

and the Creed. The signs for the ideas 'heaven' and 'earth' are thus explained:—

"[*Heaven*] This Generical Character is assigned to signifye World, the right angled affix on the left side, denoting the second Difference under that Genus, namely Heaven; and because there is no affix at the other end, therefore doth it signifye the Difference itself, and not any Species."

"[*Earth*] The same Generical Character signifyng World, the affix making a right Angle, doth denote the second difference under that Genus, namely the Celestial parts of it in general, amongst which, this Globe of Sea and Land whereon we live, is reckoned as the seventh Species, denoted by the affix at the other end."

These examples suffice to show the nature of the 'real character,' which is obviously adapted for universal writing, because the ideas expressed by the signs are translatable into the words of any language.

The Roman alphabet (with additional letters) is also made use of in application of the system to individual languages. The same forty 'genuses' are expressed by simple syllables, such as *ba, be, bi*, etc.; the differences under each genus being denoted by sequent consonants, as in *bab, bag, bad*, etc.; and the species by putting a vowel after the consonant, as in *deba, deta, gade, pida*, etc.

A few words may be quoted to show the nature of the verbal forms in this 'philosophical language:'—

<i>al</i> = 'the'	<i>lal</i> = 'from'	<i>odab</i> = 'body'
<i>coba</i> = 'father'	<i>lil</i> = 'at'	<i>odad</i> = 'hell'
<i>cobas</i> = 'son'	<i>me</i> = 'as'	<i>poto</i> = 'day'
<i>Dab</i> = 'God'	<i>mi</i> = 'no'	<i>Saba</i> = 'Lord'
<i>dad</i> = 'heaven'	<i>na</i> = 'and'	<i>salba</i> = 'kingdom'
<i>e</i> = 'he'	<i>nil</i> = 'but'	<i>tado</i> = 'power'
<i>he</i> = 'his'	<i>nor</i> = 'for'	<i>velco</i> = 'lead'
	<i>velphi</i> = 'give'	

The principle on which these words are constructed may be understood from the author's explanation of the four following:—

"[*Coba*] Co doth denote the Genus of Oeconomical Relation; the letter [b] signifyng the first difference under that Genus, which is Relation of Consanguinity; the vowel [a] the second Species, which is direct ascending; namely, Parent."

"[*Cobas*] The syllable [co] is assigned to the Genus of Oeconomical Relation, the letter [b] to the first difference, and the vowel [a] for the second species, the Letter [s] denoting the word hereby signified, to be an Opposite, viz. Son."

"[*Dad*] Da the Genus of World, and [d] the second difference, which is Heaven."

"[*Odad*] [Da] is the Genus of world, [d] is the second difference, which is Heaven, the vowel [o] which is opposite to [a] being prefix, denotes this to be the word opposite to Heaven, viz. Hell."

In this way all thoughts find expression in fit words deduced from the associated meanings of their component letters. "Every Word being a description of the thing signified by it; Every Letter being significant, either as to the Nature of the Thing, or the Grammatical Variations of the Word; besides the constant Analogy observed in all kinds of Derivations and Inflexions." With all these advantages, however, the philosophical language would need a philosopher to use it.

Another part of Bishop Wilkins's work ought not to pass unnoticed; namely, his analysis of English sounds. This is far superior to that of any preceding writer, and also more complete than the schemes of the majority of subsequent phoneticians. If the bishop's scheme for a universal language must be set aside as being beyond the ability of average learners, the logical, grammatical, and phonetic principles evolved in its development must always command the admiration of students.

The new claimant for adoption as an international language proceeds on the principle of selecting roots of words from the vocables of existing languages; but the relation of the Volapük words to the English, German, French, and other words from which they are derived, is so far from obvious, that the learner is not assisted by it to remember the meanings associated with the roots. English is said to have furnished about forty per cent of the adopted roots, yet, in a vocabulary extending over upwards of forty pages, only twelve of the roots exactly correspond with their English proto-

types. The roots might, indeed, just as well have been entirely arbitrary as to have been arbitrarily chosen in this fashion from existing words. The method of root-building proposed by Bishop Wilkins seems greatly preferable.

Root-words having been selected, they are provided with a very complete and on the whole simple category of definitive letters and syllables, for prefixing or suffixing, to show number, gender, case, tense, mood, etc. The simple grammar of English has not been taken as the model in this department, but the complex arrangements of highly inflected languages. This is unfortunate; for we may safely assume that the universal language to be some time adopted will express all verbal relations by separate words, and not by root-inflection. The student will then need only to memorize words, and he will not require to know any thing of case-endings and other grammatical subtleties. On the other hand, if these matters are considered essentials of a language, the inflective scheme of Volapük could hardly be improved on. For example: all plurals end in *s*; final *-a* denotes the possessive case, final *-e* the dative, and final *-i* the objective; masculine genders end in *om*, and feminine in *ji* (pronounced 'she'); adjective terminations are *ik* and *id*, adverbial *o* and *na*, degrees of comparison being *um ün*, and *umo üno*; active and passive verbs have their appropriate signs, as have also all persons, tenses, and moods; prepositions end in *ü*, interjections in *ö*, etc. The grammatical particulars to be attended to are very numerous, but the rules have the advantage of being absolute, and unburdened with exceptions. The inflective feature of the language must, however, present an unsurmountable obstacle to its popular employment.

We cannot think that Volapük solves the problem of a universal language. The system will naturally meet with the largest acceptance in countries which already possess an inflected language; for the manifest superiority of the Volapük inflections, in regularity and simplicity, cannot but impress those accustomed to the complexities and anomalies of inflection. Speakers of English are happily free from this source of difficulty, and to them Volapük cannot be acceptable. The English language is itself reaching out towards universality, under the influence of commercial and social necessities. The present form of the language may be considered as classical, and must be allowed to remain substantially what it is. But English is undoubtedly susceptible of modifying simplifications which would easily and perfectly fit it for international use. Let a committee be appointed, consisting of one British and one American member, to investigate the subject, and suggest such changes as would remove anomalies, and I feel convinced that they would readily create a new and simple tongue in the form of what may be called 'world English.' This seems to be the most hopeful direction in which to look for universal language.

ALEX. MELVILLE BELL.

THE PEOPLES OF SOUTH-EASTERN EUROPE.

At the present time, when the idea of 'nationality' rules the fates of Europe, those states have to pass through the severest struggles which have the most heterogeneous population, the parts of which gravitate to different centres. This is particularly the case in Austria, and was the case in Turkey. The latter, however, has disintegrated to such an extent that many of the peoples formerly included in its territory have gained their independence.

The accompanying map shows the distribution of the peoples and the boundaries of the states of south-eastern Europe. At the present time, when the struggles of the Bulgarians for independence and unity excite so much interest, a description of their distribution is of particular importance. The map shows that they inhabit the greater part of Bulgaria, while in the eastern part Turks are intermingled with them. Eastern Roumelia, which by the uprise of 1886 joined Bulgaria, has a Bulgarian population in its western half, while numerous Turks inhabit the east, and Greeks occupy the coast. But the territory of the Bulgarians is not confined to these two districts, which practically form one state. The south-eastern portion of Servia and ancient Macedonia is inhabited by them, and their territory extends northward to Ochrida. Their western neighbors are the Servians, of whom the Croatsians and Slovenians form a branch. The map shows that they occupy the

western part of this region from Montenegro and Servia north-westward, their greater number being under Austrian rule. While these peoples immigrated during the middle ages, numerous remains of the ancient inhabitants of south-eastern Europe are still extant, although in course of time much influenced by the immigrants of the middle ages. The most important of these are the Greeks in Greece and the adjoining parts of Turkey; on the Archipelago, Crete, and on many points of Asia Minor. Their distribution all around the coasts of the Ægean Sea and on the south-west coast of the Black Sea shows that they are principally a seafaring and trading people. Colonies of Greeks are found in all great cities of the Orient. Their neighbors are the Albanese, who live in the rugged mountains of the western part of the Balkan Peninsula, east of Montenegro. They are presumably descendants of the ancient Illyrians, although much doubt prevails as to their descent. In southern Eubœa and around the Gulf of Ægina they live among Greeks.

During the reign of the Romans over eastern Europe many peoples became Romanized. Their descendants are the Roumenians in Roumania, Bessarabia, Transylvania, eastern Hungary, and the north-eastern corner of Servia. It is of interest that a number of them, widely separated from the main body, should live in the Pindus, near Berat, and in a few villages of eastern Thessalia.

The invasion of the Turks added a new element to these peoples, but there are only few places which are inhabited by them exclusively. Their principal territory in Europe is the eastern part of the Balkan Peninsula, between the mouths of the Danube, Philippopolis, and Constantinople; but, besides this, numerous isolated districts throughout the peninsula are inhabited by them. The number of Turks, however, in the outlying districts, which are not any longer under Turkish rule, has greatly decreased since the recent wars. The principal district of the Turks is Asia Minor.

In the north-western part of south-eastern Europe we find another foreign people settled among the Indo-Europeans, — the Hungarians, who belong to the Finno-Tartarian race. They occupy the greater part of Hungary, where Germans, Servians, Roumenians, Russians, and Slovenians are settled among them, and the eastern part of Transylvania. Last of all we mention the Germans, who are the neighbors of the Hungarians and Servians in the north-west, but have, besides, numerous colonies in Hungary, Transylvania, and near the mouths of the Danube.

The development of these numerous peoples is one of the interesting problems of European history. It is hardly possible to classify the peoples who in ancient times lived in these regions. During the middle ages numerous peoples — the Gauls, Romans, Goths, Huns, Avars, Petchenegs, and Cumans — invaded the peninsula; but the principal part of the population consists of the ancient Slovenes of Pannonia, who settled in course of time in the province of Moesia. About the middle of the seventh century we hear about their wars with the Byzantine empire. The most important event in the early history of the southern Slavic peoples is the invasion of the Bulgarians. Their descent is doubtful, for their language has been lost. Gaster points out that not only the relics of Bulgarian language, which consist mostly of proper names, but also certain customs, are in favor of the theory that they belonged to the Turkish peoples who ruled in southern Russia, and that with them came certain Finnish tribes. They crossed the Danube in 679 A.D., and in course of time subjected all peoples of south-eastern Europe. Within a few centuries they became amalgamated with the Slavic people, whom they had conquered, and thus formed the Bulgarian people of the present time. We need only to mention that the Turkish invaders found all these peoples settled, and added a new element to the numerous races and peoples of that region.

From this brief review of the facts it will be seen that there exists no homogeneous people in south-eastern Europe, but that all of them are the descendants of an extensive mixture of different peoples. Even the Greeks, whose language has comparatively little changed since the times of antiquity, have been greatly influenced by Slavic peoples.

As none of the states of this region comprises a population speaking only one language, and as at the present time the history of Europe is entirely ruled by the desire of each nation to be inde-

pendent, the natural outcome of this state of affairs is a continuous struggle between the various peoples. But a glance at the map shows that the actual distribution of the peoples makes the establishment of states comprising only one people impossible. A Greek empire would exclude all other peoples from the sea; a Bulgarian state would include numerous Greeks, Turks, and Albanese. It is of great interest that these difficulties have only arisen in our century, for before this time the idea of nationality was hardly known. It is only since the French revolution that the tendency of all peoples speaking one language to form one state has grown up. To this idea Italy and Germany owe their existence, and it threatens Austria and Turkey with destruction. It is remarkable to see how people bitterly opposed to one another, not on account of diverging interests, but on account of difference of language, in Europe, become merged in our continent into one great people; how the same process that has been going on in Europe so frequently during the middle ages, but only by means of wars, is going on peaceably in America. Our map shows that so long as the same ideas and interests remain the leading ones in the history of south-eastern Europe, there is a constant source of wars and minor troubles, even aside from the contending interests of Russia and Austria to gain a foothold on the Ægean Sea, and England's fear of Russia's commanding the entrance to the Black Sea.

VALUES IN CLASSIFICATION OF THE STAGES OF GROWTH AND DECLINE, AND PROPOSITIONS FOR A NEW NOMENCLATURE.

At the meeting of the Boston Society of Natural History, Nov. 16, 1887, Prof. Alpheus Hyatt presented a paper, of which the following is an abstract. He proposed, in accord with views previously published in his 'Larval Theory of the Origin of Tissue,'¹ and an abstract of the same subsequently printed in the *American Journal of Science*, May 31, 1886, to divide the animal kingdom into three comprehensive divisions: (1) *Protozoa*, unicellular animals, which propagate by means of asexual (autotemnic) fission and by spores, and build up colonies, but always remain typically unicellular; (2) *Mesozoa*, multicellular colonies, but composed of only one layer of cells, so closely connected that they form a layer of primitive tissue. They have more or less spherical forms, and propagate by means of ova, spermatozoa, and by autotemnic fission, and have an aorta or common cavity, but no specialized digestive cavity or archenteron; (3) *Metazoa*, complexes of multicellular colonies, in which growth by sexual union and resulting fission of the ovum form three primitive tissue layers, and build up a body in which an archenteron is always developed, they propagate always by means of ova and spermatozoa, autotemnic fission occurring only, if at all, during the earliest stages of the ovum.

The stages of holoblastic ova may be in a general way classified as follows, to accord with that given above for the animal kingdom: —

(1) The ovum or monoplast (Lankester); (2) the first stage of segmentation, which normally results in the production of two cells, the *Monoplacula*; (3) the second stage of segmentation, in which two layers arise, the *Diploplacula*. The first two stages alone seem to have parallel or representative adult forms among *Protozoa*. He proposed to classify these stages under the name of 'protombryo.'

(4) The blastula is in aspect and general characteristics the morphological equivalent of the adults of the genera *Volvox* and *Eudorina*, the types of the *Mesozoa* or *Blastrea*. The latter are animals in which growth remained permanently arrested at the single-layered, spherical stage in the evolution of tissue-building forms. He proposed to classify these stages under the name of 'mesembryo.'

(5) The gastrula can be compared, as has been done by Haeckel, with the lower *Porifera* (*Ascones*), but these have three layers like the lowest *Hydrozoa*, in which a three-layered gastrula-like stage has been permanently preserved. The proper name for these stages would therefore be 'metembryo,' in allusion to the fact that the ovum at this stage was probably essentially a metazoon, or a near approximation to this type.

Ethnological Map of Southeastern Europe.

According to H. Kiepert.

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