE AND APPROACH

- Kamal Muhammad Habib -

1- INTRODUCTORY

AL-BIRUNI, on any count would be considered to be a remarkable man. There are very few people who are consumed by quest for knowledge as he was. He was a dilomat, a courtier, a negotiator, a mathematician, the first Muslim exponent of the Hindū philosophy, and in the bargain, very knowledgeable about herbal and animal drugs.

Evaluation of the Kitāb al-Saydanah today, after the lapse of nearly a millenium becomes all the more difficult, because we live today in a world of specialization. Al-Biruni's approach seems to be rather somewhat patterned on Thābit ibn Qurrah's Al-Dhakīrah fi Ibn al-Tibb and Abū Hanīfah's Kitāb al-Nibāt. It is definitely a departure from al-Kindi or Al-Samarqandī's approach in that the formulation of ingredients have been but rarely described. It also can not be called a specialized work, because the author has tried to jam all kinds of information within the compass of about 400 pages. Also the theoretical aspect which characterises the writings of the Ibn Sīnā is almost entirely absent in the Kitāb al-Saydanah, and the discussion some times is only etymological without any attempt at the discussion of the properties of herbals. The dosages in which the substitutes for the drug under discussion are, given have been described in certain cases but no indication whatsoever is available as to how a simple is to be incorporated in a compound drug. Nor are compact definition of electuaries, confections, stomachics, lohocs, suppositories or pessaries forthcoming. Like all the latter-day Muslim writers, Al-Biruni draws considerably upon the Kitāb al-Nibāt of Abū Hanīfah al-Dīnwarī, which fortunately has been edited since by B. Lewin (from alif to zā' only). Comparative work on Al-Biruni's Kitāb Al-Saydanah and other materia medica like Ibn Baytār's is still indicated to assess the different approaches adopted by the Muslim writers of materia medica during the pre-medieval period.

Martin Levey, in his introduction to the Medical Formulary of Al-Kindī (The University of Wisconsin Press, USA, 1966, pp.1-8) classifies the types of works in the field of pharmacology as follows:

1. Synony ic lists of materia medica in alphabetical order.
2. Books on poisons.
3. Medical formularies.
4. Extensive lists of materia medica, mainly alphabetical,

generally including therapeutic considerations and views of other writers on the same subject.

### 5. Tabular, synoptic treatises.

Al-Bīrūnī, as far as possible has tried to adhere to the alphabetical order. The synonyms that he usually provides against each drug are usually Greek, Syriac, Persian, Sigzī, Zābulī, Sindhī, Hindī and Khwārazmian and Tirmidhī in some cases. The work also corresponds to type 4 in the sense that he has not spared quotations from past authorities on the subject, but does not in any way conform to types 2, 3, and 5. Another complexity that arises is that rarely does he quote the work from which he cites, and we have in the majority to be content with the author's name only.

## II. - THE APPROACH

It is yet to be sufficiently appreciated what a mine of information the Kitāb al-Saydanah is in terms of the etymological discussion about the drugs names as well as in providing synonyms. Al-Bīrūnī himself emphasizes this aspect in introductory section of the al-Saydanah:

"One great difficulty about Arabic is that many of its words are similar and one has to differentiate one from the other by means of inflections and dots. The slightest of negligence in this behalf will bring about obscurity and confusion, and, if the rectification is either sloppy or imperfect, the very existence of a work becomes meaningless. One can not then decipher what was meant and this kind of negligence unfortunately has become all too common a characteristic among us. Were this not so, the works left by the Greek masters - Dioscorides, Galen, Paulos and Oribasius, which have been rendered into Arabic - would have been sufficient for us. But unfortunately we cannot depend upon them; and moreover, since rectifications and emendations have been introduced in the texts of their works, we can not extract full benefit from them.

"The translators of these works have done one great disservice to us. They have left out the names of some of the drugs which are found in our region and which carry the same names in Arabic and Greek, although having translated the text, the translator would not have had to explain and comment. For example, they have totally left out wild celery, wild carrot, hawberry, mushroom of Malta, & C. In a like manner they have omitted the names of Al-Mudkhal, Al-Māqūlāt, Ibārāt, Qiyās, and Burhān - the books on logic

- from mention. Our enemies therefore seek justification in ridiculing us for our lapses. These days a book, called Deh Nām (Ten Names) I see in the hands of the people. In the first place, it has been wrongly indited and almost useless; in the second, its text belies its name, for against each herb one does not find the ten names or equivalents.

"The Christians have a book, Yashāq Samāhī, meaning the exposition of names. It is also known as Chāhār Nām (Four Names) - that is, the Greek, Syriac, Arabic, and Persian synonyms or equivalents, of each herb are given. I saw a manuscript of this work in Syriac, and found nothing in it that reflected misreading and omission, and I therefore copies several parts from the work."

"I fully remember that a noble of Khwārazm fell sick. A prescription was sent to him from Nishāpūr and given to the apothecaries. One of the ingredients was unintelligible to the apothecaries till one apothecary claimed that he not only knew the drug but had it. The noble paid the apothecary 500 dirhams for it. The apothecary purchased the drug from the market for fifteen dirhams and handed it over to the noble. There at the people around began to remonstrate with him. The apothecary said: 'I have only purveyed that you wanted, namely, sweetwood: only you can not show me its matter.'

Al-Bīrūnī wrote the work almost at the ebb-time of his life and therefore there are many repetitions and omissions. Aloe, for instance, has been discussed in detail under the name of Siyāh Dāwarān, but also as sāb and sibr. The radif dād has been repeated in the appendix to the main manuscript, and the author's adverse experience with asafoetida as a vesicant has been repeated many a time, undoubtedly through lapse of memory.

Martin Levey says about synonyms:

"The synonymic lists of Arabic materia medica are of interest because they provide equivalent terms and related words - in Greek, Old Spanish, Berber, Hindi, and other languages. One of the better known lists in this category is that written by Maimonides (b.1135)." (Al-Kindi, P.S.). But, if Moses Maimonides' work written some 200 years after Al-Bīrūnī, covers 408 wellknown drugs, then the wealth of synonyms provided by Al-Saydanah is far greater. Our author's list of the drugs in the chapter on alif alone runs to some 138, and the coverage by Al-Bīrūnī is therefore at least ten times as broad in scope. Both, as it happened, were philoso-

phers and both concentrated a great deal on the etymology of the drugs' names. It seems that, after the decline of Islām in the East, the mantle of renaissance was taken over by the Spanish Arabs and the greatest exponent of the Greco-Arab materia medica, Ibn Baytār, was a Hispano-Arab.

It would perhaps be just as well if we could compare the approaches of Al-Bīrūnī and Maimonides. The latter, for instance, says about rātinaj (pine resin) as follows in Šarh Asmā'al-Uqqār (No. 352):

"It is also called ratina (Ρύτιον). This the resin which the people of the Maghrib (Berbers), call rajīnah and the people of Egypt qulfūniyā. It is also called zāft al-ghadhāwā - It is the resin of the male pine (al-sanawbar al-dhakar) of the dry terebinth (al-darw al-yabis). On the contrary, the resin called in ancient Greece is the resin of the small pine (tannūb) and not al-qulfūniyā."

To quote just from a cross example (the entry on rātinaj missing along with the whole chapter on the radif re), Al-Bīrūnī, on the other hand, proceeds about ādharbuyih which is also known as ādharbū and today as Cyclamen europaeum or sow-bread as follows:

"Called tālūn and atrūkiyā in Roman (i.e. Greek), its root is known as litfūrās and litfūrīn. In Syriac it is known as artānīthā and its root as dawā-i-artānīthā. Among the pharmacists it is held that its Persian equivalent is balāl and it is known also as qatād. Called galīm shū too, since it cleanses wool, it is used as beard wash by the older people. Abū Al-Khayr in his gloss to the Kinnāsh of Paulus Aegineta says that it is saffron root. I should presume that he has inferred wrongly.

In so far as the Greek (which Al-Bīrūnī rather interestingly calls Roman, undoubtedly because the Muslim world of the East was better acquainted with the Byzantine Empire which included Greece) synonyms are concerned, he has had to depend upon Hunayn bin Ishāq, Ibn Māsawiah, Māsarijawaih, Abū Al-Khayr and others, with the result that he got them second-hand or third hand. An interesting transcription, for instance, is that of Cato the Censor who is spoken of as Qātājānis. Similarly, Gaius Plinius Secundus or Pliny the Elder (27-79) is Aflīmūn in the text. Thalictrum spp. surfaces as thālqatrūn, and so on.

The approach therefore of Al-Bīrūnī is to give, first of all, as many synonyms as possible with regard to a

plant or animal drug and then to attempt to describe it. At times, however, he himself does not know a drug, but, all the same, quotes different statements and then gives his own opinion. He would like to assimilate as much knowledge as he can without fully digesting it. For example, he describes ambrosia, or nectar, as ambrūsiyā. It is obviously not a plant of the family, Ambrosiaceae, as it is a North American genus. What he obviously means is a polypharmaceutical but what he has described is a herb! I shall content myself my quoting two instances.

About hūm al-maiūs, which in all probability is home plant or Ephedra pachyclada Boiss. (family, ephedrales), Al-Bīrūnī says:

"In Saghdī it is khum, 'arzād maghūshī in Syriac, and āftāb parast and hūyaghūn in Persian.

"The Magians states as follows (about the plant): "It is a trunkless tree that grows in Azerbejan at a place which none can reach. The snakes there used to eat the fledgelings of two birds. An angel brought at last a hūm bough and placed it in the nest of the birds. The snakes thereat grew timorous and their fangs were closed. The bough, however, took root and is still there. That which is present there today is the self-same bough."

All the species of Ephedra spp. are medicinally important, but Al-Bīrūnī, in any case, wanted to pack as much information on both hearsay and first-hand knowledge and what he has quoted is probably a distorted version of some Sassanid legend which he heard from someone who himself probably got it tenth-hand.

Another rather interesting and equally amusing account that he gives is with regard to an alexipharmic drug, called tiryāq-i-harawī. He states (radif tā, No. 5):

"According to Turanjī, it is a herb found in Herat. Its leaves are like those of lily and its seeds like those of white lily. It possesses a pleasant odour, and its bulbs are obtained in the same way as those of iris. It is a theriac for snake bite.

"Turanjī narrates the belief held by the people of Herat to the effect that, if by means of a milky herb which in common parlance is known as theriac, ten worms are caught and placed in a closed vessel such that they eat each other up and only one worm survives, that surviving worm shall act as an instantaneously fatal poison.

"Another person has stated that in Kāshghar or Balāsa-gūn occurs a herb known as qaraūt, meaning black grass. If this 'grass' is cut by means of a knife and is not washed but is instead used for inflicting a cut on a female goat, it acts as an instantaneous poison."

Now from what possibly appears to be a monocotyledonous plant, Al-Bīrūnī has moved swiftly to a possibly euphorbaceous plant, thence to worms and later to a herb that is known as black grass! The intention is not to be discursive, but to feed as much information, rational or irrational, to the reader, with his own mind moving very fast.

We must also not forget that, while in our time, the Linnaean system serves as a standard, in Al-Bīrūnī's time no such system existed. One word, for instance, can denote two entirely different plants. Shaybah, for instance, means wormwood or Artemisia absinthium L. (family Compositae), but it could also denote Alectorie usneoides Ach. or Parmelia perlata Ach. (tree-moss; family, Parmeliaceae). So, if Al-Bīrūnī gives an account of shaybah in such a way that it is impossible to determine whether it is the composite plant or tree-moss that is implied, it is because he had to correlate the various descriptions of the herb. As it is, while the external appearance described by him could correspond to the tree-moss, the medicinal properties are those of absinthium.

He says, for example, that the plant presents the appearance of a plant whose leaves appear to have been trimmed by means of secateurs and also that it occurs as a cultivated variety and as an escape. The second statement nullifies the effect of the first. The appearance is that of a lichen and the properties correspond to those of absinthium.

### III. - THE VALUE OF AL-SAYDANAH'S SYNONYMS TODAY

As I have already pointed out, we should not forget that Al-Bīrūnī was a product of the pre-Medieval Age. The Muslim factor had reached the Trans-Oxan region barely two centuries before Al-Bīrūnī's birth almost contemporaneously with its arrival in Sind, through two outstanding generals, Qutaybah bin Muslim in Central Asia and Muhammad bin Qāsim in Sind.

In probability an Uzbek hailing from Khwārazm or modern Khiva in the Uzbek S.S.R. who was Persian by culture, Al-Bīrūnī perhaps knew many dialects as is attested by the synonyms he gives. Syriac synonyms he probably bases on the work he has already referred to, the Chāhār Nam or Yashāq

Samāhī, while the Zābulī dialect he must have picked up in Afghanistan. The Sigzī names should be particularly important, both etymologically and historically, as this dialect is now lost. Similarly it would be interesting to study the Sindhī synonyms of the herbs and to see whether they have undergone any modification today.

To quote one instance, he gives the equivalent of the herb, jintiyānā or chiretta as nāgar mūthā. Today, of course, nāgar mūthā denotes cyperus, but as chiretta belongs to the family, Gentianaceae, one wonders whether Al-Bīrūnī has interpreted the name wrongly or whether the Hindī synonym has undergone a change.

There are also occasions on which Al-Bīrūnī, despite the shadow of old age, failing sight and hearing and constant dependence on his amanensis, Abū Hāmid Ahmed bin Niheshī can be surprisingly incisive. I shall cite a few instances of his remarkable etymological accuracy to show how his work can still serve as guide today.

Under sha'ar al-jabār and sha'ar al-ghūl he has described two ferns as follows:

"39. Sha'ar al-jabār. - It is asparsiyā wushān which is apariyāwush. It is also called sha'ar al-jinn, lihyat al-himār, and kuzbart al-ba'ir. It would be described shortly, sha'ar al-himar is, in fact, an apocopation of sha'ar al-jabār.

"40. Sha'ar al-ghūl. - It is tarikhūmānas in Greek. This is the correct conclusion. It is not maiden-hair, as many would have us believe. Some call it adyanātūn which is the maiden-hair. It grows alongside the maiden-hair. It is rather like the herb tāres which is sarakhas. Its foliage is long and equilateral, slender like the lentil, facing each other, on slender boughs that are inclined to be blackish and lustrous. People believe that its actions are analogous to those of the maiden-hair."

Sha'ar al-jabar is known as parsiya wushān in Persian today and is in all probability Adiantum capillus veneris L. or some other species of the same genus (family Pteridaceae). On the hand, sha'ar al-ghūl would be Trichomanes Thunb. syn. Onychium japonicum (Thunb). Kze., also a fern. The description of the latter corresponds to the sporophylls of ferns characterized by circinnate venation and pinnules (as in maiden hairs). The transcription of the Greek synonym thus provides the key to the identification of the plant.

As for the discussion of the therapeutic properties of drugs in Al-Saydanah it is extremely uneven, but, surprisingly enough, is rather detailed in the Appendix to the manuscript. In the Appendix the radīfs shā' and dād are described. Often the description of herbs is intercalated with verses from Arabic literature to establish a point but on many occasions occur just as a piece of literary exercise, and entirely irrelevant at times. But there are occasions on which verses are quoted to establish a rather moot point as in his detailed discussion of utrujj which is Citrus medica Risso var. cederata (citron in English), or to show how harbours and cities have been closely associated with herbs and perfumes, as in his detailed exposition of the word, Dārīn. Al-Bīrūnī has also provided certain important clues regarding the synonyms for herbs.

Habb al-zalim, for example, is a name that is ascribed to the hemp-leaved hibiscus or Hibiscus canadensis L. (family Malvaceae), to artichoke seeds, and to Habelia aethiopica. The last is the habb al-zalim of Serapion or monkey pepper. But Al-Bīrūnī has to say as follows about zalim:

"I assert that the tree is salamah in Syriac and kir-āsūs in Greek. The plant occurs abundantly in Tā'if, as also in the mountains of Yemen, north of Mosul, and the mountains of Jūdī. In some cities some people designate it as qarāsiyāh, while others give it the name of karz. The people of Arabia make from it cups, arrows, and small items of daily usage. Its timber is reddish, powerful, solid, and strong. The foliage resembles that of the apricot tree, while the fruit is like jujube, suspended by means of a green thread in pairs. The colour of the fruit to commence with, is red, but becomes dark bay later on. Some varieties are black; some are sweet; and some sour. It comprises a large number of kinds - some sweet, some sour and some tasteless. These are the varieties by virtue of taste, but from the standpoint of the other characteristics, the position is that some threads are long and others short. Some are dark bay, some red or cornelian, & C. Every variety is astringent; but every variety carries are identical degree of astringency. In fact, the degree of astringency, is determined by differences in taste, as is well known."

It is perhaps obvious that Al-Bīrūnī is referring to a woody and not to a herbaceous tree, and the tree implied is Prunus cerasus L. (family Rosaceae) known as ālūbālū in the subcontinent. It is characterized by astringency and its bark is bitter, astringent, and febrifuge. What has

been transliterated as kirāsūs is obviously the Arabic transcription of the same word, being derived from the word, keras, meaning horn in Greek. A very allied species is, of course, the bird cherry or Cerasus cornuta Wall. ex Royle so that, though today habb al-zalim or zalim may denote more than one plant, there was no doubt in Al-Bīrūnī's mind as to what it is.

Another very sharp instance of al-Bīrūnī's acumen is demonstrated by his description of āqīr qarhā or āqīr qarhā, the Roman or Spanish pellitory root, with its original habitat in North Africa. This is what Al-Bīrūnī has to say about it:

"It is a name applied to the root of the tarkhūn-i-Rūmī, while some believe it to be the root of the Persian tarkhūn. In the mountain of Bāmiyān occurs a tarragen variety with large foliage. Its roots are thick - thicker than those of the pellitory and possess the same kind of pungency.

"Damishqī says: Baqleh al-āqīr qarhā is trakhūn, while in the Kitāb al-Saydanah it has been stated that the best variety is that which is pungent and stings the tongue. It is an inch thick and, on plucking, should reveal a red interior.

"Galen in the Miyāmīr writes: 'Its Greek name is derived from fire.' Dioscorides says that on furtharn there is a hairy umbel in the manner of the fennel. Its roots are an inch wide and bite the tongue."

Unfortunately āqīr qarhā has been too facily taken to be the Spanish or Roman pellitory or Anacyclus pyrethrum DC. (family, Compositae). This is, however, by no means the case as we propose to show.

The key to the whole point lies on the fact that, according to Dioscorides, the plant designated as is one that possesses the appearance of an umbelliferous plant but the properties of pellitory. This point has been discussed by Dymock, Warren, and Hooper in Pharmacographia Indica (Vol. II, 233) in considerable detail, and they have invoked the aid of the Makhzan al-Adwiyah by Mīr Muhammad Husayn, written some 700 years after Al-Bīrūnī's work. The mountainous variety known as ūd al-karīh jabalī in Arabic and occurring commonly in Syria is an umbelliferous plant which is also called tarkhūn, and is the root of Smyrniūm cordifolium Boiss. (family, Umbelliferae) or the plant known as Smyrniūm officinerum Hayne or German pellitory. So that

Al-Bīrūnī has already shown through citation of different sources that there are two kind of āqir qarhā. One is a composite plant and the other an unbelliferous plant, especially as he has quoted Dioscorides to the effect that it bears a fennel - like hairy umbel. The Western variety of āqir qarhā has been described by Ibn Baytār also. In fact, Al-Bīrūnī's description relates to the Western or German pellitory and not at all perhaps to A. pyrathrum DC, which in the Greco-Arab materia medica is equated with the Spanish pellitory. The name āqir qarhā, itself is derived from āqar and tagrih, meaning to cause sore. One author has already quoted Galen to show that its Greek name is derived from fire. Both varieties are possibly antiscorbutic, cordial, and stimulant, and are given in rheumatism.

It would also be obvious that the tarkhūn described by Al-Bīrūnī is also not Artemisia dracunculus L. (family, Compositae) but Smyrniūm cordifolium Boiss, and it is therefore doubtful whether tarkhun should therefore be accepted as A. dracunculus L. and not as the German or Western pellitory. Levey and Al-Khaleedy (The Medical Formulary of Al-Samargandī, Philadelphia, University of Pennsylvania Press, 1967, p.202) quote from Maimonides to the effect that tarkhūn is the name of the leaves of āqir qarhā, but that it is not confirmed by "the recent authors", who, on the contrary, say that it is a species of celery (karafs." Karafs is, of course, an unbelliferous plant and therefore what Maimonides has described is just a rehash of Al-Bīrūnī's description. This also provides us with a spoor en regard al-Bīrūnī's observation with respect to what may be defined as the phenomenon of repetition in nature, and is at very basis of induction. There are many amusing slips like the view that the offspring of a crocodile that wends its way to the land becomes skink (isqanqūr), while the offspring moving reverwards takes after the parents. These and many other suppositions like a dragon describing arabesque designs on the hajar al-yashf, that is, jasper are based probably on the Greek and Persian works tinged with a mythological colouration. This legend appears to be of either Greek or Persian provenance, possibly the former, and a great majority of the minerals described by Al-Bīrūnī fall into this type. An example from a stone called the hajar-i-Ghaghātīs would serve.

"31. Hajar-i-Ghāghātīs. - A light stone, which, according to Galen, on inflammation gives off the odour of the qafir-i-Yahūd. This name has been given because the stone which Dioscorides and others describe was found in Idqiyah in the river Ghāghātīs. These stones are soft and have asphalt sticking to them. An epileptic patient immediately falls down on inhaling their (smoke)."

While the stone implied is indeterminable in face of the scant information, one can of course infer that what has been described is a variety of concretion. It would be perhaps rather interesting to do some homework on the geographical names given by Al-Bīrūnī. For instance, what he denotes as Sufālah is not the East African port but is probably a corrupted transcription of Sangala in the Panjab, near the present-day Sanglawala Tibe or Sangla Hill. It is the Sangla of Alexander, and was visited by the famous Chinese pilgrim-traveller, Huen Tsang in A.D. 630 and is associated with the well-known herb, fāghirah, or Zanthoxylum spp. (family, Rutaceae). Asia Minor figures rather prominently with usually intact transcriptions since Dioscorides and Galen hailed from Asia Minor, and Paulus Aeginete who was alive during the Muslim conquest of Egypt in A.D. 640 and resided in Alexandria and close associations with Asia Minor. Moreover, the Muslims of Al-Bīrūnī's time were closer to the Eastern Roman or Byzantine Empire than to the Western arm of the Empire, the original Rome. Rome therefore for Al-Biruni was Constantinople.

However, sometimes the geographical locations given by Al-Bīrūnī are rather complex as in the following description of tabasheer or Bambusa arundinaceae syn. B. Bambos Druce:

\*1. Tabāshīr. - It is known in Hindī as bayn-sharochan and tushir. It is said to be Zangī. A commodity that looks like wheat flour is brought from India and is called lukur. It is claimed that this is tabāshīr-i-Hindī. It is known as qamhadarzā, tabaqshīr, and tawakshīr.

"Razi says that it is found inside bamboos in the manner of the incinerated bone. Abū Mu'adh calls it the ash of the bamboo root. Zinjānī says: If you travel eastwards from Sandān in the direction of Matāna and later of Jaymūd, reaching the territory that faces the region of Jaybwān, finally arriving at Jindrāwar, you will have reached the place tabāshīr is fetched from."

Dymock, et al. (Pharmacographia Indica Vol.III, p.589) believe tabashir to have been derived from the Sanskrit tvak-kshirā, and also that the port of Thana in India was well known for the export of tabasheer in the time of Idrisī, some hundred year after Al-Bīrūnī. So that the description, it would see, relates to what we know as Maharashtra today. Zang or Zanj is the modern Zanzibar and his description of siyāh dāwarān or aloe follows very closely the traditional description current during his time about Socotora and the occurrence of aloe there. Owing to the fact that the

book has probably been dictated, there is not only, as mentioned earlier, repetition, one drug surfacing under another name and with the radif rā' entirely omitted, but the description is dovetailed, at times telegraphic and at other vague. Such is the case with his narration of aloe.

"66. Siyāh dāwarān. - It is a synonym for terebinth. Some claim it to be oak. In Syriac it is maqir and this would be, in fact, aloe. Abū 'Ubaydah writes: 'From maqir come out aloe, followed by lycium and sediment. Maqir remains like a peg. Select a variety that is clean, smooth, and not hard. Its colour, a mixed yellow and black, should appeal to the eye in the manner of the colour of the liver. It should not be easily brittle. Do not take the black variety that breaks after some time. It is mixed with acacia and gum. The one that does not break easily does not quickly dissolve in water...

Here there are two possibilities. Either the aloe as imported has been described or a metonymic - that is, lycium in the sense of juice - expression has been employed. But the general impression that this quotation carries is that ophthalmic barberry comes out of aloe! While describing aloe, Al-Bīrūnī also refers to the Samanjānī variety. This would be Sanjān or today's Sinkiang in China. By and large, he is more at home while describing the geography of West Asia. He is thus almost correct in saying that Socotra is a day's journey from Shahar by boat.

One is surprised that despite the fact that several Greek names through the process of transliteration have been completely changed, as Plato in Aflātūn and Ptolemy in Batlīmūs, Al-Bīrūnī has managed to keep the Arabic transcriptions or transliterations as close as possible to the originals. As I have stated earlier, if the Greek word, thalictron, or Thalictrum spp. surfaces as thālqatrūn, the fault is not Al-Bīrūnī's since he is following the Arabic pattern for transliterations, with the Greek theta metamorphosed into thā' and the Greek omicron into wāw. I have personally not been able to determine the modern botanical equivalent for the herb called jinjidyūn, which Al-Bīrūnī calls a Greek herb, but there are occasions when there should be little difficulty as in the herb nifātūs, whose Arabic equivalent he has not provided, but which should be nepetos or Nepeta spp., possibly N. cataria L. (family, Labiatae) especially as the external characteristics described are those of a labiate plant. The latter-day Muslim physicians like Mīr Muhammad Husayn call Ocimum spp. asmīm, but Al-Bīrūnī followed the Arabic technique and gives the Greek synonym for bāzrūj or the white basil as uqimūm, which should be closer to the ὑκλμoδ of Dioscorides. Likewise, the

following description should also provide us with a clue to the herb described.

"11. Al-baqlah al-Fārsiyah. - Known also as tarah dahān, meaning the slave-girl's vegetable. 'It is also known as tarah qurbah, that is, the cat's vegetable, as the cat falls in love with the herb, eats it, sits under its shade, and rolls on its leaves and boughs."

The plant described is as a little reflection would show, is what is known in Punjābī as billilotan and is Nepeta ruderalis (Roth) Haines syn. N. hindostana Hook f. (family, Labiatae), especially as the family, Labiatae, is ecologically favoured in the temperate climate of Iran; hence the name.

Another point which weighs immeasurably in Al-Bīrūnī's favour is the wealth of synonyms which he has given from the Khwārazmian and other dialects of Persia and the Trans-Oxus region. For instance, buqqam or the red-wood tree has been given the Persian and Khwārazmian synonyms of dār-i-parniyān and panjak respectively. The Persian name obviously signifies the pained China silk wood", while the Khwārazmian name signifies some other characteristic and the Arabic name could have been fakam, according to Hamzah Isfahānī, so that each people views a tree according to their understanding of its principal external or internal characteristic, as in the plant, billilotan, or baqlah al-fārsiyah. This applies to many other herbs and with the taxonomy of angiosperms coming under constant review, works like those of Al-Bīrūnī and Ibn Baytār are of immeasurable value.

#### IV: AL-SAYDANAH AND MODERN FLORAL SYSTEMATICS

The most monumental work on the flora of the subcontinent, Hooker's Flora of British India (1872-1906), unfortunately remains to be updated. As R.R. Stewart has rightly emphasized (An Annotated Catalogue of the Vascular Plants of West Pakistan and Kashmir, December, 1972, p.i.) a vast amount of collecting has been done since Hooker's time, and, moreover, fringe areas like those of Swat, Chitral, Gilgit, and Hunza need to be added to the future flora. The herbs of many of these areas would probably correspond to the herbs described in Al-Saydanah. According to Stewart K.H. Rechinger and his team would be compiling the flora of Iran and Afghanistan long before Pakistan and India, and parts have already been coming out since 1963. In Pakistan also monographs on the smaller families have already appeared and number 30 to date. Many herbs today are cultivated in the subcontinent but are of foreign provenance. A very glaring example is that of turnip. A work like Al-Bīrūnī's Al-Saydanah should provide

us with a clue to the original habitat of the herb, synonyms therefore, and its therapeutic usage. The last aspect has been taken care of by Pharmacographia Indica by William Dymock, C.G.H. Warden, and David Hooper (1890-93) which needs drastic addition and revision, now that it has been re-issued by the Hamdard National Foundation, and for which the nation's thanks are due to the Foundation.

Desirability for further work on natural drugs has been emphasized ad lib, and it is not my intention to discuss this point further. But the point to be emphasized is that as a prelude to further work we must have at hand the equipment for identification and a standardized nomenclature is the best tool for the purpose. Later on, it may be possible to fix the Urdu names in accordance with the Arabic/Persian synonyms that are closest to the Linnæan names and there is little doubt that Al-Saydanah should offer a good deal of assistance, despite being discursive, at times thoroughly non-scientific, and at times generating uncontrollable resibility.

#### V. - THE THERAPEUTIC ASPECT OF AL-SAYDANAH

There is a pattern discernible with regard to the discussion of the therapeutic properties of herbs in Al-Saydanah. Under radifs bā and the appendix to the main text the information on medicinal properties is more detailed than in the other parts. To take the instance of balassan, or the balm of Gilead, one of the most major Greco-Arab drugs, it is considered by the Arabs to be valuable in epilepsy and pain, an alexipharmic, and as warming agent for the liver and stomach, an ocular tonic, and also as useful in elephantiasis. Let us now see what Al-Bīrūnī has to say about its medicinal properties.

"Balasan is deobstruent and of benefit in visceral hardness and detergent for wounds, especially if give with orris oil, since it removes the sheaths of bones. As a draught, it is recommended for sciatica. Its decoction is taken in spasms. It is indicated in wounds and as a cephalic detergent. It is of utility in epilepsy and vertigo. It cleanses the eye of opacity and is an ocular tonic. Its wood and grains are emollients in uterualgia, asthma, and pulmonary pains. Its grains are appropriate for the treatment of pneumonia and cough: the same thing is true of its oil. It is the drug of choice for the ulcera that are situated above the hypochondrium, is a curative for digestion, is a stomachic, and its decoction particularly acts as a carminative. It is deterrent for the stomach and a diuretic. It is anti-colic and a desiccant for the uteral humours. It aids (at the time of

parturition) in the discharge of the foetus and the placental membrane. As a fumigant, it is useful in all uteral affections. It cures strangury. A cerecloth of the herb, comprising its oil along with the rose oil and wax, is useful for the coldness of the uterus and for strangury. The oil is also useful in fevers accompanied by shivering. A draught of the herb taken with oil, acts as an alexipharmic for hemlock, and would be beneficial in headaches in particular."

This catalogue of the medicinal usage of the balm of Gilead is more detailed than one would find in Glossary of Indian Medicinal Plants by Chopra, et al. or in Pharmacographia Indica. It has not been described as a curative for strangury and as a diuretic. Similarly Al-Bīrūnī's description of the method for testing the purity of the gum-resin exudate, while appearing rather primitive today, should no doubt have been a useful addition in his own time.

Or take his description of balādhur or the marking nut. Our author has to state this about the drug:

"It acts as a vesicant and corrodes the blood and the humours. It exercises the warts of the body. It also removes the scars left by leprosy and tattooing. It cures alopecia but promotes the internal hot inflammations. The famous mājūn angarūyah is employed in the diseases due to paralysis, nerve palsy, facial paralysis, and amnesia. But it also stimulates phantasmagorical visions and melancholia. Used as a fumigant, it dries up the haemorrhoids of the piles. It is counted among the poisons and corrodes the humours. Yogurt counteracts, to some extent, its alexipharmic properties and walnut oil destroys its power."

This description is slightly different from the one given about its usage in the sub-continent. Here its nut is bruised and applied to os uteri to procure abortion and, as described by Al-Bīrūnī, it is considered to be a vermifuge. The oil from the nuts is used as a vesicant, and is used externally in rheumatism and leprous nodules. The gum from the bark is used in scrofulous, venereal, and leprous affections and in nervous debility. The ashes of the plant, in combination with other drugs, is used in snake-bite and scorpion-sting. It is obvious that here it is not used in the treatment of piles, but Al-Bīrūnī has emphasized this aspect. The same kind of description is given by Ibn Baytar later.

Another aspect that deserves attention in Al-Bīrūnī's work is his description of the substitutes, for example, as the substitute for the marking nut, Al-Bīrūnī - no doubt, basing his view on the past works - gives a combination of

five times its weight of the hazel-nut, one-fourth its weight of balsam, and one-sixth by weight of egg oil as the substitute. And Al-Birūnī has been rather generous in the information on abdāl (substitutes).

His description of the orris root is also equally detailed:

"Orris is calorific, demulcent, lentitive, flatulent, deobstruent, deterrent, purifier, and its juice, dissolved in honey, acts as a resolvent for the phlegm, and dispels it. A mouth-ful of its pulvis will remove freckles and spots, and will alone be sufficient. Its decoction is beneficial in scirrhus, inflammation due to malhumours, ulcers and for the face. It helps in the granulation of ulcers, even if sprayed, and promotes the growth of fresh and wholesome flesh on the bones. It counteracts exhaustion. Quaffed with wine or vinegar, it is a cure for eclampsia and weariness of the muscles. A sudorific, it is also a palliative for chronic aches and pains. It is taken as a draught with rose oil and vinegar in the treatment of pains and aches. A sternulatory too, gargles with its decoction would act as an anodyne in tooth-aches. Orris oil, when given with vinegar, overcomes reberberations and echoes in the ear, and is beneficial in the treatment of chronic cold and sinus; its oil and decoction would remove the foul odour of the nostrils, would be of use in wounds, would act as an epiphoric agent, would alleviate lumbago, and is especially recommended in coughs due to malhumours, pneumonia, dyspnoea, and cynache. It is an attenuant for the egesta that have accumulated in the chest and are resolved by it. It is drunk with concentrated must in pectoral ailments. Gargles of the herb in conjunction with concentrated must are beneficial for the throat, stomach aches and cold spleen, especially if taken with vinegar; it is especially advantageous for the spleen. It is salutary for hydrops, whether applied externally or internally. It also removes the haemorrhoids and cures gripes, controls excessive flow from the prostate gland, and regulates ejaculation. Given with wine, it acts as an emmenagogue. Women desirous of curing uteralgia sit in a bath containing its decoction. An old herb bruised and mixed with honey would facilitate the removal of bile, cholera, and phlegm; the measure of the wine ranges from on awqiyah (that is, 16.9g) to several dirhams (one dirham = 3.125/g). Its oil cures fevers and the fevers that are accompanied by tremors. The herb is an alexipharmic, and possesses innumerable other advantages."

The herb described obviously corresponds to the root of Iris florentina L. (family Iridaceae) which is used today in Egypt as a deterrent and emmenagogue and in liniments. This is undoubtedly one of the most detailed narrations of the therapeutic characteristics of the herb in the Greco-

Arab materia medica. Of course, the uses of the root are many and so variegated that it amounts to being almost a panacea, but even then Al-Birūnī's account of its medicinal properties would be outstanding in its comprehensiveness.

It would be interesting to study the sources quoted by Al-Birūnī. The most prominent is, of course, Dioscorides (Galen having concentrated more on the medical than herbal aspect), followed by Abū Hanīfah, Rāzī, Ibn Māsawaih, Hunayn bin Ishāq, Hamzah Isfahānī, Abū Al-Khayr (as a commentator on the work of Paulos Aegineta), Abū Muādh, Paulos Aegineta, and others. Theophrastus, Pliny, and Aetios of Amida are but rarely mentioned. Ibn Sīnā has not been quoted at all—probably because their relationship was not good or because Al-Birūnī did not obtain his Kitāb Muntakhib Shifā at-Tibb, Kitāb as - Saādah wal-Iqbāl, and the Canon. The intactness of the Greek names, in a larger measure, in Al-Saydanah is perhaps due to the fact that Istafan Ibn Basīl, who was a Syriac Christian and lived during the reign of the Caliph al-Mutawakkil (847-60), has already translated Dioscorides' Pedani Dioscorides Anazarbei de Materia Medica Libri Quinque into Arabic without a resorting to a Syriac intermediate. His teacher, the celebrated Hunayn Ibn Ishāq, later on improved and almost re-wrote it. Ibn Baytār who succeeded Al-Birūnī after two hundred years also cites in Jāmi' mufredāt Al-Adwiyah Al-Aghdhiyah almost the same sources, with a few more like those of Ishāq bin Sulaymān al-Isrāīlī of Qairawān and Al-Birūnī himself.

Al-Birūnī's attempt has undoubtedly resulted in a compendium, but none the less, represents a great attempt at synthesis. It would have been more effective and valuable if it were compiled in a synoptic, tabular form, as is the case with the Kitāb al-Mustainī by Ibn Biklārish of Saragoesa (fl. 1106), each of its leaf being divided into five columns, each column giving the name of the herb, its Galenic nature and grade, synonyms in Persian, Syriac, Greek, Latin, and Spanish, the substitute drug, and finally the preparation and the therapeutic value and uses of each drug. The very fact, however, that Ibn Baytār quotes from Al-Birūnī's Kitāb Al-Saydanah shows that the book was already regarded as a comprehensive reference work, the culminating point of which was Biklārish's work.

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Thanks are due to Prof. Qamaruddin Khān and Mr. Muhammad Sa'ūd for the clarification of some of the some difficult points and problems of transcription and transliteration. It is hoped that the translation of the Kitāb al-Saydanah would be succeeded by many more on the other writers of the Greco-Arab materia medica. If the Latin adage, Nature non facit saltum (Nature does not move in leaps and bounds), bears any significance, it is this: progress is serial and does not consist in the separation of the past from the present, just as the present cannot be disregarded in planning for the future. Al-Bīrūnī and others therefore have a good deal more to teach us than we can ever appreciate.

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