

Oxus as far as it flows parallel with the Hindu Kush; then cross over the pass of Ishkashm to the Upper Kokcha from which in all probability the Anderab valley is accessible, and also Bamian. From Bamian Capt. Conolly passed to the upper waters of the river of Balkh and thence into the valley of Hari Rud, which expands westward to the meridian of Herat.

Between the meridian of Herat and Kabul, at least three lines of lateral communication are partially delineated. These are the parallel valleys of the Hari Rud, of the Murghab, and of the route traversed by Vambery, and the Russian officer Grodekov. Indeed it can be still further demonstrated that practical lateral communication exists throughout the whole length of the Iranian and Himalayan systems, and probably offers greater facilities of transit than the transverse routes.

On this point a few words appear to be called for, by the statements of a recent writer, a member of parliament, and formerly an Indian Governor of great distinction, who has denied the existence of lateral communication along and within the Suliman Mountains which form the easternmost part of the Iranian system and extend nearly from the Kabul River to the sea.

So far from lateral communication being wanting in this locality, which is now of much importance on account of its being brought by treaty within the scope of British administration—so far from the lateral communication being deficient and much less altogether absent—it constitutes as in the other mountains which we have discussed, a characteristic and marked feature of them. Indeed the outermost slope or scarp of the eastern Suliman has been delineated like a rising series of parallel gutters, terraces, or troughs, in the beautiful maps of the Derajat prepared by the surveyors under the guidance of Major-General Sir Henry Thuillier, who for so long a time filled the office of Surveyor-General of India, and whose presence here is such an advantage to the section.

In the heart of the mountains two lines of lateral communication can be already traced, even with our present very scanty information. Both are on the east of the waterparting of the Helmund and Indus basins, which is formed by the western range of the Suliman. One skirts the very summits of the range and is formed at its northern limit by the uppermost valleys of the Kurram, west of the Peiwar Kotul. It is watered by a stream which descends from near the Shutargarden Pass to the Kurram, where it meets another branch of the Kurram coming from the Mangal country on the south-western limits of the Kurram basin. From thence there is a communication with the district of Furlmul which was known to the Turki Emperor, geographer, and conqueror of India—the famous Baber. Furlmul lies at the head of the Dawar valley and river, which descends from it straightway to the Indus, but has never yet been wholly traversed by Europeans. Furlmul is occupied by the Karoti tribe of the famous Povindah merchants, unless the Waziri have driven them out.

From Furlmul this lateral line passes on to the Dwa Gummul another haunt of the Karoti people, who, as Povindahs and periodical visitors and traders to India, should have a clear interest in being friendly with us. From the Dwa Gummul we pass on to a southern headwater of the Gummul, and so on to the head of the Zhob valley, which is connected with the Thal-Chotiali route to Peshin.

There is another very important lateral line, a part of which was made known to Lieut. Broadfoot of the Royal Engineers as far back as 1842, by a native name, signifying "the road of the Waziri," a dominant tribe in those parts. This also connects the Kurram valley with the Dawar and Gummul valleys; and it is prolonged from Gummul up to the Chotiali route, by the great Zhob valley, which has at least been distinctly seen from both ends, in a direction nearly meridional. We all know the great road which has been traversed by British troops between Kabul, Ghazni, Kandahar, and Kelat, and eastward of this, on the western side of the western Suliman range, a route has been traversed from Zurmul to lake Abistada, and from the lake to Kelat, British troops have marched over the Toba-highland.

So much by way of proof of abundant lateral communication along the mountains west of the Indus.

One word more relating to the lateral communication through the hills and valleys of the south slope of the great Iranian highland. For it relates to the construction in the near future of a railway to India. From sheer ignorance some have proposed to carry such a line along the coast in a deadly climate with the atmosphere of a permanent hot bath. But the true route is found in one of those elongated lateral valleys which at

a considerable elevation above the sea and in a better climate than that of the lowland on the coast, stretch all along from the Pubb river on the borders of India to Mesopotamia. Among these is the line of the Kej valley and a succession of others leading to Shiraz, from whence there is little doubt that a practical line may be found up to Bagdad.

### UNIVERSITY AND EDUCATIONAL INTELLIGENCE

CAMBRIDGE.—The Professorship of Experimental Physics has been formally continued by the Senate, and there is now no doubt that if Lord Rayleigh is willing to undertake this onerous office, he will be elected Professor. A memorial requesting him to be a candidate signed by almost every elector in a very short time seems like a command. It shows that there is no fear, and every hope for a beneficial result to education following. Lord Rayleigh's knowledge of the working of the University and the Scientific Commission will give him a most commanding position. It is a clear "call" from the University when such men as Adams, Besant, Cayley, Dewar, Ferrers, Frost, Garnett, J. W. Glaisher, Hughes, Liveing, R. K. Miller, Peile, Pendlebury, Routh, Salvin, Skeat, Stoke, James Stuart, Todhunter, Venn, James Ward, W. Aldis Wright and others unanimously record their view that it would tend greatly to the advance of physical science and to the advantage of the University that Lord Rayleigh should occupy the chair of Experimental Physics at Cambridge.

Messrs. C. W. Moule (Corpus) and S. H. Vines (Christ's) have been appointed members of the Botanic Garden Syndicate till November 20, 1882; Drs. Power and Phear have been appointed on the Museum and Lecture Rooms Syndicate; Mr. Henry Sedgwick and Mr. V. H. Stanton are again on the Local Examinations Syndicate; Messrs. W. D. Niven and G. H. Darwin are appointed on the Observatory Sydicate; Messrs. Bradshaw, Bently and Peile, and Dr. Hart and Mr. Aldis Wright are on the University Press Syndicate; the two latter are special elections in view of the publication of the Revised Translation of the Bible; P. T. Main and F. M. Balfour on the State Medicine Syndicate.

Mr. S. H. Vines is also appointed on the Natural Science Studies; and Dr. Paget has been elected on the Council of the Senate, as a Professor, in Prof. Maxwell's place, for one year, and by only one vote over Prof. Stuart. Dr. Paget has on previous occasions been unwilling to come forward for such an onerous post, and would hardly now have done so, but for the short term of office required, and the importance of the medical and natural science rearrangements at Cambridge demanding his aid if the University showed its confidence in him.

An amended schedule for 2nd M.B. Camb. to come into operation in June, 1880, as far as regards comparative anatomy differs from that at present in force in introducing *excretory* and *reproductive* organs, as being required to be known in addition to the other principal systems: the tapeworms parasitic in man, cockroach, fresh-water mussel, whiting, and rabbit are introduced, while the spider and the cockchafer, oyster, perch, and rat disappear. In the specification as to the vertebrate skeleton, the cod displaces the perch, the dog replaces the rat. These changes all seem to be in the direction of providing larger and more conspicuous and accessible specimens to be studied, or those more necessary for a medical student.

### SCIENTIFIC SERIALS

*Journal of Botany*, September, October, and November.—The last three numbers of this journal are mainly occupied with articles on descriptive and systematic botany, extracts, and reviews, with the exception of two, to which special attention may be called.—In the September number Mr. S. Le M. Moore has a "preliminary notice" on mimicry of seeds and fruits, and the functions of seminal appendages. He points out the number of seeds or fruits that bear a striking resemblance to coleopterous or other insects, by means of which he believes they may often escape from their seminivorous enemies by being passed over as insects, or, being picked up and thrown away by insectivorous birds, may thus become disseminated. He adduces striking instances of this mimicry in Polygalaceæ, Leguminosæ, Umbelliferæ, and especially Euphorbiaceæ, in which the carunculus of the seed closely resembles the head of the insect, and the raphal