

in some instances 4 ins. thick, diorite, porphyritic trap, and coarse ferruginous sandstone." Chuckergaon, the village mentioned, appears to be close to Port Blair.

The ore proved on examination to be chromite. As this mineral is usually found in serpentine, and serpentine is known to occur in the neighbourhood of Port Blair, there is a strong probability that the Andamanese chromite is no exception to the general rule. "Serpentine and gabbro are found largely developed south of Port Blair and on Rutland Island, and are doubtless intrusive." A "micro-crystalline syenite" was noticed in one locality by Mr. Kurz; it is doubtless a form of the dioritic rock found locally associated with the serpentine in Pegu.* It will have been remarked that Mr. Portman observed diorite, &c., close to the place where the chromite was found.

As chrome iron ore (chromite), of average quality, is worth about £10 a ton in England, the Port Blair mineral, if obtainable in considerable quantities, is well worth attention.

[From the *Records Geol. Survey of India*, Vol. XVI., 1883.]

Obituary.

SAMUEL FRANCIS BAWDEN, whose untimely death is deplored by many friends, to whom his warm heart and generous disposition had endeared him, was born in London of Cornish parents in the year 1854. His family is well-known and much respected in the mining district of West Cornwall, where one or more members of it have been connected with mining for several generations. His grandfather was engaged as engineer in the construction of the West Cornwall Railway, one of the oldest railways in the United Kingdom; his father was for many years connected with the Carn Brea and other mines near Redruth; one of his uncles has been for a long time purser of West Basset Tin Mine, in his native parish of Illogan; and another, now retired from active life, was for many years manager of Messrs. Vivian's Nickel and Cobalt Works at Birmingham.

His relatives being thus engaged, it was natural to Mr. Bawden to turn his attention to metallurgical chemistry. While employed in various chemical works at St. Helen's, Glasgow, and Swansea among others, he embraced such opportunities as came within his reach to add theoretical knowledge to his practical acquaintance with Chemical, Mineralogical, and Metallurgical Science. At Swansea he was for some time a teacher of chemistry under

* W. T. Blanford, *Manual of the Geology of India*, part 2, p. 733.

the Science and Art Department, and I have been assured that his teaching there was much appreciated for its clearness and definiteness by those who attended the classes.

In the year 1877 he entered the service of the Rio Tinto Company, as Chief Selector and Assayer at the mines. His diligence and general ability while engaged in this important work led to his promotion as chief of the Cementation Department, on the resignation of Mr. Alex. Hill in 1880; and this latter appointment he held up to the time of his death, having secured in it the approval of his superiors, the personal regard and esteem of his colleagues, and the hearty respect of those who were engaged under him.

During his residence at the mines, and partly in conjunction with Mr. Osborne, then chief of the Mining Department and now sub-manager, he worked out several important improvements in the treatment of the ores and products—among which may be specially mentioned the washing of the copper precipitate with dilute acid to remove arsenic, the treatment of the richer ores by the dry way in blast furnaces, together with certain improvements in the calcination of the ores, washing certain classes of ore with ferric liquors, &c. &c. He also made some successful experiments on a kind of modified “Hollway Process,” which have so far not been pursued to their legitimate conclusion.

A serious illness, the effect of the climate, from which he suffered for several months in the summer of 1879, seemed to have left him by the end of that year; and from this time up till the month of May 1883, his health continued good, but in that month his old enemy “calentura,” a severe form of fever and ague, reappeared, and he was ordered home to recruit his health. Under the influence of the pure air of Cornwall he seemed in a few months to have much improved, and he proceeded to London with a view of returning almost immediately to his duties at the mines. A relapse, however, took place, at first slight, but which speedily became alarming, and on the 3rd November 1883, in spite of the skilful aid of his physician Dr. Thin, he died of exhaustion, regretted by all who knew him, at the early age of 29. He leaves a young wife and infant daughter to bewail his loss.

Mr. Bawden was elected a Member of the Mineralogical Society in 1879, but his busy life at Rio Tinto prevented him from contributing to the Society's Magazine or from attending any of the meetings of the Society.

Rio Tinto, *Feb.* 1884.

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