Such return undercurrents have in somewhat similar circumstances been shown to exist in the Dardanelles, Strait of Gibraltar, and in the Suez Canal.

The observation at Bab-el-Mandeb was difficult. The wind is strong and the disturbance of the sea is considerable, while the water is 120 fathoms or 700 feet deep. But a surveying vessel maintained herself at anchor there during four days, and, by the aid of an ingenious apparatus sent from England for the purpose, clearly proved the existence of a current of 1½ knot flowing steadily at depths below 70 fathoms out of the Red Sea, whilst in the upper strata there was a similar current flowing in. In such ways is interchange of water provided for by Nature in places where tidal action does not suffice.

In what I fear is a very discursive Address I have not mentioned the interior of Africa. In the first place, it is a subject of itself; and as we shall have, I hope, many papers on African subjects I have thought it better to deal mainly with generalities.

Still I cannot refrain from a few words to express the astonishment I always feel when I hear people complain that Africa goes slow. When I look at what has been effected in my own lifetime, it appears to me that, on the contrary, it has been rushed. The maps I learnt from as a boy showed the whole interior as a blank. There are now no parts that are not more or less known. The great lakes have all been revealed; the great rivers have all been traced; Europeans are now firmly fixed with decent governments in parts formerly a prey to tribal wars and the atrocities of the inland slave traffic. Railways are running over regions unknown forty years ago, and one of the most astonishing things to me is that I should be able to hope now to visit in comfort and luxury the great Victoria Falls which my old friend Sir John Kirk—whom I left the other day hale and hearty—was, with the exception of Livingstone, the first white man to see, after a long and laborious journey in his company in 1860.

I could not help being amused as well as interested at seeing a short time ago a proclamation by the Government of Northern Rhodesia, dated not far from Lake Bangweolo, calling on all concerned to observe neutrality during the present war between Russia and Japan. I think that if anyone had prophesied to Livingstone, as he lay in 1873 lonely and dying by the shores of that newly discovered lake, that such an edict would be issued in thirty years he would have expressed a doubt as to its fulfilment.

To Southern Africa Nature has denied two of the features that facilitate rapid progress—good harbours and sufficient rainfall—but the energy of man has done wonders to provide the former where possible, and will doubtless do more; whilst I believe that the lack of the latter will also be overcome in the same way. The coordinated—or, in other words, the scientific—observations made in many other countries have pointed out a possible solution. On the other hand, the height of the inland plateaux makes it possible for the white man to live and work in latitudes which would under other conditions be tropical.

South Africa must have a great future before it; and while some present circumstances may delay development of its natural advantages, I am inclined to think that in the long run prosperity may be more solid and material for being reached in the face of difficulties, as has so often occurred in the history of the world.

SOCIETIES AND ACADEMIES.

PARIS.

Academy of Sciences, August 21.—M. Bouquet de la Grye in the chair.—On the laws of sliding friction: Paul **Painlevé.** A discussion of a problem suggested by M. de Sparre in a recent paper, and of the conditions necessary for a solution without ambiguity.—The cause of the presence of abnormal quantities of starch in bruised apples: G. **Warcollier.** It is shown that tannin from galls prevents all action of amylase on starch, and it is supposed that the accumulation of starch in bruised apples is due to a similar action.

CALCUTTA.

Asiatic Society of Bengal, August 2.—Additions to the collection of Oriental snakes in the Indian Museum, part iii.: N. **Annandale.** Four new species and a new genus are described, two of the former coming from the Malay Archipelago, one from N.E. India, and one from Gilgit. Notes on other species from different parts of the Oriental region are given. This paper completes the series for the present, the collection now being worked out and arranged.—Sal-ammoniac: a study in primitive chemistry: H. E. **Stapleton.** An attempt to carry back the history of sal-ammoniac through Mohammedan times, and to throw light on the primitive conceptions of nature which led to its introduction as an alchemical drug. Although little used by the Greek school of Alexandria, it was in high repute as one of the alchemical "stones" of the Arabs, and through their agency the substance passed into European alchemy. Authorities are given for the belief that the salt owed its reputation partly to its magical qualities, which were due to its connection with human hair and other animal substances, and partly to its strictly chemical qualities. A suggestion is finally made that the salt was originally introduced into Western Asia through Persia from China.—Alchemical equipment in the eleventh century, A.D.: H. E. **Stapleton** and R. F. **Azo.** This paper is an annotated analysis of an Arabic treatise on alchemy lately discovered in the library of His Highness the Nawab of Rampur. The treatise was written in Baghdad in the year 426 A.H. (1034 A.D.), and though now in a somewhat mutilated state, it affords a welcome addition to our knowledge of alchemical methods and equipment in the eleventh century. Special attention is directed to (1) the great importance attached to weights in chemical operations 700 years before the time of Black and Lavoisier; and (2) the drawings and description of the *Vthāl* (Aludel), which furnish, for the first time from Arabic sources, a clear conception of this instrument.

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