

fessors Hans and Lobwirnski respecting ideal matter of various degrees. Can you inform me whether any English publications have appeared on this subject, and if not, what foreign works would be best suited to give an insight of the results that have been arrived at to one who can devote but a limited time to such investigations?

Surely the conclusion suggested by your correspondent (viz., that the moon in its composition closely resembles caseine) is intended only as a joke; for, assuming the equation given,

$$M = C_m N_n O_p H_q,$$

and even granting that the quantities  $m n p q$  are in such proportion as to make the right-hand member of the above equation assume the form of the chemical formula for caseine, there is surely no reason why the mass of the moon (which your correspondent has chosen to denote by  $C$ ) should be interpreted as carbon, nor its direction of motion  $N$  as nitrogen, nor its velocity  $O$  as oxygen.

PERCY R. HARRISON

### Sun-Spots

In the "Life of Charlemagne," written by Eginardus, one of the Emperor's household, and afterwards Abbot of St. Bavon's, in Ghent, occurs the following passage:—

"Per tres continuos vitæque termino proximos annos et solis et lunæ cerebraria defectio, ac in sole macula quædam atri coloris septem diernum spatium visa."

"In three successive years nearest to his death [there were] very frequent eclipses of the sun and moon, and in the sun there were seen certain spots of a black colour, for the space of seven days."

This life, written between 814 and 843, and referred to by the writer's contemporaries, has been collated with several MSS. by the Bollandists, who give it in full in their Acta Sanctorum under January 28. It is a curious, if not a valuable, contribution to the early history of sun-spots, and suggests questions which some of your correspondents may care to consider.

HENRY BEDFORD

All Hallows College, Dublin, January 15

### A Clever Spider

In a letter I have just received from my brother at Rondebosch, near Cape Town, he narrates the following, which I thought might interest some of the readers of NATURE:—

"On Friday I was much interested in watching a spider and male glow-worm. The spider was a common long-legged house spider who had a web in the corner of the room. It was an aristocratic spider, in fact. Presently a male glow-worm flew into the web, and in a few minutes the spider had wound him round and round till no Egyptian mummy was more securely housed. Just as this operation was being finished, a second glow-worm flew into the web, a long way from the first. Off goes the spider, and soon he, too, was encased in silk. Then I noticed that the spider went three times backwards and forwards between the head of glow-worm No. 2 and a main strand of his web. After this he went round cutting all the threads around the glow-worm until it hung by the head strands alone. The spider then fixed a thread to the tail end, and by it dragged the carcass in the direction of glow-worm No. 1 (presumably the larder). As soon as the rope attached to the head was taut, the spider made the rope he was pulling by fast to a strand of the web, went back, cut the head ropes, attached himself to the head, and pulled the body towards the larder, until the tail rope was taut. In this way, by alternately cutting the head and tail ropes and dragging the glow-worm bit by bit, he conveyed it to the larder, where it hung alongside mummy No. 1. Another presently flew in. After he was enwrapped in silk, the spider, whether on purpose or not I cannot say, cut the last thread by which he hung, and dropped him to the ground. Whether he thought that this morsel might get 'high' before he could eat it I cannot say. I should say that the prey was some twenty times the weight of the captor."

LL. A. MORGAN

St. Thomas's Hospital, Westminster, January 12

### Erratum in Paper on Tidal Friction

AN erratum has been pointed out to me in my article in NATURE, vol. xxi. p. 235, and I should be glad to correct it.

The forty-second line of the second column of p. 236 runs:—"so that the earth will rotate faster than the moon revolves." By a slip of the pen I here wrote "faster" instead of "slower."

G. H. DARWIN

January 16

### AFGHAN ETHNOLOGY

THE events now in progress on the north-western frontier of British India have for the third time in this century directed the serious attention of statesmen, historians, and ethnologists to the remarkable people who give their name, or rather one of their names, to the north-eastern division of the Iranian table-land. During the empire of the Sassanides the whole of this region, from Persia proper to the right bank of the Indus and from the Koh-i-Baba, Ghor and other western continuations of the Hindu-Kûsh to the Arabian Sea was known as Khorasan, that is, Khoristan, the Land of the Sun or the East. This term, with the gradual reduction of the Persian sway, has shrunk to the proportions of a province on the north-eastern frontier of the Shah's estates, and has been replaced further east by the ethnical expressions Afghanistan and Balochistan, the lands of the Afghans and Baloches. But these expressions, as so frequently happens, are so far misnomers and deceiving that the lands in question harbour many other peoples besides those from whom they are now named. In Balochistan, for instance, the most numerous, powerful, and influential element is not the Baloch at all, but the still unfathomed Brahûi, from which circumstance it has even been suggested that the country ought rather to be called Brahuistan. A similar suggestion could not certainly well be made with regard to Afghanistan, for here there is no other people who can for a moment compare with the Afghans in numbers or political importance. Still the subjoined rough estimate of the population according to nationalities will show that it is very far from being homogeneous:—

Afghans and Pathâns ...	Iranian stock ...	3,520,000
Tajiks ...	Iranian stock ...	1,000,000
Hindkis ...	Hindu stock ...	500,000
Hazaras and Aimaks ...	Mongolo-Tatar stock	600,000
Kataghâns ...	Türki stock ...	200,000
Badakshis ...	Galcha stock ...	100,000
Baloches ...	Iranian stock ..	100,000
Kizil-Bashes ...	Türki stock ...	75,000
Kohistanis and Siah Posh	Galcha stock ...	50,000

6,145,000<sup>1</sup>

It will be noticed that in this table are included all the races forming part of the present Afghan political system taken in its widest sense, whose northern frontier is now marked by the upper course of the Oxus. Before dealing with the Afghans proper, with whom we are chiefly concerned, a few words may be devoted to each of the minor elements, all of whom continue to keep aloof from their neighbours, seldom or never intermarrying, and mostly retaining their own national customs, dress, religion, and speech. No general amalgamation has, in fact, yet taken place of these heterogeneous ingredients, so that we cannot speak of the Afghan in the same sense as we do of, for instance, the Italian, French, or English nations. The Afghan race, though by far the most numerous, has been politically predominant only since the death of Nadir Shah (1747), and its rule has been far too chequered by intestine strife and foreign troubles to have allowed time or opportunity for the slow process of

<sup>1</sup> This figure exceeds by about a million that usually given as the total population of Afghanistan. But recent exploration has shown that many of the tribes are much more numerous than had been supposed, and as our knowledge of the country increases, it will probably be found to contain even a greater population than that here given.

absorption to have made any perceptible progress. Next to them by far the most important are—

*The Tajiks*, who, here, as elsewhere in Central Asia, represent the old civilised Iranian communities, co-extensive with the former limits of the Persian empire, but since the ascendancy of the Türki, Mughal, Afghan, and Brahui races, now forming politically the subject, socially the settled, trading, and agricultural elements in these regions. Persian, or some variety of it, is still everywhere their mother-tongue; hence, in Afghanistan they are collectively known either as Parsivân, *i.e.* Persian-speaking, or Dehgân, *i.e.* peasants or agriculturists. "The Tajiks are Iranians, a remnant of the old Persian population subdued by the Afghans, but still speaking Persian and retaining the Persian type of features" (F. von Stein, in *Petermann's Mittheilungen* for March, 1879); religion, Sunnite. Remotely allied to them are—

*The Hindkis*, of Hindu stock, who have been long settled here chiefly as traders, forming numerous communities, especially in the eastern districts, said to be mostly of the Shatri caste; religion Brahminical, speech Hindustâni.

*The Hazaras and Aimaks*, occupying the northern highlands between Bamian and Herat, the former in the east, the latter in the west, are undoubtedly of Mongolo-Tâtar stock, though now speaking rude Persian dialects. They claim descent, some from the Toghiani Türks, some from the Koreish Arabs, others from the old Kibiti race, but seem really to be military colonists settled here by Jingshi Khân, Manku Khân, and Timûr. The Aimaks (the term simply means horde, tribe, clan), are of the Sunni, the Hazaras of the Shiah sect, and are consequently fiercely opposed to each other. Owing to this circumstance they have often been regarded as of different races, but "there seems no reason to doubt that the Aimaks and Hazaras are the same people, though separated . . . by the different sects they have adopted" (Col. C. M. MacGregor, "Afghanistan," p. 246); type, high cheek bones, with small grey eyes, scant beard, and low stature. The Aimaks occupy the Ghôr highlands, which must have been almost uninhabited when they settled there, for we read in the *National Chronicle* that about 1190 A.D., Sultan Shêhab-ed-dîn removed all the Afghan tribes from the Ghôr to the Ghazni highlands, "in order to become the bulwarks of the seat of empire and hold in awe the infidels of Hindustan." Of the Aimaks there are four main divisions, the so-called "Char Aimak" ("Four Hordes"): Taemûris, Taemûnis, Hazara-Zeidnats, and Suris, with a total population, according to some authorities, of about 450,000, including those now settled in Khorassan. The Hazaras, numbering at least 150,000, occupy the region stretching for 250 miles west from Kâbulistan, and are divided into thirty-eight main branches with numerous subdivisions, under chiefs bearing various titles, such as Khan, Sultan, Ikhtiar, Vali, Mîr, Mettar, and Turkhan, and hitherto practically independent of the Durâni Amirs. Akin to them are—

*The Kataghans*, a main branch of the Uzbeks, forming the bulk of the population in Kunduz and Balkh, that is, the region now known as Afghan Turkestan, stretching from the northern slopes of the Hindu-Kûsh to the left bank of the Upper Oxus. They take their name from a legendary Kata, from whom they claim descent in two main streams, the Beth-bula and Cheguna, with five and eleven sub-divisions respectively, each named after one of Kata's sixteen sons. Most of the tribes occupy the country south of the Oxus, but 7,000 families are now settled north of that river, consequently in Bokhara territory; religion Sunnite, speech Türki; type, small stature, broad face, high cheek bones, sparse beard, small oblique eyes. Are now mostly settled agriculturists and traders.

*The Badakhshis*, or natives of Badakhshan, in the

extreme north-east, beyond Kunduz, and abutting on the Pamir table-land, are a pure Aryan race, intermediate between the Iranians and Hindus, and of the same stock as the highland Tajiks, whom Ch. de Ujfalvy groups under the collective name of Galchas.<sup>1</sup> Chief divisions, Darwazi, Roshâni, Shugnâni, and Wakhi, or Wakhâni; religion Sunnite, speech Aryan, with Persian and Indian affinities. The Wakhi is a distinct variety, retaining many old Sanskritic elements, hence R. Shaw thinks it may be a relic of a primitive organic Aryan language current here before the race issued from the Pamir, or divided into Vedic and Zendic. It would be interesting to compare it with the Jagnôb, which de Ujfalvy tells us is unintelligible to the other Galcha tribes of Ferghâna. A Galcha skull which has found its way to Paris, has been examined by P. Topinard, who pronounces it to be identical with those of the early Keltic Aryans. If their speech also should prove to be of an organic Aryan type, as constituted previous to the dispersion, de Ujfalvy's view might be unreservedly accepted that "Ces pays mysterieux recèlent sans doute le secret de l'origine de notre race."<sup>2</sup>

*The Baloches*, of Iranian stock, and regarded by the Afghans as their brethren, are represented in Afghanistan chiefly by a number of hill tribes in the south-east corner, and by some nomads in the south and west along the Lower Helmand. Most of them belong to the Rind section of the Baloch race, the more important being the—

Kasrânis and Bozdars, on north-west border of Dera Ghazi Khan; numerous sub-divisions, the Bozdars alone with sixty-four septes (Major Minchin).

Khosahs, south of Sanghar Pass towards Shikarpur; four divisions: Kalulani, Bakiani, Toniani, Sariani.

Laghâris, overlooking the Sakhi-Sawar Pass, Dera Ghazi frontier; four divisions: Aliani, Hadiani, Boglani, Habtiani; fifty-six sub-divisions.

Gurchânis, south of the Laghâris, about Chachar Pass. Maris, Sham district, east, north, and north-west of Kachi; four divisions: Ghazani, Loharani, Bijarani, Mazarani; twenty-two sub-divisions. The Mazarani have separated from the rest, and are now settled west of Sebi and north of the Bolan Pass.

Bûgtis, south of the Maris; two divisions: Firozani, Zarkâni; thirteen sub-divisions.

Kayânis, Seistân, former rulers of that country; by some said not to be Baloches, but Kâkar Afghans.

Religion, Sunnite; speech, a rude, uncultivated variety of the old Persian; type, regular Caucasian features, light or brown complexion; hair often chestnut and even fair; eyes light grey and sometimes blue, especially in centre and north. Of the many forms of the national name, Baloch, Biloch, Belûch, Balûch, Bilûch, &c., Baloch is the best, coming nearest to the true pronunciation, as Pottinger assured his French translator, M. Eyries.

*The Kizil-Bashes*, or "Red Heads," known collectively as Gholam-Khani or Gholam-i-Shah, "servants of the King," are of Türki stock, and have been settled in Herat, the Gulkoh Mountains, but chiefly in Kâbul since the time of Nadir Shah. The term was originally applied by Shah Ismail to the Nikâlu, Jawânsheer, and four other trusty Türki tribes to whom he owed his successes. But since then they have become a sort of brotherhood "much akin to the Beyyadiyah or 'White Boys' of Oman, and bearing some analogy to the Mormons" (W. G. Palgrave, "Report on Province Trebizond," 1868). Those of Kâbul form three divisions: the Jawânsheer, originally from Shîsha, the Afshar, Nadir Shah's tribe, and the Morâd Khani, composed of all the other Türkis who have from

<sup>1</sup> "Le Badakhân est également habité en grande partie par des Tadjiks montagnards" (*Bull. de la Soc. de Geo.*, March, 1879, p. 250). But Robt. Shaw ("High Tartary") says that physically they approach nearer to the Kashmirians and other Aryans of Northern India. This is borne out by their speech, which is more akin to the Sanskritic than to the Iranian family.

<sup>2</sup> *Loc. cit.*, p. 252.

time to time removed from Persia to Kâbul; religion, Shiah, with secret rites; speech, Persian, and amongst themselves, Tûrki; are a very fine race, very fair, with an evident mixture of Iranian and Tâtar blood.

The *Kohistanis* and *Siah Posh* ("Highlanders" and "Black Clothes") forming the bulk of the population in Kohistan, Swat, Kafirstan, Chitral, and generally of the southern slopes of the Hindu-Kûsh down to the left bank of the Kâbul river, are of pure Aryan stock, allied to the Kashmirians, but probably more closely to the Badakhshis and Wakhsis. The Kohistanis are Moslem, the Siah Posh still mostly pagans, hence called Kâfirs, or Infidels, by their neighbours, and their country Kafirstan. Their speech, of which there are ten distinct varieties (Major Tanner), is described as neo-Sanskritic, akin to Dardu and Lughmâni. But it has never been critically studied, and may possibly prove to be pre-rather than neo-Sanskritic; is in any case of great philological interest, having been isolated from the kindred tongues since the eruption of Islâm in the tenth century; type, regular features, blue and dark eyes, hair varying from light brown to black, broad open forehead, tall and well-made. But General A. Abbot ("Correspondence," edited by C. R. Low, 1879) distinguishes between a fair type with blue eyes, the aristocracy "descended of the Greeks" (?) and a very dark type, the aborigines. The Kohistanis north and north-west of Kâbul, C. R. Markham says, are mainly Tajiks (*Proc. Geo. Soc.*, February 2, 1879, p. 117); but they are more probably of the kindred Galcha stock, for those of Swat are represented as closely akin to the Siah Posh whom I take to be of this race. They form two main sections, the Torwals and Garwis. They took a large share in the recent events about Kâbul and have just been reduced by the British. The Safis, who have also lately been heard of in the same neighbourhood, are simply Siah Posh converts of the Tagao valley, Kunar district, north of Kâbul; three divisions: Wadin, Gorbaz, and Mûsawid; speech Pashae, closely allied to Lughmâni and Kohistani of Swat.

We come now to the Afghans proper, whose original home seems to have been the Kâbul valley, whence they spread westwards to the Ghôr country, southwards to the Suleimân mountains, and more recently down the Helmand and Arghandâb valleys to Kandahar.<sup>1</sup> They call themselves Bani-Israel, "Sons of Israel," claiming descent either from Saul or from the ten tribes, for on this point they do not seem to be quite clear. But this is of the less consequence that both claims are alike inadmissible. Notwithstanding a certain Jewish expression, which they have in common with the Armenians and other races of the Iranian plateau, they are beyond all doubt an Aryan and not a Semitic race, so far as these terms can be at all used as racial rather than linguistic designations. And here it may be well to remember that both Aryan and Semite belong equally to one ethnical stock, conventionally known to anthropologists as the Caucasian or Mediterranean, and that they can often be distinguished one from the other only by the test of language. We have the same phenomenon in Europe, where but for their speech no one would ever suspect that the Basques of the western Pyrenees were other than a somewhat favourable specimen of the Aryan race. This test, however, is abundantly sufficient to sever them from that connection, and the same test must suffice to remove the Afghans from the Semitic to the Aryan group.

Their most general and apparently oldest national name is Pukhtûn or Pakhtûn, as it is pronounced by the Khaibarîs, and which has been identified with the *πακτυες*, of whom Herodotus heard through Scylax (509 B.C.) as situated about the junction of the Kôphes (Kâbul) and

Indus. Their country they still call Pukhtûn-khwa, which is equivalent to Watan-khwa, or "Home Land"; their language is always called by them the Pukhtû, softened in the west to Pushtû, and from Pakhtâna, the plural of Pakhtûn, comes the form Pathân by which they are known throughout India. This word has been connected with the root Pukhta, a hill, so that Pukhtun would mean Highlander. But such derivations are seldom trustworthy, and it may be questioned whether any people have ever called themselves *Hill-men*, though often enough so named by their neighbours.

The alternative national name, Afghân, by which they are exclusively known in Persia and Europe, has been regarded by some as synonymous with Pukhtûn, both meaning "set free;" but by others it has been connected with Acvakan, the Açvaka, or "Horsemen," of the Mahâbhârata, who are supposed to be the Assakani, or Assekenes, of the later Greek historians. The natives themselves draw a distinction between the two names, so that although all Afghans are Pukhtâna, not all Pukhtâna are true Afghans. The latter term is properly restricted to the descendants of a legendary Kais, one of the first apostles of Islâm (ob. 662), from whom, through his three sons, Sarabân, Batân, and Gurgûst, are supposed to spring the 277 Afghan khels (tribes) proper. Of non-Afghan khels there are reckoned 128, making 405 Pushtâna khels altogether. Of these 105 are Sarabâni (from Sarabân), 77 from Batân, in two divisions; Batanai 25, and Matti 52, these last being known as Ghilzæ; 223 from Gurgûst, also in two divisions; Gurgûstai 95, and Karalânai 128, these last being the non-Afghan or Pukhtâna khels as above. In this traditional account of the national genealogies the distinction between the true Afghan and non-Afghan tribes is already obscured, for the latter are made to descend from Gurgûst, one of the three sons of Kais, who is elsewhere represented as the ancestor of the true Afghans alone. But the confusion becomes intensified when it is added that the very word Pathân, specially applicable to the non-Afghans, and which we have seen is merely the Indian form of Pakhtâna, is explained to be a corruption of Pihtan, "rudder," a title said to have been conferred on Kais by the Prophet himself. Altogether the distinction, though still maintained and recognised by the various sections of the people, cannot at all be regarded as racial. The true Afghans occupy mainly the western, central, and north-eastern districts—Herat, Seistân, Kandahar, and the Kâbul basin, as far east as Peshâwar. The non-Afghans, or Pathâns proper, are found almost exclusively in the Sufed-Koh and Suleimân highlands, as far south as the Kaura or Vahû Pass, opposite Dera Fatah Khan. A line drawn from about the parallel of Multân, through this point, westwards to Tal through the middle of the Derajât, will very nearly form the boundary in this direction of the Pathâns on the north, and the Baloches and Brahuis on the south. This relative geographical area suggests a possible explanation of the distinction between the two great divisions of the race. From their more westerly position it is obvious that the true Afghans must have been the first to adopt Islâm, and they may have thus come to look upon their pagan brethren of the Suleimân highlands as Kâfirs, undeserving to rank as genuine Afghans, the distinction thus originated naturally surviving their subsequent conversion.

In the subjoined table an attempt is made to give, for probably the first time, a complete classification of all the main sections of both divisions, with their chief sub-branches, approximate number of khels, geographical area, and population. The difficulty of the subject, occasioned mainly by the minute tribal sub-divisions, may be concluded from the fact that a complete genealogical tree of, say, the Afridis or the Vaziris alone, would occupy about two pages of NATURE.

<sup>1</sup> Till the time of Sultan Babur, founder of the Mughal empire (beginning of sixteenth century) the Afghan language was still confined to the north-eastern and western highlands, Persian being elsewhere current, as it still is mostly in the lowlands.

TABLE OF AFGHAN AND PATHAN TRIBES.

Main Sections.	Chief Subdivisions.	Total No. of Khels.	Geographical Position.	Population.
I. Duráni or Abdali ...	1. <i>Zirak</i> :—Popalzae, Ali-kiozae, Barakzae 2. <i>Panjpao</i> :—Murzae, Alizae, Ishakzae	135	Mainly in the tract between Herat and Kandahar, 400 miles long, 80 to 150 broad; also in Kabulistan.	800,000
II. Khugiani... ..	Vaziri; Khairbun; Sherzad	32	Chiefly in the Jalalabad district, between Surk-áb and Kabul rivers. Seem to have been originally a branch of the Panjpao Duranis.	50,000
III. Ghilzae or Ghilji ...	1. <i>Turán</i> :—Ohtak, Sakzae, Tunzae 2. <i>Bāran</i> :—Chin, Chalo, Zabar, Ali, Sulimān	140	In the country bounded N. by the Kabul river, E. by the Suleiman Mts., W. by the Gulkoh Mts., S. by Khalat-i-Ghilzae and Poti; 300 miles long, 100 miles broad. A branch at Khubes and Nurmanshahr, Persia.	600,000
IV. Yūsafzae ... ..	1. <i>Mandan</i> :—Usman, Utmān 2. <i>Yūsaf</i> :—Isa, Ilias, Mali, Rani	130	The hills N. of Peshāwar district and in the Yūsafzae division of the Peshāwar district.	700,000
V. Mohmandzae or Mahmandzae ... ..	Tarakzae; Halim; Baizae; Khwai; Utmān	63	The hills N.W. of Peshāwar between Kābul and Swat rivers; chief town Lalpūra.	40,000
VI. Kakars ... ..	Jala; Musa; Kadi; Usman; Khidar; Abdula	45	Extreme S.E. corner Afghanistan proper.	200,000
VII. Khataks ... ..	Tari; Taraki; Bolak	70	S.E. part Peshawar district, and S. and E. of Kohat; some also now amongst the Yūsafzaes.	100,000
VIII. Utman Khel ... ..	Asil; Shamo; Mandal; Ali	33	The hills N. of Peshawar between the Mohmands and Yūsafzaes.	80,000
IX. Bangash ... ..	Miranzae; Baizae; Sāmalzae	20	Miranzae, Kohat, and Kūram valleys; said to be originally from Seistān.	100,000
X. Afridis ... ..	Kuki; Malikdān; Kambar; Kamr; Zakha; Aka	180	Lower and easternmost spurs Sufed Koh Mts., W. and S. of the Peshāwar district, with Bara valley and parts of Chura and Tira valleys.	90,000
XI. Orakzae or Wurukzae	Daolat; Utman; Sipah; Ishmail; Rabia; Isa	70	The Tira highlands, N. and W. of Kohat.	30,000
XII. Shinwaris or Shanwaris ... ..	Sangu; Ali Sher; Sipai; Babur; Lohargae	30	Parts of Khaibar Mts., E. valleys of Sufed Koh and on borders of Bajāwar. <i>Note.</i> —X., XI., and XII. are collectively known as the <i>Khaibarīs</i> .	50,000
XIII. Tiraes ... ..	Shibdواني; Seh Pa	8	In the Kot valley of the Shinwari country, but distinct from them.	7,500
XIV. Jaduns or Gaduns ...	Salar; Matkhwa; Mansur	10	S. side Mahaban Mts. and Hazara district, Peshāwar; said to be Kākars originally, though now with the Yūsafzaes.	5,000
XV. Tarins ... ..	<i>Spin</i> :—Shadi, Marpani, Lasrani <i>Tor</i> :—Bateh, Haikal, Mali	20	N. frontier Biloch province Kachi.	20,000
XVI. Povindahs ... ..	Lohani; Nasar; Niazi; Daotani; Kharoti; Miani	120	From head of Gomal S. to head of Lora river along W. Suleiman range, their territory forming a triangle hemmed in between the Ghilzaes, Vaziris and Kākars.	50,000
XVII. Vaziris or Waziris ...	1. <i>Utman</i> :—Mahmud, Ibrahim 2. <i>Ahmad</i> :—Shin, Sirki, Umur 3. <i>Mahsud</i> :—Ali, Shahman 4. Gurbaz; 5. Lali	320	Suleiman Mts. from Thal to Gomal Pass, 30°-32° N. lat. A branch now with the Khugianis (II.)	250,000
XVIII. Shiranis ... ..	1. <i>Chua</i> :—Yahia, Bairam 2. <i>Sen</i> :—Ahmad, Yahia 3. <i>Uba</i> :—Ahmad, Manu	130	Suleiman Mts. from the Shekh Hidar Pass southwards to the Ramak.	35,000
XIX. Bābars ... ..	Mahsud; Bahadin; Musa; Ahmad; Mardan	15	In the Koh-i-Daman of the Dera Ishmail district, opposite the Sangão and Dahina Passes; same stock as the Shiranis.	20,000

TABLE OF AFGHAN AND PATHÂN TRIBES (*Continued*).

Main Sections.	Chief Subdivisions.	Total No. of Khels.	Geographical Position.	Population.
XX. } Turis ... ..	Gundi; Ali; Mula; Mastu; Firoz; Maru	52	Kuram valley. (See <i>Note</i> under XXI.)	30,000
XXI. } Jajis ... ..	Maidan; Danni; Isteah; Al- garh; Ada; Lehwanni; Ali; Ahmed; Bian, Shamu	50	Kuram valley, mostly about River Ariab and from the Shutar Gardan to the Paiwar Pass. <i>Note</i> .—XX. and XXI. are not regarded as true Pathâns, being traditionally sprung of two Mughal brothers, Tor and Jaji. Edwardes says they are Khatar Hindkis from Rawalpindi.	4,000
XXII. } Zaemûkhts ... ..	1. <i>Khwaïdad</i> :—Bâbakar, Hasn 2. <i>Mahamad</i> :—Wati, Manatu, Mandan	33	In the hills between Mîranzæ and Kûram.	25,000
XXIII. } Dawaris ... ..	1. <i>Tapi</i> :—Haidar, Idak 2. <i>Mâlâv</i> :—Darpa, Amzani	6	Dawari valley, 32° 57'—33° 7' N. lat.	20,000
XXIV. } Khostwâls ... ..	Ishmail; Matûn; Mandu; Shamal	10	Upper Khost valley, adjoining Kûram and Zurmat.	12,000
XXV. } Mangals ... ..	<i>Lajhwar</i> :—Fattakeh, Agzar, Andaz, Miral, Khajuri, Zab	14	On Lajhi river, Kuram valley, and parts of Zurmat; are supposed to be of Mughal descent.	25,000
XXVI. } Jadrans <sup>1</sup> ... ..	—	—	East of Zurmat, E. side of Suleiman Mts.	15,000
XXVII. } Ushtarânas ... ..	1. <i>Gagal</i> :—Shaho, Musa, Ako, Shamo 2. <i>Ahmad</i> :—Ibrahim, Kadr, Mashar	42	The hills opposite extreme S. part Dera Ishmail district. Are disowned by the Afghans, though apparently of Lohani (Povindah) stock.	8,000
XXVIII. } Esots ... ..	1. <i>Noh</i> :—Ahmad, Zado, Ja- han, Chado 2. <i>Mâlâ</i> :—Ado, Khidr, Pain- da, Khadi	15	The hills west of Dera Ishmail Khan. Are said to be of Kâkar origin, though now distinct; Troglodytes.	5,000
XXIX. } Jafars ... ..	Ramdani; Mohra; Rajâli; Rawâni	12	Between the Bûj spur of the Suleimân Mts. and the Bozdar Biloches.	5,000
		1,790		3,521,000

Of the main sections in this table, Nos. I. to XII. inclusive are recognised as true Afghans, and of these, Nos. I. and III. (Durânis and Ghilzæes) are by far the most important and influential. Since the time of Nadir Shah, the Durânis have been the ruling tribe, the Popalzæe division till 1818, the Barakzæe from that year to the present time. They were formerly called the Abdali or Avdali, a name which has been traced to the Ephthalites and Abdela of the Byzantine writers of the sixth century. But it was changed to Durâni from the title of Durri-Durân, "Pearl of the Age," assumed by the Sardar Ahmad Khan, of the Sadozæe branch of the Popalzæes, when he usurped the supreme power at Kandahar on the death of Nadir Shah in 1747. The seat of government was removed from Kandahar to Kâbul by his successor, Taimûn Shah (ob. 1793), and this dynasty became extinct in 1818, when it was succeeded by the Barokzæes in Kâbul, though various descendants of Ahmad Khan continued and still continue to assert their claims to the sovereignty in Herat.

Although mentioned in the national genealogies, the right of the Ghilzæes to be considered as Pukhtûns at all, much less genuine Afghans, has been questioned. There certainly seems to be a flaw in their escutcheon, and they themselves, who always call themselves *Ghilji*, and not

*Ghil-zæe*, claim Tûrki descent. The national tradition is that they entered the country in the tenth century under a certain Sabaktakin, of the Kilich Tûrki tribe "anciently situated on the upper course of the Yaxartes"<sup>1</sup> (Syr Darya). But, however this be, they are now entirely assimilated in habits, dress, religion, and speech, to the other Afghan tribes, with the exception of a few who are still nomads.

None of the other sections call for special remark except the Povindahs, who are at once agriculturists, traders, and warriors, their armed caravans yearly fighting their way through the intervening hostile tribes down to the markets of the Panjâb and Sindh. The name is supposed to derive from the Persian Parwinda, a bale of goods, and seems to be indifferently applied to the Lohanis, Waziris, Kâkars, Ghilzæes, or any other tribe temporarily or permanently forming part of this singular "trades' union." By far the most important section are the Lohanis, the oldest and most numerous members of the association, and one of the most promising elements for the future pacific settlement and material prospects of the country.

Physically the Afghans may be described as, on the whole, a fine race. Their features, though often coarse and ugly, are regular in the European sense of the term, with the occasional Jewish cast above remarked upon.

<sup>1</sup> I have not yet succeeded in obtaining the subdivisions of this section, and will feel obliged if any reader of NATURE will kindly communicate them, together with any other omissions or rectifications that may occur to him.

<sup>2</sup> H. W. Bellew, "Afghanistan and the Aghans," 1879.

Type, long, oval face, arched nose, head mesaticephalous, that is, intermediate between the round and the long, measured horizontally, with cranial index 79;<sup>1</sup> fair complexion, thick beard, hair and eyes generally black, but light blue or grey eyes and brown hair common amongst the Rohillas,<sup>2</sup> as the Suleimán highlanders are often collectively called.

The great bulk of the people are Sunnites, which is one of the causes of their profound aversion to the Persians, who are mainly of the Shiah sect. Yet the nobles and upper classes, especially amongst the Duránis, usually converse and always correspond in Persian. The consequence is that the Pukhtu, or national language, has remained a somewhat rude idiom, seldom employed in literature, and in refined society regarded as little better than a provincial patois. Its importance philologically is considerable, for though usually grouped with the Iranian branch of the Aryan family, Dr. Ernest Trumpp (Grammar, 1873), gives it a more independent position as intermediate between the Iranic and Indic, while Prof. Haug, of Munich, now regards it as a separate member of the family. It is very harsh and spoken with considerable dialectic variety everywhere in Afghanistan proper except the Hazarajat, and also in the Pesháwar district of British India. The most marked dialects seem to be the Kandahari, Dir, Tirhai, Pesháwari, Khaibari, Tarni, Vazíri, and Ushtaráni. The Pashae and Laghmáni, sometimes included in the list, are not Pukhtu at all, or even Iranian, but distinctly Sanskritic, closely allied to the Siah Posh and Kohistáni.

A. H. KEANE

### THE METEOROLOGY OF SOUTH AUSTRALIA<sup>3</sup>

MR. CHARLES TODD sends us a well-written and eminently practical paper on the rainfall of Adelaide during 1878, illustrated with a map showing the positions of the 115 stations for the observation of the rainfall of that part of Australia and their rainfall for the year. Along with the monthly rainfall for 1878 there are printed the monthly means of forty-three of the stations at which the rainfall has been recorded for at least eight years. Since these stations extend right across the continent from Palmerston in the north to Cape Northumberland in the south, we are now, through this boldly designed system of observation, obtaining just notions of the agricultural and pastoral capabilities of the colony, in so far as these depend on that prime factor of climate, the rainfall.

The rainfall of South Australia depends, on the one hand, on the tropical rains, which extend from the north coast inland, and prevail from November to April; and on the other hand on the winter rains, which extend from the south coast northwards into the interior, and prevail for the seven months ending with October.

The tropical rains extend in a greater or less degree across the interior, as far as lat. 26 S., falling off very considerably, however, south of Daly Waters, in lat. 16° 15'. The breadth over which these rains spread southwards and their copiousness depend altogether on the strength and southerly dip of the north-west monsoon, and consequently in the years when this monsoon blows over Australia with diminished force, a large tract of territory becomes nothing but an arid waste.

A different state of things, however, prevails along the north coast and for a few hundred miles inland. There the summer rains fail not. At Palmerston, for example, the average of the past nine years gives a monthly fall

<sup>1</sup> Barnard Davis, "Thesaurus Craniorum."

<sup>2</sup> From *roh* = the Persian *roh* = mountain, whence also Rohilcund, in Northern India.

<sup>3</sup> "Meteorological Observations made at Adelaide Observatory during 1876-77-78," under the direction of Charles Todd, C.M.G., F.R.A.S. "Rainfall of South Australia during 1878" (with map), by Charles Todd, C.M.G., F.R.A.S. Adelaide, 1879.

for each of the four months, from December to March, of 12.38 inches; in April, October, and November, the monthly mean is 3.68 inches; in May and September it is small, and in June, July, and August no rain falls. Here, then, is a large region, doubtless with a great future before it as regards the supply of the markets of the world with fruits and other tropical produce, such as have long been shipped from the rich plains of India and Ceylon.

The winter rains occasionally extend well up into the interior, sometimes passing the centre of the continent; but generally they thin off about 100 miles north of Spencer's Gulf, and are heavy north of this gulf only along the Flinder's range of mountains. The area of minimum rainfall of the continent extends from the Great Australian Bight to the northern extremity of the Flinder's Range, over the plains to the east of this range up to latitude 25°, and spreads either way to within perhaps a few hundred miles of the east and west coasts.

The agricultural districts of South Australia are marked off by the method of distribution of these winter rains; and roughly speaking, they lie for some distance northwards along and in the immediate vicinity of the Flinder's Range, and thence southwards along the coast to Cape Northumberland. This broadish strip of territory constitutes, then, the granary of the colony; and looking at Mr. Todd's rain returns in connection with the broad physical features of the region, it is likely always to remain so.

The close connection between the average quantity of wheat reaped per acre and the rainfall is shown in a table, giving for each year beginning with 1861 the yield per acre and the monthly rainfalls deduced from the observations of rain made over the agricultural districts during these eighteen years. In 1878 the rainfall over the agricultural districts was nearly 3 inches under the average, and the yield of wheat was only 7 bushels 9 lbs., or nearly three bushels under the average. Still more instructive would the comparison be if, instead of lumping the districts together, their average rainfall and average yield of wheat were presented in a separate form.

The *Meteorological Observations* made at Adelaide Observatory, published monthly, show also the rainfall at all the rain stations with remarks, the appearance of which cannot but be watched with the liveliest interest by the Colonists. Thus in January, 1876, it is noted that the monsoon scarcely reached the MacDonnell Ranges, south of which, and as far as the east coast, drought prevailed; and in the following month the information is given that although 10 inches of rain fell at Port Darwin, the monsoon rains were comparatively light and barely reached the centre of the continent.

The observations at the Adelaide Observatory are made, printed, and discussed with extremely satisfactory fulness for an observatory not furnished with continuously recording instruments. Of special value are the comparisons made of each month's observations with the means of these months from past observations. The sorting of the wind observations into the directions for each hour of observation, viz., 6 and 9 A.M., noon, 3, 6, and 9 P.M., give most interesting results. These show for the summer months a shifting of the wind from a south-easterly direction in the morning to a south-westerly direction in the afternoon, a result doubtless due to the situation of Adelaide with reference to the heated interior of the continent, as that heating varies during the twenty-four hours.

The weak point of this system of meteorological observation is the total absence of barometrical and thermometrical observations at all the stations except Adelaide. Such observations were made at some half dozen stations during 1861-64, but since then we miss them from the reports. It would not be possible to exaggerate the importance, not only to the colonists themselves, but to