

by certain minor features to which Abbe gives special attention, and which indicate an outward movement of the prevailing currents on the north side of each cape, but an inward movement on the south side. The V-shaped bars on the shore of ancient Bonneville (Monogr. I., U. S. Geol. Survey, 57) seem to correspond with the cusped capes in essential features, but their relation to eddying currents is not clearly brought forward by Gilbert. Penck, in his recent *Morphologie der Erdoberfläche*, mentions back-set shore currents as of frequent occurrence, and suggests that the V-shaped bars of the Bonneville shore may have been produced by such movements (II., 485, 486), but he does not refer to other examples of this kind. Yet cusped sand-bar capes of moderate size are certainly not rare, as may be seen by consulting the maps of our coast in the lower part of Chesapeake Bay.

Dungeness, on the southeastern coast of England, seems to be a similar form; but no other examples are known of so great a size as those of our Carolina coast, nor has any other instance been adduced of so pronounced a control exerted by the general oceanic circulation upon the form of the continental shore line.

THE MIGRATION OF CAPE CANAVERAL.

IN connection with the foregoing, mention may be made of the southward migration of Cape Canaveral, as indicated by the Coast Survey Charts (Nos. XIII., and 159-163). Like the capes further north, Canaveral is a sand-bar cusp, the details of its form indicating a control by two adjacent eddying currents, after the manner described by Abbe. Its history appears to have been in brief as follows: The position taken by the first blunt cusp between the adjacent eddies seems to have been about ten miles south of Mosquito inlet and forty miles north of the present cape; this being, as it were, a provisional location

adopted by the currents before much work had been done in shaping the coast by building long bars for the transportation of sand. As an improved and continuous bar grew from north to south, its relation to the general curvature of the Carolina bight was such that it ran past the first-formed cape, and a new location for the cusp was then chosen thirty miles farther south, the outline of the old cape being still faintly traceable inside the newer bar. But a still better adjustment of the currents to the shore brought another bar down from the north, this one running past the apex of the second cape in much the same way that the second bar ran past the first cape; and thus the third cusp, the present Canaveral, was formed ten miles south of the second. The southward migration of the cape appears to be still continued, as indicated by the arrangement of the sand dunes; but it is now going on with a slowly progressive, creeping advance, and not by a leap, such as that which shifted the second cape from the first, or the third from the second. All this, however, is based only on a study of the charts. Those who have opportunity for a study of the cape on the ground might make it the subject of fruitful observation.

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ANNUAL MEETING OF THE CHEMICAL SOCIETY (LONDON).

IN the course of his address at the anniversary meeting of the Chemical Society of London, the President, Professor Armstrong, after referring to the notable growth of the Society in the twenty years during which he had been a member, stated that the Council had decided to break through the practice which had always obtained and by which the Faraday Lectureship has invariably been filled by some foreign scientist, and had bestowed the Faraday Medal upon Lord Rayleigh 'in recognition of the

services rendered to chemical science by the discovery of argon.' The President added that the Medalist would address the Society on the subject of argon.

Lord Rayleigh said that, in returning his thanks to the Society, he was somewhat embarrassed, because he felt that there ought to be another standing at his side. It was true that his researches, to which the President had referred, upon the densities of gases had rendered it almost certain that a new gas of some sort was concerned, and probably that the new gas was in the atmosphere. But from this point to the isolation and examination of argon was a long step, and the credit must be shared equally between Professor Ramsay and himself. In some quarters there had been a tendency to represent that antagonism existed between chemists and physicists in the matter, though such a thought never entered his mind. Professor Ramsay was a chemist by profession, while he himself had dabbled in chemistry from an early age, and had followed its development with a keen interest.

During the course of the same meeting Professor Ramsay and Mr. Crookes spoke of the isolation and spectroscopic examination of the gas containing helium derived from clèveite.

At the anniversary dinner in the evening of the same day the principal address was made by the Rt. Hon. A. J. Balfour. The following extracts from this will be of interest. Speaking of the attitude of the statesman towards science, he said: "For my own part, though the last thing I wish to do is to suggest that the work of a practical politician is other than a work which taxes the highest qualities of a man, still I have to admit, on looking back at the history of civilization, that if we want to isolate the causes which more than any other conduce to the movements of great civilized societies, you must not look to the great

politician of the hour, on whom it may be all eyes are fixed; you must look to those, often unknown by the multitude, whose work, it may be, is never properly realized by the mass of their countrymen till after they are dead. You must look at them, and at their labors, to find the great sources of social movement. We, who are carrying on a work which I hope is not useless, which, I am sure, receives its full meed of public recognition, do, after all, not belong to that class to which the community is most beholden for all that is to improve the lot of man upon earth. It is to those who, very often with no special practical object in view, casting their eyes upon no other object than the abstract truth and the pure truth which it is their desire to elucidate, penetrate ever further and further into the secrets of Nature and provide the practical man with the material upon which he works. Those are the men who, if you analyse the social forces to their ultimate units, those are the men to whom we owe most, and to such men, and to produce such men, and to honor such men, and to educate such men, the Society whose health I am now proposing devotes its best energies. * * *

"I should like to do what I can to dispel the prejudice which certainly exists at this moment in many influential quarters against technical education properly understood. Technical education, properly understood, suffers greatly under technical education improperly understood, and there is so much nonsense talked upon this subject; there is so much money uselessly spent; there are so many things taught to persons who do not want to learn them and who, if they did want to learn them, could by no possibility turn them to practical account; that it is no matter of astonishment that some persons are disposed to say that 'technical education is only the last bit of political humbug, the last new scheme for turning out a brand new society; it is worth-

less in itself; not only is it worthless, but it is excessively expensive.' I am sure Mr. Bryce* would agree with everything I have said upon this point, and everything I am going to say upon it—for I shall not go into controversial matter—because, while I think that those who object to technical education have their justification, it yet remains true that if you include, as you ought to include, within the term technical education the really scientific instruction in the way of turning scientific discoveries to practical account, if that is what you mean—and it is what you ought to mean by technical education—then there is nothing of which England is at this moment in greater need. There is nothing which, if she, in her folly, determines to neglect, will more conduce to the success of her rivals in the markets of the world, and to her inevitable abdication of the position of commercial supremacy which she has hitherto held."

"I do not deny that, if manufactures and commerce have an immense amount to gain from theoretical investigations, on the other hand—as everybody will admit that has even the most cursory acquaintance, let us say, with the history of the discoveries in electricity and magnetism—pure science itself has an enormous amount to gain from industrial development. While both these things are true, I am the last person to deny that it is a poor end, a poor object, for a man of science to look forward to, merely to make money for himself or for other people. After all while the effect of science on the world is almost incalculable, that effect can only be gained in the future, as it has only been gained in the past, by men of science pursuing knowledge for the sake of knowledge, and for the sake of knowledge alone; and if I thought that by anything that had dropped from me to-night I had given ground for the idea that I looked at

science from what is commonly called the strictly utilitarian standpoint—that I measured its triumphs by the number of successful companies it had succeeded in starting, or in the amount of dividends which it gave to the capitalist, or even by the amount of additional comfort which it gave to the masses of the population—I should greatly understate my thought; but I know this great Society, while it has in view these useful objects, still puts first of all the pursuit of truth, which is the goddess to which every man of science owes his devotion. And truth, not profit, must necessarily be the motto of every body of scientific men who desire to be remembered by posterity for their discoveries. These things can only be done through a disinterested motive, and it is because I believe that societies like the great Society I am addressing do more than any other organization to attain that great object; because I think they bring together men engaged in congenial pursuits; because the stimulus of mind brought close to mind, and the honorable ambitions and the honorable rivalries of men engaged in the same great task must lead to an enormous extension of our knowledge of the secrets of Nature; that I, as an outsider, not belonging to your body, do, in the name of a public for which I venture to speak, wish you all success and wish you all prosperity." W. W. R.

CORRESPONDENCE.

HAECKEL'S MONISM.

EDITOR OF SCIENCE: In response to your kind note of recent date concerning Haeckel's 'Monistic Creed,' I may state that I find myself in the fullest sympathy with the views expressed by Professor Brooks.

I may perhaps be permitted to add the following:—

The senses of man, as of other animals, yield certain impressions which so far as they go are of the nature of truth. We

* The Rt. Hon. James Bryce, President of the Board of Trade.