There was a tendency for a curved ridge of sand to form inside the opening right round on to the face of the breakwater, but it was not very pronounced at present. Mr. Rattenbury.

At ebb, and down to low water during bad weather in the south-west monsoon, an awkward surface cross-current set in right across the entrance-channel at about 3,800 E, which made pilotage of light ships up the channel a matter for care. It probably always existed, but had been intensified by the construction of the breakwater and the constricting action of the gap on the water passing through.

Inasmuch as the direction of the wave-action was caused by the direction of the prevailing winds, the currents up and down the coast might be said to be caused by the winds. The ebb naturally set to the north, but the current was a slight one. In the south-west monsoon the wave-current and ebb coincided in direction, but in the north-west monsoon they were contrary in action. The wind- or wave-current was stronger than the ebb, so that contrary currents arose in different seasons of the year. Probably during the north-east monsoon the southward current was stronger during the flow than during the ebb, but he was not sure of that.

Paper No. 5031.[1]

"The Energy-Output of the Coal-Miner."

By Professor Kenneth Neville Moss, O.B.E., M.Sc., Assoc. M. Inst. C.E.

Correspondence.

Mr. E. C. Homersham agreed with the Author that miners required a proper supply of nourishing food. He pointed out that the pit-head facilities at most collieries in Great Britain left much to be desired, and he would advocate the putting into force of regulations ensuring the provision of satisfactory facilities and housing accommodation; such regulations would greatly improve the lot of the miner and would increase his efficiency. About 35 years ago the South African Government had imposed such regulations on the Rand mine-owners. Objections had been raised that the mining industry would be put to additional expense, but no mine had closed down as a result of the regulations. He wished to point Mr. Homersham.

[1] p. 354 (January).

Mr. Homersham. out, however, that regulations were useless unless they were enforced. The South African Government had met that objection by inserting a clause in the regulations to the effect that if, through the neglect of the powers controlling the mine, the manager was hindered in obeying the regulations, the Chairman, or acting Chairman, became responsible and liable to punishment. The prosecution of a Chairman had, however, never been necessary.

Sir John Orr. Sir JOHN B. ORR observed that he was especially interested in the Paper because he had been in the pits in Ayrshire and had watched the miners at work. Professor Moss was the first to determine the energy-output under actual working conditions; from results obtained in the last year of the war on soldiers engaged in various exercises, and from his recollection of the difficult physical conditions under which miners worked, involving the simultaneous use of groups of muscles of limbs and trunk, the figures given corresponded with what might have been anticipated. Studies of that kind, where the calorie requirements were determined under actual working conditions, were of especial interest at the present time, when minimum dietary requirements were under consideration. Theoretical calculations based on limited data would have to give way to direct observations under actual conditions, such as those made by Professor Moss. There was not the slightest doubt that the food requirements of the miner would have to be reconsidered in the light of Professor Moss's results, and it would be in the interest of practical dietetics if more observations of that kind could be made.

The Author. The AUTHOR observed that the correspondence on his Paper did not call for any reply.

Paper No. 4977.[1]

"The Treatment of Mud-Runs in Bolivia."

By STEPHEN WILLIAM FRANCIS MORUM, B.Sc. (Eng.), Assoc. M. Inst. C.E.

Correspondence.

Mr. Blencowe. Mr. SIDNEY BLENCOWE observed that the Author emphasized the damage that might, and did, result from the action of mud-runs; such runs were common throughout recent geological formations

[1] p. 426 (January).