

being attacked in this country partly by observations of pilot balloons and partly by observations near the earth's surface of the angle of elevation of a balloon, which in a horizontal wind floats very nearly at the same level as the point to which it is attached. Special difficulties arise owing to the rapid increase of the errors of observation in the first method as the balloon travels away from the observers, and to the influence of the instability of the wake in the second method. Dr. Ludewig's contribution will therefore be of special interest. He uses the principle that the barometer in the balloon shows the height above sea-level, and therefore the rate at which the balloon is rising relative to the earth, while a vertical anemometer carried by the balloon shows the rate at which the balloon rises relative to the air. The difference between the two rates gives the rate at which the air is rising relative to the earth or the strength of the vertical current.

The construction of a suitable anemometer is the principal difficulty. Dr. Ludewig uses a fan in a small cylinder, which hangs from the balloon in a vertical position; the revolutions of the fan are recorded photographically by an ingenious device, so that the inertia and friction are reduced to a minimum. When the anemometer was suspended in a horizontal current of air, the fan did not rotate, so that effects arising from variations in the horizontal velocity were practically eliminated. In addition to a barograph, a Bestelmeyer variometer was used. The instrument is a form of eye-reading microbarograph, which permitted of great accuracy in determining the small variations in altitude as the balloon travelled across the country. In the first ascent, made on January 22, 1911, the results obtained from the variometer and the anemometer agreed so closely that it was evident that no vertical currents were present. In the third ascent, on February 18th, when there was a steep gradient for westerly winds over central Europe, strong vertical currents were experienced, and the instrumental measurements showed that the motion was mainly upwards, and reached at times a speed of 3 metres per second at altitudes slightly less than one kilometre. A curve, showing in profile the country passed over by the balloon during the period for which the diagram of vertical motion is drawn, would add interest to the latter and possibly suggest the causes of the rapid variations in the upward current.

E. GOLD.

BEACH-LA-MAR, THE JARGON OF THE WESTERN PACIFIC.

BEACH-LA-MAR is that peculiar variety of English speech which has arisen from the contact of uncivilised civilisation with the savage or semi-civilised peoples of the western Pacific. It is a language born of the necessity of comprehension between primitive traders, and is thus, in its nature and purpose, akin to the Lingua Franca of the Levant, the Pidgin of the China Seas, the Chinook of the American fur trade, the Negro-English of the Guiana plantations, and the Krooboy talk of the African coast. Its name suggests but one of its origins, for Beach-la-mar is the sailor's mispronunciation of *Bêche-de-mer*, a name of the Trepang or *Holothuria*, which was prepared on the island shores for the markets of the East Indies. But the language began with the American whalers and the sandalwood gatherers of the early nineteenth century, who preceded the *bêche-de-mer* fishers of the 'forties and 'fifties. On the decay of the trepang industry the talk passed to the copra-collectors and the beach-combers, and was finally settled as the jargon of the Pacific by the "blackbirding" (more delicately described as the "recruiting of Polynesian labour") in the 'sixties, when it became the common speech of the natives on the Queensland plantations.

Few have recorded the speech, and in an entertaining little volume Mr. Churchill has noted all that is to be found relating to it, with some chapters by way of introduction.¹

Mr. Churchill discusses the art of breaking English into jargon. It is delightfully simple, for "the proper way to make a foreigner understand what you would say is to use broken English." Politeness may give way to emphasis.

¹ "Beach-la-mar, the Jargon or Trade Speech of the Western Pacific." By William Churchill. Pp. 54. (Published by the Carnegie Institution of Washington, 1911.)

Grammar and the elegances of speech do not matter. The want of these will not shock the native, for in no native language is it possible to be ungrammatical. In them intelligible speech consists in the placing of the vocables in the right order. Inaccurate arrangement is unintelligible nonsense. The native subjects the broken English to the rules of his own speech. As to this, Mr. Churchill, promising that a single parent for the many and diverse languages of Melanesia is as yet unproved, recognises that all the languages of that region are practically on the same plane of development, and so uses the designation "Melanesian speech" to indicate a composite of the knowledge of the languages there spoken. He regards them as isolating languages, and rejects the Malayo-Polynesian theory of Bopp, as well as the application to them of the term "agglutinative." He believes the words may be separated into monosyllabic elements, and these even may be susceptible of ultimate reduction to vowels, to which may be prefixed or suffixed a consonant with a definite power of qualifying or fixing a special meaning to the stem.

The rules of isolating speech applied to the Broken English formed the Beach-la-mar.

The vocabulary is nearly all English, and the marine element is strong. Mr. Churchill says, "There can be no hesitation in ascribing to fore-castle English such exotics as *pickaninny*, *calaboose*, and *savvy*—longshore sweepings from the Spanish Main. The *squareface*, sole landward hope of the sailor, is scarcely known ashore. The sailor dialect has kept alive, and has given to these remote savages the special sense of *sing out* and *look out*, of *capsize* along with *copper*, of *slew*, of *look alive*, of *adrift* and *fashion*. Of certain elements of low, cant, vulgar English the sailors may have been the carriers." The Kanakas in the Queensland plantations enriched the vocabulary with Austral English, and to this "we must ascribe in the greater measure the inclusion of such terms as *tumble down* and *blackfellow*, of *flash* and *trash*, of *hook it* and *clear out*, of *hump* and *wire in*, of *gammon* and *bloody*." Such words as *kaikai*, food, *likelik*, little, *tambo* or *tabu* come from the island tongues, and one word, *rauss* (? clear out) is German.

Mr. Churchill has given a bibliography of the subject in fifteen entries. He has produced a most instructive and interesting book. It illustrates a simple language in the making, and records a form of speech which will disappear with colonisation and mission schools. It is to the presence of these in the Torres Straits that a decade in jargon noted by Mr. Churchill is due.

SIDNEY H. RAY.

THE FRACTURE OF FLINT BY NATURE AND BY MAN.

AT a meeting of the Prehistoric Society of East Anglia, held at Norwich on November 4, the natural fracture of flint and its bearing on rudimentary flint implements was discussed by Mr. J. Reid-Moir.

Subjoined is a summary of the main points described:—

(1) Experiments were shown in natural percussion produced by placing a number of flint nodules in a sack and shaking them violently together. The following results were obtained:—

First, some of the flints were flaked on the edge by blows which had impinged at all angles, as would be expected from fortuitous blows.

Secondly, nearly all the blows had impinged obliquely, thereby blunting the edge and showing prominent ripple-marks.

On the other hand, human blows are always delivered at a constant angle to the edge of the flint, and are delivered vertically to the edge, as it is much easier to remove flakes thus than by oblique blows, which is nature's method.

Nature must of necessity detach flakes obliquely, because out of the 180 angles at which it is possible to edge-flake a flint, there is only one which gives a true vertical flake.

These vertical flakes do not show ripple marks, as the force of the blow does not pass through the body of the flint.

It was also seen that fortuitous blows produced a large number of truncated flakes on the edge of the flints, which are not seen to anything like such a large extent on human