

VI.—Given carbon dioxide, how would you demonstrate its chief properties?

Prove that carbon dioxide is heavier than air.

(1) Collect the gas by downward displacement.

(2) Pour it downward from one vessel into another containing a lighted taper; the taper will be extinguished.

(3) Fill two wide-mouthed bottles with the gas, and hold the one mouth downwards, the other mouth upwards, one minute. If a lighted taper be now introduced into both bottles, it will continue to burn in the bottle that was held mouth downwards, and be immediately extinguished in the other that was held mouth upwards.

(4) Soap bubbles float on CO_2 . Carbon dioxide neither burns nor supports ordinary combustion. The metals potassium, sodium (and magnesium, when heated), decompose the gas, uniting with the oxygen to form the oxide of the metal, and throwing down the carbon.

(5) Lower a candle into a large dry bottle filled with air, and allow it to remain there until it goes out. Notice the water on the sides of the bottle. Introduce lime water and shake; a white precipitate, CaCO_3 , will form.

MODERN LANGUAGES.

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ENGLISH.

QUESTIONS IN ENGLISH.

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NOTE.—The object of the following answers is not so much to convey information as to suggest systematic methods of treating questions.

I. Discuss the relation of English to the other languages of the Aryan family.

The birthplace of the human race, and consequently of the language, is now generally supposed to be in the regions of the Indus, near Cashmere. All languages seem

to have been derived from one common source, and linguists sought vainly for a long time to discover the primitive language. The claims of the various tongues were advocated by different writers, but the Hebrew was the favoured one till quite recently, when the ancient Sanscrit was discovered. There are two roads by which the Aryans of Asia might have come into Europe. One to the north of the Black Sea, through Russia; the other to the south, into northern Greece, and along the Danube.

Many terms have been used in describing the languages of Europe, as Aryan, Indo-European, Indo-Germanic, and Japhetic; but the first of these is the best that has been invented. It originated with Max Müller. It is derived from the root *ar*, to plough, which in later Sanscrit means "noble."

Though all languages have the same origin, some are found to resemble each other more closely than others; and this leads to the classification of languages. Affinities are ascertained by tracing, 1st, The peculiarities of grammatical structure; 2nd, Historical relationship.

The first mode of classification is called a morphological one, and divides languages into (1) Monosyllabic; (2) Agglutinative; (3) Inflectional.

Historical relationship depends on (1) Similarity of grammatical structure; (2) The fundamental identity of roots. There are about nine hundred roots in Sanscrit which reappear in the languages of Europe.

If languages are compared with respect to their inflections, it will be seen that in a very large number of them the genitive contains the letter *s*; and that the dative or accusative frequently terminates in *m* or *n*.

The Aryan family includes—

1. Gentoo or Sanscrit, including most of the languages of Hindostan. 2. Iranian or Ancient Persian, the parent of Afghan, Beloochee, and Kurdish. 3. Armenian, including Ancient and Modern Armenian. 4. Classic, including Greek, Latin, Spanish, French, Wallachian. 5. Slavonic, including Russian. 6. Lithuanic, including Lettish and Lithuanic. 7. Keltic. 8. Gothic.