

WE must add to our maps the ports of the growing region of Bolivia on its narrow strip of coast. Besides Cobija there are now as trading ports Mejillones, Tocopilla, and Caleta de la Chimba.

GOLD operations are being undertaken at Penang by English enterprise, with great hopes of success. The object is to work the quartz reefs.

GOLD mining is reviving in Colombia or New Granada, a country once famous for its riches.

THE LATE CAPTAIN BASEVI, R.E.

A LETTER in the *Times* of the 19th inst., from Col. J. D. Walker, R.E., announces the death of Captain James Palladio Basevi, of the Royal (late Bengal) Engineers, Deputy-Superintendent of the Great Trigonometrical Survey of India, an officer of great worth and ability, whose loss will be long felt in the department of the public service to which he belonged. He was the son of the celebrated architect, George Basevi, and was distinguished as a lad for more than ordinary talent, and particularly for his mathematical abilities. First at Rugby, then at Cheltenham College, and afterwards at Addiscombe, he won for himself a high position among his fellow students, and in December, 1851, he left Addiscombe as the first cadet of his term, obtaining the first prize in mathematics, the sword for good conduct, the Pollock medal, and a commission in the Honourable East India Company's Corps of Engineers.

The first few years of his services in India were spent in the Department of Public Works in the Bengal Presidency; but in 1856 he was appointed to the Great Trigonometrical Survey of India, in which he continued to serve up to the time of his death, performing many services of great value.

His bent of mind and habits of study led him, however, to feel a preference for the more purely scientific branches of the operations of the Trigonometrical Survey. Thus, in 1864, he was selected to undertake certain operations which had been proposed by the President and Council of the Royal Society for the determination of the force of gravity at the stations of the great meridional arc of triangles measured by Lambton and Everest, which extends from Cape Comorin to the Himalayan Mountains. The investigations were to be effected by measuring the number of vibrations which would be made in a given time by certain invariable pendulums when swung at the several stations.

Captain Basevi entered on the pendulum observations with his characteristic ardour and devotion. He carried his observations of pendulum and clock coincidences over at least twelve days at each station; for ten hours daily—from 6 A.M. to 4 P.M.—he never left his pendulums for more than a few minutes at a time, taking rounds of observations at intervals of an hour and a half apart; then at night he would devote a couple of hours to star observations for determining time.

His observations of the pendulums on the Indian arc showed that the local variations of gravity which are superposed on the great law of increase from the equator to the poles, though apparently irregular when examined singly, are subject to laws which are highly interesting and curious, and are well worthy of investigation. At the northern extremity of the arc the results indicate a deficiency of density as the stations approach the Himalayan Mountains, while at the southern extremity they indicate an increase of density as the stations approach the ocean; thus both groups of results point to a law of diminution of density under mountains and continents, and an increase under the bed of the ocean.

Thus far, however, observations had not been taken at any very great altitudes, the highest station in the Himalayas being under 7,000 feet; arrangements were therefore made to swing the pendulums on some of the elevated table lands in the interior of the Himalayas, which rise to altitudes of 14,000 feet to 17,000 feet. It was expected that this would be sufficient to complete the work in India, and then the pendulums would be taken back to England to be swung at the base stations of Greenwich and Kew, and *en route* at Aden and at Ismailha on the Suez Canal, places which are in the same latitudes as some of Captain Basevi's stations. Thus gravity at Aden would be directly compared with gravity at certain points of the coast and continental stations of the Indian Peninsula, and similarly the plains of Egypt would be compared with the Himalayan Mountains.

In the spring of the present year Captain Basevi proceeded to Kashmir on his way to the high table lands in the interior.

Early in June he reached Leh, the capital of Ladak. He then proceeded to the Kiangchu table land in Rukshu, about eighty miles to the south of Leh. There, at a spot called Moré, in lat. $33^{\circ} 16'$ and long. $77^{\circ} 54'$, and at an altitude of 15,500ft., he completed a satisfactory series of observations, which show a very gross deficiency of density. After applying the usual reductions to sea level, &c., it was found that the force of gravity at Moré did not exceed the normal amount for the parallel of latitude 6° to the south, as determined by the previous observations with the same pendulums.

Wishing to have one more independent determination at a high altitude, Captain Basevi proceeded to the Changchenmo Valley, which lies due east of Leh, across the newly-proposed trade route between the British province of Lahoul and the States of Eastern Turkestan. Near the eastern extremity of that valley, on the confines of the Chinese territories, he found a suitable position in lat. $34^{\circ} 10'$ by long. $79^{\circ} 25'$, at an altitude which is not exactly known, but must probably have exceeded 16,000ft. He hoped to complete his observations in ten days, and then commence the journey back to India. But he did not live to carry out his intentions; already the hand of death was upon him, and, all unconsciously to himself, the over-exertion to which he was subjected in a highly rarefied atmosphere and under great vicissitudes of climate was rapidly undermining a constitution which, though vigorous, had already been sorely tried.

With the devotion of a soldier on the battle-field, he has fallen a martyr to his love of science and his earnest efforts to complete the work he had to do, and in him we have lost a public servant of whom it may be truly said that it would not be easy to find his equal in habitual forgetfulness of self and devotion to duty.

SOCIETIES AND ACADEMIES

PARIS

Academie des Sciences, Sept. 11.—M. Faye in the chair. —M. Dumas read an abstract of a pamphlet published by MM. Lomer and Ellershausen, advocating the establishment at Bellegarde, in the department of Ain, of hydraulic machines worked by the Rhone, and giving a force of 10,000 horse-power. The site is called "Le perte du Rhone" at Bellegarde, and this immense hydraulic pressure is to be obtained by boring a tunnel, through which only one-third of the water of the Rhone will go. The height of the fall will be sixty feet, and the result is to be obtained very easily, as the tunnel is only to have a length of 550 yards. The engineers hope to create at Bellegarde a city as important as Lowell in the United States. It is intended to induce Alsatian manufacturers to move from Mulhaus, and to settle in that locality. — M. Decaisne sent some observations relating to animals fed with bread infested with the *oidium aurantiacum*, and it is considered as demonstrated that, at least under special circumstances, such food must be considered as being really poisonous. —M. Berthelot sent a very long paper on the union of alcohol with bases, which was inserted *in extenso* in the *Comptes Rendus*. —M. Lecoq de Boisbaudron sent also a paper which was published by him some time ago, on the constitution of luminous spectra. —M. Favre sent a paper to elucidate certain points of a special theory worked out to explain how a certain weight of copper rotating between the poles of an electro-magnet is heated by the influence at a distance. The fact was discovered by Foucault.

SAN FRANCISCO

California Academy of Sciences, August 22.—Mr. Dall called the attention of the members to some shells of oysters that had been transplanted from the Eastern States, and which during the last twelve months had been growing in the waters of the bay. The recent growth of these oysters had been modified in a manner so that they corresponded very closely to that of our native oyster. In the eastern oyster the shell is white and smooth, whilst our bay oyster has the shell much corrugated, of a brown colour, and frequently with purple stripes between the ridges. Now the recent growths of the shell of these transplanted eastern oysters exhibit the same corrugations as our native, the colour is decidedly more brown than in the east, and purplish stripes are frequently found between the corrugations. —Dr. Blake gave a description of some prismatic dolerite found in the neighbourhood of Black Rock, Nevada. The prisms were six-sided, measuring from 0.1 in. to 0.3 in. across, and some were from 3 in. to 4 in. long, but they all had evidently been