gestures were made audible by breathing or grunting.

In this way a single polysyllabic 'word' would denote a sequence of actions (or of actions and related objects), in other words, a 'sentence.'

Since these results were formulated I have learnt that a practically identical theory was put forward in Sept.–Oct. 1862 by Dr. J. Rae of Honolulu, in three articles published by *The Polynesian*, copies of which I have now seen in the British Museum Library (Press Mark—General Catalogue—P.P. 9899. 6).

Dr. Rae's conclusions were drawn from a study of Polynesian word-formation.

It is remarkable that, though Prof. Max Müller was acquainted with Dr. Rae's articles (see his "Science of Language," Second Series, 1864, pp. 10 and 89), he did not appreciate their importance, or see the light which they threw on the origin of the Aryan roots and of human speech in general.

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Preliminary Note on a Glow in Hydrogen at High Pressure.

DURING an experiment in which an attempt was being made to get atomic hydrogen by means of an incandescent tungsten filament in wet hydrogen, a quite unexpected glow was discovered. The apparatus consisted of a three-litre bulb in the bottom of which there was sealed a tungsten filament from a 300-watt electric-light bulb. The pressures varied from 2 cm. to 35 cm., the hydrogen being generated by the electrolysis of potassium hydroxide. No care was taken to dry the hydrogen or to purify it.

The glow was observed as follows: The filament was allowed to come to incandescence, the observer very carefully shielding his eye from the direct light of the filament. On extinguishing the filament and then opening the eyes, it was possible to see a weakly luminous ball of vapour, blue in colour, rising from the filament and spreading out into an umbrella-shaped cloud at the top of the bulb. This glow persisted for about a second and then disappeared. The act of disappearance was a characteristic one, the glow appearing to collapse from the wall of the bulb to its centre. The speed with which the glow shot up from the filament increased with increased pressures. Below 2 cm. and above 30 cm. the glow was no longer observed.

It was found that after the filament had been run steadily for about thirty minutes it was no longer possible to observe the glow. However, on letting the filament stand for about ten minutes it recovered its former power to give the glow. We suspect from this that the glow is caused by something which is liberated from the incandescent tungsten filament, the fatigue of the filament being due to the filament's having given up all the carriers of the glow.

When fresh hydrogen was allowed to enter the bulb the filament did not give the glow until it had been flashed about ten or twelve times, after which it recovered its former ability to give the glow.

In order to eliminate the possibility that the glow may have been due to excitation of the hydrogen by electrons from the filament which had been accelerated due to the potential drop along the filament, a filament was used which became incandescent and gave the glow on only 5·5 volts. This immediately eliminated the above possibility, because the lowest excitation potential of H_2 is at 11·4 volts.

Several attempts were made to photograph the spectrum of the glow, all with no success. However, by the use of colour filters it was possible to show definitely that the glow extended at least from 5000 Å.U. to 4400 Å.U. Therefore, although there are as yet no photographs, there is very little doubt in our mind as to the nature of the spectrum. We think that the spectrum is continuous because it is hard to see how such a weak spectrum can extend over a range of more than 600 Å.U. and be anything else. An attempt is now being made to determine the nature of the carriers of this glow.

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Anomalies in the Properties of Long-Chain Compounds.

DURING the course of an investigation into the nature of adhesion (on which I have been engaged with Prof. J. W. McBain on behalf of the Adhesives Research Committee of the Department of Scientific and Industrial Research), it has become evident that many of the properties of certain long-chain compounds become anomalous at (or in the immediate neighbourhood of) the 5th, 10th, and 15th carbon atoms in the chain. This is of theoretical interest in connexion with the form which the carbon spiral assumes in particular homologous series.

As is well known, the combined X-ray data of various investigators lend support to the idea that some form of carbon spiral or zigzag exists in certain long-chain compounds; and on certain assumptions the disposition of the carbon atoms in the chain has been more precisely defined. It is desirable, however, that data other than those of X-ray spacings should be considered in this connexion; for example, properties relating to the *molten state* or to *solution*.

According to the stereochemical view, a continuous chain of five carbon atoms would be expected almost to return on itself; and it is reasonable to suppose that a similar disposition of the carbon atoms would recur at the 10th, 15th, etc., carbon atoms. In this event the properties of similarly constituted compounds might be expected to show at least a tendency to periodicity with increase of molecular weight. Evidence of such a periodicity in the molecular rotatory power of the ethyl-R-carbinols (R = alkyl) was obtained by Pickard and Kenyon (*Jour. Chem. Soc.*, p. 1924; 1923).

From a consideration of such properties as static friction, adhesion, cohesion, surface tension, density of packing and electrical properties of monomolecular films on water, optical activity, magnetic rotation, dissociation constants, toxicity, together with other data, it appears that cumulative evidence can now be adduced indicating that anomalies or turning points exist in many of the properties of certain long-chain compounds at (or near) the 5th, 10th, and 15th carbon atoms of the chain. (It is intended to publish the detailed evidence shortly.) The abnormality is usually most pronounced at or near C_{15}, the anomalies being smaller in the neighbourhood of C_5 and C_{10}. It is considered that publication of the data may stimulate research into the question of periodicity in the properties of long-chain compounds, quite independently of the various X-ray investigations now in progress.

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