

On the Ephedra, the Hūm Plant, and the Soma

By AUREL STEIN

IN choosing the subject for this short paper I am guided not solely by the fact that the archaeological observations which first drew my attention to it were gathered in that field of my Central-Asian explorations with which I have fortunately been able to associate my old friend Professor Rapson as one of the earliest and most helpful of my collaborators. What invests certain curious finds among modest burial remains of the Lop desert with a special quasi-personal interest for me is the distant and puzzling relation they bear to a much discussed question of Vedic and Avestic research, that of the sacred Soma and Haoma.

It is a question which was often touched upon in his lectures by that great scholar and teacher, Professor Rudolf von Roth, during the years 1881-4, when I had the good fortune, figuratively, to sit at his feet as an eager devoted pupil. The question as to the identity of the original Soma plant and its home which he had discussed just at that time in two short papers of masterly clearness,¹ was not to be solved then, and still remains undecided.² But Roth's main contention still holds good that a solution for it could be hoped for only by the study of relevant physical facts, if possible, on the ground of early Aryan occupation.

The archaeological "finds" to which I have alluded above were curiously enough made in a most desolate part of Central Asia, on ground which is far from likely ever to have served as the habitat of an early population speaking the Aryan, i.e. common Indo-Iranian, tongue, and practising that cult of the Soma: Haoma as the hymns of the Rigveda or Avestic texts represent it. In *Innermost Asia*, the

¹ See Roth, "Über den Soma", *ZDMG.* 1881, pp. 681-92; and "Wo wächst der Soma?", *ZDMG.* 1884, pp. 134-9. Excellent English translations of both papers were furnished by Mr. C. J. (subsequently Sir Charles) Lyall, I.C.S., with a letter dated 22nd July, 1884, to the Hon. Sir Steuart Bayley, then Member of the Governor-General's Council. Together with notes of Dr. G. Watt they were supplied in print to officers employed on the Afghan Delimitation Commission. I owe a type-written copy of those translations to the courtesy of the officer in charge, Government of India Records.

² Cf. Macdonell-Keith, *Vedic Index*, ii, pp. 475, under the head *Soma*, for a succinct survey of the numerous widely different opinions recorded by Indologists and others about the identity of the plant figuring in Vedic hymns and later texts.



detailed report on my third Central-Asian expedition, I have given a full account how in February, 1914, in the course of my search for the ancient Chinese route once leading during the centuries immediately before and after the commencement of our era through the now utterly waterless Lop desert, I came upon the remains of a ruined watch-post, L.F., and just outside it of a small cemetery.¹

Their position on a steep "Mesa" or eroded ridge of clay, rising over a hundred feet above the bare plain around, had, together with the utter aridity of the climate, helped to protect the remains from damage both by moisture and by wind-erosion, a most destructive force in this forbidding region. The finds brought to light by clearing the rooms of the little stronghold definitely proved that it had been occupied as a station to keep watch over the route once leading across the absolute desert beyond towards Tun-huang, on the westernmost border of China proper. This route, as proved by plentiful documentary evidence from the ruins of the fortified Chinese station of Lou-lan farther to the south-west, had finally been abandoned early in the fourth century A.D.

The question as to the occupants of the watch-post was answered with full clearness by the exploration of the little cemetery outside. Several of the graves opened proved to contain bodies in a surprising state of preservation, as seen from the photographs reproduced in *Innermost Asia*.² Looking down on figures which, but for the parched skin and the deep sunk eye-cavities seemed like those of men asleep, I could not doubt that the dead belonged to the autochthone semi-nomadic people whom the Chinese Annals describe as the inhabitants of this territory of ancient Lou-lan.

The appearance of heads and faces clearly suggested the *Homo Alpinus* type, which, as Mr. T. A. Joyce's analysis of the anthropometric materials collected by me has shown,³ is best represented nowadays among the Iranian-speaking hillmen of the valleys adjoining the Pâmirs. It forms a very conspicuous element also in the racial composition of the present population of the Târîm basin. The look of the dead, their dress and buried belongings, clearly indicated that they and their people had lived the semi-nomadic life of herdsmen, fishermen, and hunters, just as the Lopliks, now to be found on the lower Târîm river, did down to our times. That these modern

¹ See *Innermost Asia*, i, pp. 263 sqq.

² See *ibid.*, figs. 171, 172.

³ Cf. his Appendices, in *Serindia*, iii, pp. 1351 sq.; *Innermost Asia*, ii, pp. 996 sq.

successors of the ancient Lou-lan people are of Turkish speech and unmistakably Mongolian stock need not concern us here.

The bodies were enveloped in a shroud of coarse canvas. The shroud in the case of the two best preserved burials, both of middle-aged men, had its edge near the head or where it lay across the breast tied up into two little bunches. One of these proved to contain grains of wheat, and the other a quantity of small broken twigs.¹ There could be little doubt about the contents being meant to represent provisions for the dead in another life.

Similar little packets of broken twigs placed in an exactly corresponding fashion were found also in four more graves, including that of a female, at other small burial grounds of the same type but less well preserved, which were subsequently discovered by us in two widely distant localities (L.Q. and L.S.) of the Lop desert.² In most of the other graves at these cemeteries the bodies and their belongings were found in a badly decayed state not permitting of close examination of details. But it may be safely assumed that the provision of such small packets of twigs formed part of the regular funeral practice among the indigenous people who in a more or less nomadic fashion inhabited the Lop tract during the first few centuries of our era before it became a wholly waterless desert.

Specimens of this particular burial-deposit from all the six graves mentioned were submitted by me to Dr. A. B. Rendle, F.R.S., Keeper of the Department of Botany, British Museum, who in a letter dated 4th August, 1925, kindly informed me as follows:—

“The specimens (they are all the same) are undoubtedly fragments of the twigs of *Ephedra*, a low-growing shrub with slender green branches devoid of leaves except for a small membranous sheath at the nodes. It is abundant in the drier regions of the Himalayas and Tibet, and generally in Central and Western Asia.”

In the same letter Dr. Rendle was good enough to refer me to an interesting notice in Sir George Watt's *Dictionary of the Economic Products of India*, which records the identification of the plant now used as the sacred *Homa* in the Zoroastrian ritual of the Pārsīs of India with an *Ephedra*. This notice³ describes the *Ephedra* as “a genus of erect or sub-scendent rigid shrubs comprising some eight or ten species . . . met with in Europe, temperate Asia, and South America”.

¹ Cf. *Innermost Asia*, i, pp. 265, 268 (L.F. 05, L.F. i, 03).

² Cf. *ibid.*, ii, pp. 736 sq., 740 sq. (for graves L.S. 2, 3, 6); 743, 748 (L.Q. iii).

³ Cf. *Dictionary of Economic Products of India*, iii, pp. 246 sq.

Of one species in India (*Ephedra vulgaris*, Rich.) it is mentioned that it occurs throughout the Himālayas, but is also distributed in Central and Western Asia. Two other Indian species are said to have a more westerly distribution (*E. pachyclada*, Boiss.), extending from Garhwāl to Afghānistān and Persia, and the other, *E. peduncularis*, Boiss., being met with from the Panjāb, Rājputānā, and Sind to Afghānistān and Syria.

What however directly concerns us here is the statement furnished by the subsequent passage of the notice: "Interest has recently been taken in these curious plants from the observation that the dried twigs of an Ephedra imported from Persia into Bombay constitute the sacred Homa of the Parsis. A sample of the Homa obtained in Bombay was at first determined as *Periploca aphylla*, an erect leafless perennial with twigs as thick as a goose-quill or less, and possessing a milky sap. Subsequent examination of other samples, however, revealed the fact that the Homa of the Parsis was in reality an Ephedra, and this determination has since received support from the information recorded by Dr. Aitchison in his botanical report in connection with the Afghan Delimitation Commission, where it is stated that *Ephedra pachyclada*, Boiss., bears, in the Hari-rud valley, the names of *hum*, *huma*, *yehma*. Dr. Aitchison states of that plant that it was found 'a very common shrub, from Northern Baluchistan along our whole route, in the Hari-rud valley, the Badghis district and Persia, growing in stony gravelly soil'. Of *Ephedra foliata*, Boiss., Dr. Aitchison further affirms that it is known as *Hum-i-bandak*."¹

Dr. Rendle in the same communication drew my attention to a note of Dr. Dymock (late Surgeon-General, Indian Medical Service), quoted in Sir G. Watt's *Dictionary*,² and stating: "The Parsi priests say that the *Homa* never decays, and they always keep it for a considerable time before they use it." This observation seemed at first to suggest a possibility that the depositing of Ephedra twigs with those ancient Lou-lan people might have been meant merely as a symbolic provision to prevent decay of their bodies, and thus to assure their full enjoyment of a future life.

¹ It fully agrees with Dr. Aitchison's observation about the distribution of the Ephedra that I found a low scrub, known locally by the name of *Hūm* and closely corresponding in appearance to the above description of the genus, growing plentifully on the gravelly wastes crossed on my journey of 1915 along the Perso-Afghan border between Mujnābād and Durōh. I well remember how bitter the taste was when I tried to chew a little of the green twigs.

² See loc. cit., iii, p. 250.

But this interpretation of the curious burial practice has lost much of its force since it has come to my knowledge that an alkaloid isolated from a species of Ephedra, known to the Chinese as *Ma-huang*, has apparently for a long time past been widely used as a powerful drug. Preparations of this alkaloid under the name of Ephedrine have on account of their very valuable pharmacological action on bronchial muscles, mucous membranes, blood-pressure, ophthalmic affections, etc., entered largely into recent medical practice.¹

I have had no opportunity to ascertain how far back and over what parts of Asia this medical use of the bitter principle obtained from Ephedra plants can be traced. But on general grounds it appears to me probable that this effective therapeutical use of a plant widely spread in Central Asia may have been practised from early times in the region of the Tārīm basin. If to this is added the evident ease with which the dry twigs of Ephedra can be preserved for such use, their provision in those ancient burial deposits of the Lop tract can well be accounted for.

Far more difficult it is to explain how the Ephedra plant came to be used for supplying the juice which in the Zoroastrian ritual practice of the present day, both among the "Gabar" communities of Yezd and Kirmān and the Pārsis of India, figures as the representative of the ancient *Haoma*. That this use is not recent can be safely concluded from the popular application to an Ephedra of the name *Hūm*, as already referred to, in the border tracts of Persia and Afghānistān. Yet it is obviously impossible to reconcile the character of the juice obtained from this Hūm or Ephedra plant, extremely bitter and far from palatable even as a medicine, with what Rigveda hymns and Avesta often indicate as to the exhilarating and exciting effects of both Soma and Haoma.² It is clear enough that on Iranian ground, too, a substitution for the original plant must have taken place such as Sanskrit texts directly attest for India in the case of the original Soma of the Vedic hymns. But the very limited extent of the materials available bearing on the history of the *realia* of the Zoroastrian cult leaves little hope of direct evidence being ever obtained on the point.

¹ I take my information on this point from Wellcome's *Excerpta Therapeutica*, 1930, pp. 72 sqq.

² Cf. e.g. *RV.* viii, 48, 1, where the Soma is called the drink "to which all the gods and men together stream calling it 'sweetness' self", as quoted by Roth, *ZDMG.* 1881, p. 683.

There can be no doubt that the Haoma of the Avesta was identical with the original Soma plant of the Vedic hymns. Abundant as are the references in the latter to the sacred Soma which served as the libation to the gods at the most important of sacrifices, yet such definite data as we can gather from them regarding the plant itself are very scanty.¹ This vagueness of indications, characteristic of so much else that the earliest poetic literature of India supplies, is duly reflected, as already mentioned, by the widely divergent opinions of scholars as to the identity of the plant.

It would not fall within the scope of this paper systematically to take up afresh this much-discussed question, even if I commanded the time needed for studying it in all its aspects and had access to the whole literature which has accumulated concerning it. But in the course of my Indian service, and especially during the archæological explorations conducted by me along the North-West Frontier of India in the years 1926-8, I was able to acquaint myself with much of the ground where the areas of early Indo-Aryan and Iranian occupation meet, and this fact may justify my briefly recording here some quasi-geographical observations which deserve to be considered in relation to that question.

One of the few definite data furnished by the texts about the famous plant is that it grew on the mountains. The special importance of this indication is emphasized by the fact that it is supplied by numerous passages of the Rigveda and by the Avesta alike.² This ought to suffice to exclude from the range of consideration both the Hūm plant of Persia and any of the order of the Asclepiadæ to which the species of *Sarcostemma*, the modern representative of the Soma plant in the ritual practice of Brahmanic India, belongs. For as Sir George Watt, in his notes on the above-mentioned translation of Professor von Roth's papers, has justly pointed out, the very numerous species of Asclepiadæ to be found in India are for the most part confined to the tropical and sub-tropical plains, the drier tracts like the Panjāb and Sind "which most resemble Afghānistān containing fewest species". An equally strong argument against any of the Asclepiadæ is raised by Sir George Watt's question: "Can any one who has examined the bitter milky sap of the Asclepiadæ (such as

¹ For a lucid analysis of such data and of the references bearing in general on the cult-practices connected with the Soma, cf. Macdonell-Keith, *Vedic Index*, ii, pp. 474 sqq.

² Cf. *ibid.*, ii, p. 475, note 14.

Calatropis gigantea, the *Akenda*, or *Madar*) suppose that such a liquid could ever be used for more than a medicinal purpose ? ”

Now it is curious to note that in view of the Rigveda's and Avesta's uniform mention of the mountains as the home of the plant an interesting passage of the Avesta has not received more attention. It is found in Yasna x, 11, a text known as the *Hōm-yasht*. Though classed with the “Younger Avesta”, it yet undoubtedly contains much early traditional lore. The passage, Yasna x, 11, claims to describe the distribution of the sacred Haoma plant, and runs as follows :—¹

āat θwā athra sponta fradaṣṣta
 mərəya vižvañca vibarən
 avi iškata upāiri-saēna
 avi staēra starō-sāra
 avi kusrāda kusrō-patāda
 avi paurāna višpaṭha
 avi spita-gaona gairi.
 āat āhva paurvatāhva
 pouru-sarəḍō vīraodahē
 haomō gaomo zairi-gaonō.

In keeping with Darmesteter's translation (*Zendavesta*, i, pp. 101 sq.), it may be rendered as follows :—

“ From there [the *Haraiti barəza*, i.e. the Elburz range of Persia] the divine birds have carried you in all directions to the *iškata Upāirisaēna*, to *Staēra* which has the stars on its head, to *Kusrāda Kusrō-patāda*, to the pass (?) of *Paurāna*, to the ‘White Mountains’. And in all those places you flourish manifold, oh succulent (?), golden-coloured Haoma.”

The distinct references made in two preceding passages of the same text (Yasna x, 3, 4) to the mountains as the home of the Haoma is a very valuable confirmation of what passages of the Rigveda tell us of the Soma. The same applies also to the description of the Haoma as *zairi-gaona*, “golden-coloured”; for it agrees exactly with the colour *hari* ascribed to the Soma plant in the Rigveda. But still more useful for our investigation are the definite topographical indications to be gathered from the Avesta passage I have quoted.

As long ago as 1886 I had occasion in a brief communication to the Seventh International Congress of Orientalists at Vienna to point out that the localities enumerated in this passage must all be looked

¹ See Yasna x, 11, in Geldner's edition.

for in that mountainous north-eastern portion of the present Afghānistān which extends from the Oxus to the south of the Kābul river.¹ I then showed that the Mount *Upāirisaēna* "the mountain above the eagles' [flight], the *Aparsīn* of the Bundahish, is identical with the Paropanisus of the Greeks, the Hindukush range north of Kābul²; and that *Kusrāda* and *Kusrō-patāda* correspond in all probability to the mountain-tracts of Ghōr and Ghōrband situated to the north and south of that range.³ In *Pawrāna* it is easy to recognize the modern local name *Parwān* borne by the pass and valley through which a well-known route across the central portion of the Hindukush range due north of Kābul descends to the meeting-point of Ghōrband and Panjshīr. The *spita-gaona gairi*, the "White Mountains", correspond to the high range called *Spīn-ghar* by the Pashtu-speaking Pathāns along the Peshawar and Kohāt border, and more generally known by its Persian designation of *Safēd-kōh*. In *Staēra* we have perhaps an older Iranian form of the well-known modern name *Tirāh*, the mountain-tract held by the Afrīdis west of the Peshawar valley. The phonetic derivation of the present name *Tirāh* can now be more readily accounted for since we know that the tongue once spoken in *Tirāh* and still surviving in a few villages north of the *Safēd-kōh* belongs to that Dardic branch of the Aryan language group which, like the Indian branch, knows the change of *st* to *t*.⁴

¹ This communication was, I regret to confess, through my fault, not printed in the Proceedings of the Congress. The identifications then proposed were mentioned by me in 1887 to my lamented friend Professor James Darmesteter and readily accepted by him; see his *Zend-Avesta*, i, pp. 102 sq., with notes 30-4. For an independent reference to that communication, cf. Geiger-Kuhn, *Grundriss der Iranischen Philologie*, ii, p. 393, note 2.

² The Pahlavi commentary renders the ἀπαξ λεγόμενον *iskata* by *shikast* "cave". Can this interpretation be connected in any way with the legend of Alexander's Greeks which looked for Prometheus' cave in the Indian Caucasus, i.e. the Paropanisus?

³ Here, too, as in the case of the phonetic derivation of *Tirāh* (see below) account may have, perhaps, to be taken of the influence exercised by a local population speaking a Dardic tongue. For the change of initial *k* > *kh* > *gh* cf. Grierson, *Pisāca Languages*, p. 93. The change of initial *k* into *kh* is regular also in certain East Iranian languages: see *ibid.*

The Ghōrband valley lies very close to the area where certainly in later times *Pashai*, a Dard language, was spoken.

It deserves to be noted that the name *Ghōrband* occurs also as the name of a considerable valley which descends to the right bank of the Indus from the watershed towards Upper Swāt. The valley belongs to a hill-tract where until the Pathān conquest of late mediæval times a Dardic language, akin to those still prevailing in the adjacent Indus Kōhistan, was spoken.

⁴ Cf. Grierson-Stein, "Notes on Tirāhi," *JRAS.* July, 1925, pp. 405-16; Grierson, *The Pisāca Languages*, p. 133.

The Vedic texts have nothing to offer that in point of geographical definition could compare with the guidance which this passage of the Avesta affords for the location of the sacred plant. But on closer examination it is yet possible to discern in them some indications of quasi-geographical bearing which justify our looking to the hill-ranges due south of the mountain-area marked in the Avesta passage as a likely habitat of the elusive plant that provided the Soma relished by gods and men.

When dealing with the results of the archæological tour which in the winter of 1927 took me through the whole length of Waziristān and Northern Balūchistān, I had already occasion to point out that these border territories between the Indus valley and Eastern Irān were likely to have been for some length of time in the occupation of Vedic tribes, before they descended from those hills, a poor arid land, though perhaps then not quite so barren as now, to the conquest of the fertile Indus-valley and the Panjāb plains.¹ The rivers *Krumu* and *Gomatī* mentioned in a famous hymn of the Rigveda, x, 75, have long ago been recognized as identical with the present Kurram and Gumal, in which the whole drainage of Waziristān and the Afghān uplands adjoining westwards finds its way to the Indus. The mention of these two rivers, both comparatively small except when sudden spates fill their beds, distinctly points to such acquaintance with Waziristān as only prolonged Aryan occupation in early Vedic times can adequately account for.

This conclusion is strongly supported by the reference made in another hymn of the Rigveda, vi, 27, to the river *Yavyāvātī* and to *Hariyūpiyā*, by which may be meant either a locality or a river. The *Yavyāvātī* has been rightly identified by Professor Hillebrandt with the Gumal's main southern tributary, the *Zhōb*, the modern name of which, as I have shown elsewhere, can easily be accounted for as the direct phonetic derivative of the Vedic form.² In *Hariyūpiyā* we may safely recognize the name *Hariōb* borne by the hill-tract which comprises the western headwaters of the Kurram river and is situated beyond the British border to the south-west of the Safēd-kōh.³

¹ See *An Archæological tour in Waziristān and Northern Balūchistān* (Memoirs of the Archæological Survey of India, 1929, No. 37), pp. 2 sq.

² Cf. *ibid.*, p. 2, note 3. For Professor Hillebrandt's identification, see *Vedische Mythologie*, iii, p. 268.

³ Professor Hillebrandt's identification, *Vedische Mythologie*, iii, p. 268, note 3, seems to have been suggested first by Dr. Brunnhofer (*Iran und Turan*, p. 41). The close phonetic relation between the Vedic and the modern form of this local name is too clear to require specific demonstration.

The mountainous border territories between the Kābul and Kurram rivers in the north and the headwaters of the Zhōb in the south, to which these indications take us, are nowadays held by Pathān tribes. Their inroads have ever been directed towards the fertile plains by the Indus, and their control constitutes a particularly difficult task for the British "Rāj" keeping watch and ward on the North-west Frontier of India. There is good reason to believe that conditions similar to those prevailing now, due to the scantiness of cultivable ground and the adverse conditions in general of a barren mountain land, must at all times have forced the valiant if far less civilized tribes holding those arid hills to look upon the fertile tracts eastwards as their natural raiding ground. Thus in Vedic times, too, I believe the great belt comprising the present Wazīristān and the hill-tracts to the north and south must have witnessed occupation at first and then advance, whether slow or rapid, by Aryan tribes which harried and in the end conquered the riverine plains of the Panjāb.

My purpose here is not to trace what indications might be gathered on this ground about the phase preceding the earliest known great invasion of India from the north-west, but to try and examine whether some knowledge of its physical conditions could help us in the search for the original Soma plant. With regard to the general geographical character of this region, it must be pointed out in the first place that it consists both within and outside the British border of a succession of ranges, more or less parallel, striking as a whole from north-east to south-west, but throwing out minor branches westwards.¹ From one of its easternmost portions, the very conspicuous Takht-i-Sulaimān, rising wall-like above Dera Ismail Khan district by the Indus, the whole of these ranges has been conveniently designated as the Sulaiman system. South of the snowy Safēd-kōh these ranges at several points attain maximum heights up to more than 11,000 feet. But the average height of their crest-lines does not rise much above 8,000 feet; and in great parts of the area, especially south nearer to the Indus, it is still lower. Between these ranges lie long-stretched valleys with average elevations from 3,000 to 5,000 feet. In spite of the width and open nature of great parts of these valleys, the cultivated area is very limited, owing to the arid climate and the scanty supply

¹ For the orographic configuration of this region, the sheets: Afghanistan, Baluchistan, of the Survey of India's *Southern Series* maps on the 1 : 2,000,000 scale may be conveniently consulted.

of water available for irrigation. This accounts for the semi-nomadic character of most of the present population; combined with the economic pressure resulting from such conditions, it helps to explain its unsettled, largely predatory habits.

In a region which in spite of its rather unattractive character has become fairly well-known in consequence of frequent military operations and in parts through prolonged British occupation, it would have been rather supererogatory for me, who am not a botanist, to look out for the chance of discovering a plant as yet unknown that might solve the riddle of the Soma. But all the same, I used such opportunities as offered during my various tours along this far stretched portion of the Frontier from the Kurram down to Pishīn and Kalāt, to inquire about any plant growing on its mountains and known to the people for properties that might possibly suggest some connection with the ancient use of the Soma.

The only result of these inquiries has been to direct my attention more closely to a plant of which I had thought more than once before while travelling in distant Central-Asian mountains from the Nan-shan to the ranges west of the Pāmīrs. I mean the wild rhubarb. It grows plentifully on the highest portions of the ranges which stretch along the border between Northern Balūchistān and the Afghān provinces of Kandahār and Ghazni. That it is to be found in abundance also at corresponding elevations in many parts of Afghānistān is shown by a notice of Sir George Watt concerning the species known as *Rheum spiciforme* or *Rheum moorcroftianum*.¹ Like the closely allied *Rheum emōdi*, Wall., which, as shown by the same authority, is a widely spread Himālayan and Central-Asiatic species of the wild rhubarb, it is used medicinally everywhere by the local people.

According to the information collected by me about the headwaters of the Zhōb as well as in the Pishīn tract, the juice from the succulent stalks of the plant is prepared into a kind of sweet sherbet, which is said to be on sale in the bazaars of Kandahār and Quetta

¹ See *Dictionary of Economic Products*, vi, pt. i, p. 487: "This species is found on the drier ranges of the Western Himālaya from Kumāon (altitude 14,000 to 16,000 feet) to Western Tibet (altitude 9,000 to 14,000 feet) and is distributed to Afghānistān. . . ."

Food.—"In Afghānistān, the plant is always wild, and appears to grow abundantly in many parts. When green, the leaf stalks are *rawash*, and when blanched by heaping up stones and gravel around them, they are called *chukri*; when fresh (in which state they are sometimes brought to Peshawar in spring) they are eaten either raw or cooked. They are also dried for use, to be eaten with other food, and are sometimes made into a preserve." (Stewart.)

during most of the year. Of the wild rhubarb of the Afghān border being used for an intoxicating drink I could learn nothing; nor is such use of the plant to be expected in a region where the Islamic prohibition against wine and spirits of any sort is strictly adhered to. But that the juice pressed from the wild rhubarb can be turned into wine by means of fermentation is adequately proved by the rhubarb wine, the preparation of which from the cultivated rhubarb is still well known and practised in certain parts of England and probably elsewhere also.

Since the above conjectural idea occurred to me of the wild rhubarb from the mountains of the Afghān frontier having possibly served for the Soma drink of the ancient Āryas of those parts, I have noticed the following significant reference in the report which Dr. A. Regel, the botanist employed by the Russian Government during the years 1882-4 on the exploration of the mountain territories north of the Oxus, had furnished to Professor von Roth.¹ The instructions communicated to him through the Russian Academy of Sciences had caused Dr. Regel specifically to look for an Asclepiad corresponding to the description which Roth believed could be deduced from certain passages of the Rigveda regarding the appearance and character of the plant. In the passage which Roth quotes, from a letter dated 17th January, 1884, Dr. Regel states that he had failed to discover such a plant in the wide region explored by him, and then continues: "The plant which comes nearest to the description is the rhubarb; the more so since the Tājik tribes connect the idea of *sugar* with it, calling it *Shuguri*. But the plant naturally and by itself alone yields no intoxicating beverage, and nothing is known of any admixture in the preparation of the Soma juice by the Aryans. There are here no true Asclepiads, though there are some plants resembling the *Sarcostemma*."

It is not necessary for us here to examine in detail the hints which Roth believed to be furnished by certain passages in the Rigveda as regards the appearance of the Soma plant, and which together with the substitutes used in the late ritual practice of Southern India induced him to look for it among the Asclepiadeæ. Those notices have since been rightly declared to be "inadequate to identify the plant".² The various terms (*amsu*, *kṣip*, etc.) used for the shoots of the Soma

¹ I quote the relevant passage from Sir Charles Lyall's translation of Roth's paper, *ZDMG*. 1884, pp. 134 sqq.

² See Macdonell-Keith, *Vedic Index*, ii, p. 475.

plant (*andhas*) may have been applied by the Vedic poets as well to the shoots of the wild rhubarb as to those of an Asclepiad. The description given of the soma-shoots as "ruddy" (*aruṇa*) or "tawny" (*hari*) would certainly well suit the colour of the rhubarb. "It is not possible to describe exactly the details of the process of pressing the Soma as practised in the Rigveda."¹ But the description of the juice obtained thereby as brown (*babhru*), tawny (*hari*), or ruddy (*aruṇa*), and as having a fragrant smell is quite in keeping with what we should have to expect in the case of the juice of the rhubarb. Finally it might well be that the mixing of Soma with milk, curd, or grain which is repeatedly mentioned² was meant to facilitate that fermentation which alone could endow a juice like that obtained from the rhubarb with the exhilarating and exciting effect so clearly indicated in the Vedic hymns.

If our surmise is right as to the wild rhubarb, in one or another of its closely allied species, having been the plant from which the Soma of early Vedic times and the Haoma sung in the Yasna was obtained, it will help to confirm the belief that the border territories indicated above, where nowadays the North-west Frontier of India meets Afghānistān, were at an early period held by tribes who called themselves Āryas, and spoke Vedic Sanskrit. But that hypothesis—and I cannot call it more at this stage—will not help us, as Roth had hoped from an eventual identification of the plant, definitely to determine the area which had served as the common home of Indians and Iranians before their languages separated. The very wide distribution of the wild rhubarb in its closely allied species from the Himālayas into the mountains of Central Asia and Eastern Irān would preclude such a conclusion.

But on the other hand this wide distribution of the plant would allow us to explain how the cherished drink could be obtained in places both for men's enjoyment and for sacrificial libation also at a period when we must assume those conquering Āryas to have penetrated far into the plains of the Panjāb, if not beyond; for from the heights of the outer Himālayan ranges it might have been possible to carry the shoots of the plant down even there within limited distances and at certain seasons.

In the Rigveda a number of localities are mentioned where Soma

¹ Cf. *ibid.*, ii, p. 477.

² See *ibid.*, ii, p. 477, and Hillebrandt, *Vedische Mythologie*, i, pp. 219 sqq., there quoted.

was consumed.¹ Among these there is only one which can with reasonable assurance be identified. It is the *Suṣomā*. Its identity with the Soān river in the Rawalpindi District of the Panjāb appears to me highly probable in view of the position which the name occupies in the list of Panjāb rivers recorded in the "Nadistuti" hymn of the Rigveda (x, 75).² As the Soān has its origin in the "Murree Hills", a Himālayan spur which rises to heights over 9,000 feet comparatively near to the open plain of the Rawalpindi District, transport of the plant to parts of the latter for sacrificial or other use would not have been very difficult.

The inquiry, started by a grave-find in the waterless waste of the Lop desert, has carried us from ground where absolute dryness preserves all remains of human existence, far away to a region where climatic conditions leave little or no hope of antiquarian evidence ever throwing light on the question how the bitter liquid pressed from a *Sarcostemma* came to take the place of the Vedic Soma. But even where after the passing of thousands of years all other evidence of human activities has vanished, in essential aspects their geographical scene remains unchanged. Thus if our examination of such scant indications as Vedic texts afford has helped to determine more closely that scene from which the Aryan conquest of India started, our diversion from a purely antiquarian quest may be held to have brought some advantage in the form of a modest historical gain.

¹ Cf. Macdonell-Keith, *Vedic Index*, ii, p. 478. Their names are *Ārjika*, *Pastyāvanti*, *Śaryanāvanti*, *Suṣomā*, the territory of the Pañcajanāh.

Apart from *Suṣomā* the only other locality for which a likely identification might be proposed, is *Śaryanāvanti*. Its mention in *RV.* viii, 7, 29, along with the *Suṣomā* has suggested to me that its name might perhaps be connected with that of the *Harro* river, which drains the main portion of the Hazāra District, to the west of Rawalpindi. The phonetic derivation of the modern name would offer no serious difficulty, as the change *ś > h* is regular in the Indo-Aryan languages of the Indian North-West.

² Cf. my article "On River Names in the Rigveda," *JRAS.* 1917, pp. 91-9.