GEOGRAPHICAL NEWS.

Paul Fauque has returned to Paris from a scientific mission to Sumatra, with much valuable information touching the people of the country of Siaks and the kingdom of Atcheen. In the course of the journey he obtained precise information in regard to the causes and incidents of the death of Messrs. Wallon and Guillaume, assassinated by the natives on the river Tenom in 1880, as well as on the mineralogy and natural history of this great island. Numerous photographs of the country and people were secured.

François Deloncle, accompanied by an English and a French civil engineer and a Siamese commissioner, has been engaged in an inquiry as to the possibility of cutting the isthmus joining the peninsula of Malacca to the mainland, in north latitude 7° 14′. Here they discovered a little independent state called Samsam, formerly the resort of pirates, and now semi-independent of Siam. The inhabitants are a *métis* of Malay and Siamese blood. Here deep inlets penetrate the coast, joining an inland sea, which was now first seen by Europeans. It is about twenty feet deep, and forty-five miles long, having a greatest width of twelve miles. It presented a very singular appearance, being plentifully strewn with small islands of compact limestone covered with swallow's nests. This sea is fresh during the north-east, and salt during the south-west monsoons, and separates the island of Tantalam from the peninsula by a multitude of passages not represented on any chart. The section of the peninsula was made at Talung; and specimens brought back show the presence of auriferous quartz, tin, and iron. The report of the expedition will contain important anthropological as well as geographical documents. Returning, Deloncle also examined Adam's Bridge, between Ceylon and India, and will report that the establishment there of a maritime passage is entirely practicable.

Sorokin has recently published an account of his journey in the central range of the Thian-Shan, where, among other discoveries, he found the so-called ruins of cyclopean buildings to be due to natural causes acting on rock *in situ*. Dr. Regel has returned to Tashkent with his collections from Hissar and Karategin.

Les missions catholiques, published at Lyons, contains in almost every number rich contributions to geography or ethnology, as well as to the history of missions. Among others, it has recently contained the itinerary and map of a journey across Kwangsi and Kong Cheo, by Father Chouzy, and a journey on the Niger, by the missionaries of the church in Africa. The abbé Desgodins, in the same review, announces his establishment in a new English outpost in Thibet, at Pedong, forty-five miles north-north-east from Darjiling, where he will continue meteorological observations, as previously at Bathang, his former station.

Giraud, to whose critical situation, abandoned by his caravan, recent reference was made in this journal, has arrived safely at the mouth of the Zambezi. It appears, that, after leaving Karema, he endeavored to penetrate westward, in spite of disquieting rumors and symptoms of mutiny in his caravan. He succeeded in crossing the lake in native canoes, and in a month had reached the Belgian station of M'pala. Here, unsettled by rumors of difficulty on their proposed route, his party revolted, and proceeded to pillage villages where he had previously been received with kindness. He was therefore compelled to return. With a small party gathered on the shores of Lake Tanganyika, he reached the north coast of Lake Nyassa, descended in a little boat to Shiré, endangered by the hostilities between the Portuguese and the natives, but succeeded in reaching the Zambezi and Kwillimané in safety, in good health, with numerous notes and collections, and, at last accounts, was on the point of returning to Europe.

From the *Missionary herald* for March we learn that Mr. Richards of the East-central African mission made a journey in October, 1884, from Inhambane to the Limpopo River. He went through an unexplored country in search of a tribe whose chief settlement was reported to be Baleni on the Limpopo, and who spoke a language akin to Zulu. Between thirty and forty miles westward from the coast he crossed a river called the Bombom, which may be the Luizi of some charts on which it is represented some three times the distance from the coast. No other important river was noticed until the Limpopo was reached. The country is almost wholly marshy, and covered with brush or low palms, with ponds here and there. The thermometer ranged between 80° and 90° F. The Amakwakwa tribe, encountered forty miles from the coast, had been subjected to chronic pillage by Umzila's fighting men, and had abandoned agriculture in consequence. They were idle, living on the wild fruit which is abundant, and getting very drunk on the native wine afforded by the scrub palm, which produces a rapidly fermenting sweet sap at the rate of a pint a day per tree. Many kraals were deserted, and a tract of country seventy-five miles square was nearly desolate. About a hundred and fifty miles from the coast, the Amagwaza people were encountered, who gave the travellers a cordial reception as soon as it was found they were not Portuguese. They are subject to Umzila, whose capital kraal is far to the north, but most of whose people live south of the Sabi River. Baleni was said to be on the Limpopo three days south from the point where Mr. Richards reached it. Time did not suffice to visit it. The return was made through a rather openly wooded country, where the trees bore long wreaths of a gray tree-moss, and beautiful birds were abundant. Elephants abound in this district. In three days the ridge between the Limpopo and the sea was reached, where live an industrious kindly people, with sheep, cattle, and large gardens. By the pedometer the crest was fifty-seven miles from the sea, and seventy-eight from the river. The people of the region appear to have been originally of Tonga race; but, conquered by the Zulus and Portuguese, their language has been modified by the superior nationality in its respective districts.

The long-disputed questions as to the ancient bed of the Amu Daria, or Oxus, appear to have received a final settlement in the publication of the studies of Konshin of St. Petersburg. According to him, the river has never directly emptied into the Caspian; but it is probable that at some period an indirect communication has existed between them through Sari-Kamich Lake and the Uzboi, which drained it. The lake was of much greater area, and its overflow reached the Caspian by the Uzboi: its character was saline or brackish. Were this state of things restored, we should have an immense Turanian sea, composed of a northern basin corresponding to that of the Sea of Aral, and a southern one corresponding to the Sari-Kamich area, connected by a wide but shallow neck of water. Into the former the Sir-Daria would empty, with the Sari-Su and the Chiu; into the latter, the Oxus, the Tedient, and the Murghâb. The overflow of brackish water would find its way by the Uzboi to the Caspian.

Those interested in the question of lakes with two outlets would do well to incite exploration of Frances Lake in the North-west territory. This lake, discovered many years ago by Robert Campbell, now of Winnipeg, was reached by him from the head waters of the Liard River, ascending, according to his account, a small stream actually proceeding from the lake. To his surprise, on the other side he found a communication, during the time of high water, with the head waters of the Pelly River. In 1865 information received from officers of the Hudson-Bay company at Victoria, by those of the International telegraph expedition, was to the effect that the Pelly communication was the chief one, and that a lowering of its bed had turned the drainage permanently north-westward, and the connection with the Liard had become nearly or entirely dry. This has since been indicated on most charts; but, as the lake covers some four hundred and fifty square miles, fuller and confirmatory evidence would be very desirable. The Liard is an affluent of the Mackenzie, and the Pelly of the Yukon River.

THE STATE SURVEY OF NEW YORK.

THE veto of the appropriation for this survey by the late governor of New York caused only a partial suspension of its functions. The survey exists by reason of an organic law creating the commission, and defining its powers. Only by the repeal of this law can the survey be abolished. Its work has been confined to a triangulation so accurately executed as to form a reliable basis for all local surveys and topographical work; but the value of such careful measurements is somewhat difficult for the unscientific man to understand, and the results are not immediately apparent.

To remove all doubts regarding the excellence and economy of the work under their control, the commissioners requested an investigation by the U. S. coast and geodetic survey. After a full examination of the records of eight years' work, Superintendent Hilgard transmitted them to the state authorities, with his full indorsement.

By this appeal to a most competent authority, the commissioners and director of the New-York state survey have established the fact that the work slowly accomplished with small appropriations since 1876 has been done in the best way and at a small cost. Their report just made to the legislature, having vindicated the work of the past, recommends a radical change in the future policy of the survey. It is urged that New York should be warned by the experience of Massachusetts that a triangulation not immediately followed by a detailed topographical survey gives but little satisfaction to the people. The citizens of a state want reliable maps which they can use, not mere skeleton maps which are only available for surveyors. The board therefore recommends that the legislature enlarge its powers, and increase the appropriations for the state survey, so that topographical surveys may be at once begun in at least three counties, and be carried forward on such a scale as to permit of the economical performance of the work. The cost of the topographical work is estimated at from ten dollars to twenty dollars per square mile, depending upon the character of the country, and the scale of expenditure recommended is forty thousand dollars per annum. For this sum, complete maps of from three to five counties could be made each year, and the maps, by counties, issued within a year after the field-work is done. It is proposed to have the U. S. coast and geodetic survey complete the primary and secondary triangulations, leaving the funds of the state to be used for tertiary triangulation and topographical work.

The experience of the director of the survey, who is by law the engineering member of the state board of health, has proved conclusively the wide-spread need of topographical maps to aid in the sanitary work of the state. The commissioners therefore affirm that there is pressing necessity for topographical maps for sanitary works on water-supplies and drainage; that no survey can meet the wants of the people that does not result in a reliable map sufficiently detailed for ordinary practical and scientific purposes; and that the people have a right to expect that the benefits of the survey will be made immediately available in the form of useful maps.

PROPOSED NEW METHOD OF MEASURING THE DENSITY OF THE EARTH.

THE only known way of measuring the density of the earth is through the 'gravitation constant,' which expresses the attraction exerted by a known mass at a given distance. The bodies whose attractions have been measured are either mountains or portions of the earth, as in the well-known experiments of Maskelyne and Airy; or portable masses of lead, as used by Bailey and others. The difficulty in the way of the former experiments is the necessary uncertainty of the density of those portions of the earth's mass in