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flashed upon them as they looked once more upon that scene of the sufferings and humiliation of the crucified and ascended One!

Ver. 20. *But they*, on their part, proceeded to their work after he had thus ascended to heaven. *The signs which followed*, as Christ foretold and promised.

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## ARTICLE V.

### RELATIONS OF THE ARYAN AND SEMITIC LANGUAGES.<sup>1</sup>

BY REV. J. F. MCCURDY, PH.D., PRINCETON, N.J.

#### NO. III. — COMPARATIVE PHONOLOGY.

AN examination of the grammatical systems of these two families of speech led us to the conclusion that, if these languages have arisen from a common source, they must have diverged while still in a rudimentary stage of their development, that is, before their characteristic structural features had been evolved. In our search after proper data for comparison, we found ourselves, for this reason, shut out from the province of the grammar, and left to that of the lexicon. After considering the objections which have of late been urged strongly and skilfully against the admissibility of mere verbal analogies in linguistic comparison generally, we thought ourselves justified in regarding them as inconclusive and invalid. We therefore now feel ourselves at liberty, as far as the well-grounded principles of glottology are concerned, to proceed to an examination of the vocabularies of the respective groups.

It will now be necessary for us to establish our views as to the scope of this special inquiry, and as to the general principles which are to govern it. Before going farther, it should be recognized that the kind of treatment which needs to be accorded to the question of Aryo-Semitic relations is essen-

<sup>1</sup> This discussion, which was interrupted by the ill-health of the writer, is resumed from Vol. xxxiii. pp. 352-380 (April, 1876).

tially different from that accorded by all scholars to the question already well settled of the internal relations of the members of the Aryan family itself. The discoveries made in the latter department of investigation have shown that the surest and final kind of proof of the original identity of verbal forms is the establishment of a series of phonetic laws, according to which the sounds proper to each member of the group stand in a certain fixed and determinate relation to each of the other members, as well as to that primitive type of speech, which has been theoretically constructed as the parent language of them all. That is to say, certain similar more or less well-defined so-called *roots* were compared, whose primary meaning was the same in each language; and from that comparison it appeared that the respective *sounds* so represented were originally identical, whether the resemblance between the forms was external or not. Any given combination of sounds in any language of the Aryan family was discovered to be represented in a certain fixed form, with almost uniform regularity, in any one of the other languages containing the word to be compared. Hence the well-known laws of phonetic change were made out from a number of cases sufficient to show that the resemblances were not accidental; and these laws, being once established, were thenceforth used as a test of relationship between all roots or words suggested for comparison. If the words do not answer the conditions of this test, after a fair allowance for possible phonetic disturbances,—whose limits, as well as conditions, are themselves scientifically settled,—the hypothesis of primitive identity must be given up. This principle is now one of the commonplaces of linguistic science; and it only remains to be said, in this connection, that the same test has been rigorously applied to other families of speech, with more or less satisfactory results according to the inherent difficulty of the comparison in each case, and that the principle involved is of universal application, and the only absolutely infallible standard of judgment in all cases of verbal comparison in any and every form of human speech. We

have alluded to it at some length in this place, because we wish to show exactly where we stand with regard to the scientific basis of truth in this inquiry, as well as to bring out in its clearest light the only true test by which the value of the labors of all previous theorists as to Aryan-Semitic verbal relations may be rightly estimated.

If, now, we are asked whether it is possible to frame as definite and comprehensive a system of phonetic laws by which the roots of the Aryan and Semitic families may be compared with absolutely certain results, we answer that under our present light it does not seem possible. We believe that investigations may be made, under certain fixed restrictions, with regard both to the sounds and the words to be compared, keeping all the while within the methods and the spirit of true science, and that thence we can arrive at that kind of conviction which is little short of absolute certitude. Of this we shall have to speak at large presently. It will be proper for us, however, at this point, to see whether the theories advanced of late asserting the discovery of sure phonetic laws have any right to be accepted as final and conclusive. We shall need to remind the reader, in the first place, that a comparison of *sounds* as the basis of the establishment of strict phonetic laws can only be effected through the comparison of *roots*; and in the second place, that the forms compared must be real roots in the true scientific sense of the term, that is, the final significant residuum after all the formative or determinative elements are eliminated. If we compare forms in the two families that are not ultimate roots, our labor is wasted. It is a plain corollary from the latter restriction, that in the comparison of these forms it needs to be well ascertained whether the *primary notions* conveyed by these genuine roots do themselves also correspond.

The most persistent investigator of this subject, as well as the most voluminous writer, in recent times, seems to be Rudolf von Raumer, who since the year 1863 has been publishing, from time to time, the results of his labors in various forms. The reader will find his theories succinctly stated in

his last contribution.<sup>1</sup> A fair summary of his opinions may also be found in a recent work<sup>2</sup> of the Italian scholar Pezzi. They are criticised by Frederick Delitzsch in his little treatise next referred to. The conclusions of von Raumer may be summarized in these two phonetic laws which he thinks he has firmly established: (1) The hard Semitic explosives or mutes are represented etymologically by the corresponding Aryan sounds; (2) The soft Semitic explosives are for the most part represented by hard Aryan sounds of the same organs. For these assumptions he has, as he thinks, furnished adequate evidence. Upon them we remark, first, that there is evidently no regularity in the correspondences. It follows from his principles that the hard Aryan mute *t*, for example, may be represented either by Semitic *t* or *d*, the Aryan *k* by either *k* or *g*, the Aryan *p* by either *p* or *b*. Now, we do not say that this is not so; but we maintain that it is not in harmony with the observed facts of other related languages, in which the mutes, as well as other sounds, are either equivalents, as in Sanskrit compared with Greek, or are differentiated according to normally invariable laws, as in Sanskrit compared with Gothic. If we could suppose that in the Aryan family a language existed which as related to Sanskrit stood on the same level as the Gothic in one half of its words containing certain sounds, and on the same level with Greek in the other half containing the same sounds, we might be prepared for a similar phenomenon in Aryo-Semitic relations. But as von Raumer's assumption appears to be without observed analogy, we have to insist on very strong and abundant evidence in its support before we can accept it. This leads us to say, secondly, that the evidence adduced is not sufficient. His cardinal fault is, that in neither family does he go back to the earliest accessible forms in making his comparisons, as he often employs for that purpose stems, instead of roots, even in cases where the terminal letter or

<sup>1</sup> *Zeitschrift für vergleichende Sprachforschung*, Vol. xxii. pp. 235-249.

<sup>2</sup> Domenico Pezzi: *Glottologia ariæ recentissima. Cenni storico-critici* (Torino, 1877), pp. 37-41.

letters are well known not to be radical; as in his assimilation of  $\text{p}^{\text{h}}$  (pure) to the Latin *purus*, in which the root is *pu*, and not *pur*. In Semitic words he even holds it to be a general principle that we need not seek to go behind the trilateral forms, as we have an abundance of comparable material in the weak stems which either have only two dissimilar sounds (as in the Ayin doubled verbs), or else present the significant idea in the two strongest letters. It is possible that he may often have struck upon a true relationship; but his theory, not being sufficiently discriminating or thoroughgoing, leaves room for, and often necessitates, so much palpable error, that his conclusions cannot be taken as a whole to be scientifically established; and the claim of final proof which he sets up in behalf of his phonetic laws must therefore be disallowed.

The profound Indo-European scholar Ascoli, in letters addressed to Kuhn and to Bopp, maintains essentially the above so-called phonetic laws of von Raumer, and puts forward a third also, according to which the Sanskrit *g* has for its regular representative the Semitic *p*. In favor of this assertion he brings forward only a small number of comparisons, and those of a most inconclusive character, especially when the radical notion of each form is considered; e.g.  $\text{p}^{\text{h}}$ , to rise up, with the Sanskrit *gam*, to go;  $\text{p}^{\text{h}}$ , to procure, obtain, with Sanskrit *jan* (primarily *gam*), to beget. Ascoli deals mostly, however, with the ultimate constitution of the Semitic so-called roots, and with the supposed affinity of certain relational words in the two families—subjects which he seems to have handled with much greater skill and prudence.

Frederick Delitzsch, to whose work<sup>1</sup> we referred in a general way in our historical review of previous laborers in the department of Aryo-Semitic relations, deserves a more extended notice, in this connection, than we could then afford to give. After criticising severely the theories we have just

<sup>1</sup> Studien über indogermanisch-semitische Wurzelverwandschaft (Leipzig, 1873).

alluded to, and after a very judicious statement of the true conditions of all successful comparison, he himself sets forth a table of phonetic laws,<sup>1</sup> according to which each primitive Aryan sound is represented simply by its nearest phonetic equivalent in the Semitic — a scheme which is really much less discriminating and more sweeping than that of either Raumer or Ascoli. The work of Delitzsch demands a somewhat minute criticism, because of its real importance, as being in some respects the most valuable attempt to settle the general problem before us.

We would say, first, then, with regard to the scheme of phonetic representation, that it is for the most part extremely arbitrary, as well as superficial. The general underlying principle is merely this, that when an Aryan root is found in the Semitic family it will appear with exactly the same sounds wherever the two groups are phonetically coincident. But here he commits the cardinal error of neglecting to reduce the phonetic stock of both systems of speech to their primitive and narrowest limits. With regard to Aryan sounds, indeed, he confines himself rightly to those which have been accepted by glottologists as belonging to the primitive form of speech; but in the Semitic family he takes the sounds just as they stand, only grouping together, for the purpose of bringing out a set of equivalents to certain Aryan sounds, those which are physiologically the most closely allied, without investigating the question of their true historical relations. For example, he assumes that the Hebrew  $\aleph$ , where it answers to the Arabic  $\aleph$  and the Ethiopic  $\aleph$ , is to be classed with  $\aleph$ , both representing the Aryan  $d$  and  $dh$ ; while the Hebrew  $\aleph$ , answering to the Arabic  $\aleph$  and the Ethiopic  $\aleph$ , is to be grouped with  $\aleph$ ,  $\aleph$ , and  $\aleph$ , as representing in common the Aryan  $s$ . The fact is, however, that the Hebrew  $\aleph$  rarely appears as radically related to  $\aleph$ , either in Hebrew itself or in the cognate dialects. Further, his system divides sharply between the different kinds of Semitic gutturals. The Hebrew

<sup>1</sup> Op. cit., pp. 82, 83.

π, with its Semitic representatives, historically corresponding, as he claims, with the Aryan *gh*, form one division of sounds; while κ and ς, with their representatives, form another, which have as their Aryan analogue the spiritus lenis. Here π is left out altogether, though a sound more fundamental, as we think, than κ, and certainly as worthy of a place in such an exhaustive presentation. To be consistent he would have to represent it also by the Aryan *gh*, which would have been almost self-evidently erroneous. The fact seems to be that all the true gutturals are of pure Semitic origin, and are as closely related to each other as are the surd and sonant dentals or labials. The true determination of all these questions will have to be attempted presently, when we come to analyze for ourselves the whole Semitic and Aryan alphabet.

Our next criticism applies to Dr. Delitzsch's treatment of the roots to be compared, and is simply a corollary from the foregoing. While he has taken the Aryan roots in their most primitive accessible form, he shows us nothing in the majority of Semitic roots cited that leads us to believe that we have before us the sounds they contain in a form equally original, inasmuch as, after stripping off the weaker letters when the comparison requires it, he leaves the root just with its current phonetic representation. It is a matter of regret that he has failed to recognize the necessity of adopting a more exact method, especially as the theoretical part of his work is so just and discriminating as far as it goes.

In justice to Dr. Delitzsch, however, it ought to be stated that the practical proof of these phonetic laws is confined chiefly to the treatment of the sounds *k* (including *p* and its representatives) and *g*. The cases cited are treated with becoming caution and with much acuteness, and we think he has brought forward some striking evidence for the general assumption of a radical relationship. We agree, however, with Mr. Sayce,<sup>1</sup> whose criticisms upon Dr. Delitzsch, for the most part, seem to us ineffective, in thinking it to be unfortunate that so many of the forms cited (Mr. Sayce says all,

<sup>1</sup> Principles of Comparative Philology (London, 1874), pp. 73, 74.

which is not the case) are of an onomatopoeic character. On the whole we think the book has done good service, and we hope the author will follow up this timely and suggestive work with further contributions towards the solution of the general problem.

The elaborate essay of J. Grill<sup>1</sup> upon the relation of the roots of the Aryan and Semitic families appeared about the same time as that of Delitzsch just noticed. It is a very thoughtful, suggestive contribution. The phonological affinity of the roots is justified by implication; but the author confines himself chiefly to the discussion of the typical character of root-formations in each system, whose dissimilarity in the predicative or most numerous class does not seem to him to preclude the possibility of a successful comparison. We shall have occasion to allude to it further on, when we have to deal with the special question of the constitution of the roots.

So much for some of the more important of the late attempts to establish phonetic relations between the two families. Before we proceed to set forth our own views on the subject, it remains still for us to deal with objections or difficulties raised by eminent philologists against the comparisons of Aryan and Semitic sounds in general. These are set forth chiefly by those who are opposed to all attempts to reconcile the two systems of speech, and whose theories of a necessary radical diversity on account of structural differences we considered in our last Article. A few citations of the most pronounced opinions will suffice for our present purpose.

Professor Sayce, already known to our readers as one of the most determined opponents of Aryan-Semitic affinity, claims that the phonology of the two systems precludes the possibility of any relationship.<sup>2</sup> This view we have had occasion to deal with already,<sup>3</sup> when it lay in our way to prove

<sup>1</sup> Zeitschrift der deutschen morgenländischen Gesellschaft. Vol. xxvii. pp. 425-460. Ueber das Verhältniss der indogermanischen und der Semitischen Sprachwurzeln. Ein Beitrag Zur Physiologie der Sprache.

<sup>2</sup> Op. cit., p. 101.

<sup>3</sup> Bib. Sac., Vol. xxxiii. pp. 355 ff.

that the fact of one language containing sounds strikingly different from any in another is no necessary evidence of radical diversity ; and we therefore do not need to take it up again. He speaks more definitely, however, and in a more scientific spirit, in another work,<sup>1</sup> where, among other objections, we find the following: "All attempts to compare single roots in the two families are unscientific ; we have no Grimm's law, neither do we know the original meaning and form in many cases ; and coincidences often happen in the most diverse languages (e.g. Maudschu *sengui* and Latin *sanguis*). Words like כֶּרֶךְ compared with *képas* are borrowed ; and onomatopoeia has played a great part in the origin of all languages producing similar sounds for the same idea." The only thing calling for present notice in this quotation, which is a fair summary and representation of the objections urged by his whole school against these comparisons, is the statement that we have no Grimm's law in this field of inquiry. The allegation is true ; but it is also true that no such law, or anything even of the most limited application that might serve the same purpose, will ever be discovered, if scientific students of these languages endeavor to close up the way against all investigation into the subject. There was a time — not so very remote, either — when "Grimm's law" was unknown and unsuspected. The science of language is still in its youth. When a young man goes forth to see the world, each country as it is visited seems to him to contain almost a new race of men. The more closely he studies the world's inhabitants — not singly, but in their relations to one another, — the more alike they seem to be ; and when he has gone over them all thoroughly, and takes a general survey, he finds a great many laws and principles of thought and action that control them in common. It is so, also, with our science, which has not yet got very far in its travels.

Far more encouraging to the investigator is the judicial opinion of Professor Whitney: "The question, in short,

<sup>1</sup> An Assyrian Grammar for Comparative Purposes (London, 1872), p. 144

not yet ripe for settlement. Whether the better comprehension of the history of Semitic speech which farther research may give will enable us to determine it with confidence, need not here be considered. While such a result is certainly not to be expected with confidence, it may perhaps be looked for with hope.”<sup>1</sup>

Professor Max Müller has treated this question of evidence quite fully, in the last volume of his *Chips from a German Workshop*<sup>2</sup>; and we shall close our preliminary survey of the conditions and difficulties of our task by a consideration of his forcible and very plausible statements upon the subject. In referring to them it ought to be mentioned that Professor Müller is one of those who earnestly contend for the scientific legitimacy of the very widest comparisons among the families of speech, and that the remarks to be quoted are uttered mostly in the way of cautioning against hasty conclusions. Still, they may very easily be applied beyond the scope of their author's main purpose. After speaking of the vagueness of meaning in the Semitic roots as an obstacle to just comparison, he says: “I have by no means exhausted all the influences that would naturally—nay, necessarily—have contributed towards producing the differences between the radical elements of Aryan and Semitic speech, always supposing that the two sprang originally from the same source. Even if we excluded the ravages of phonetic decay from that early period of speech, we should have to make ample allowance for the influence of dialectic variety. We know in the Aryan languages the constant play between gutturals, dentals, and labials (*quinque*, Sk. *panka*, *πέντε*, Aeol. *πέμπε*, Goth. *fiuf*). We know the dialectic interchange of aspirate, media, and tenuis which, from the very beginning has imparted to the principal channels of Aryan speech their individual character (*τρεις*, Goth. *threis*, High German *drei*). If this, or much more, could happen within the dialectic limits of one more or less settled body of speech, what must have

<sup>1</sup> *Language and the Study of Language*, p. 308.

<sup>2</sup> Vol. iv. (London, 1875), pp. 99–109.

been the chances beyond those limits?" And again: "We know that words which have identically the same sound in Sanskrit, Greek, Latin, and German cannot be the same words, because they would contravene those phonetic laws that made these languages to differ from each other. . . . . The same applies, only with a hundredfold greater force, to words in Hebrew and Sanskrit. If any trilateral root in Hebrew were to agree with a trilateral word in Sanskrit, we should feel certain at once that they are not the same, or that their similarity is purely accidental. Pronouns, numerals, and a few imitative rather than predicative names for father, mother, etc., may have been preserved from the earliest stage by the Aryan and Semitic speakers; but if scholars go beyond, and compare such words as Hebrew *barak*, to bless, and Latin *precari*<sup>1</sup>; Hebrew *lab*, heart, and the English *liver*; Hebrew *melech*, king, and the Latin *mulcere*, to smooth, to quiet, to subdue, they are in great danger, I believe, of proving too much."

With regard to the above strictures we remark, in the first place, that we acknowledge that a trilateral root in Hebrew cannot be etymologically related with a *trilateral word* in Sanskrit; and we will even admit that if a trilateral (triconsonantal) Semitic root agrees in sound with a triconsonantal root in Sanskrit, the chances are ordinarily in favor of a mere accidental coincidence. But very little use, if any, ought to be made of trilaterals in comparisons; and we hope, for our part, to escape the force of this censure upon Aryo-Semitic investigators in general. There was a time when Müller showed a more generous hospitality to their conclusions, based upon a more just discrimination of the conditions of the inquiry, in the following words, uttered in 1861: "The grammatical framework is totally distinct in these two families of speech. This does not exclude, however, the possibility that both are diverging streams of the same source; and the comparisons that have been instituted be-

<sup>1</sup> Unfortunately this very comparison is repeated by von Raumer in his last contribution: *Zeitschrift für vergl. Sprachforschung*, Vol. xxii. p. 245.

tween the Semitic roots reduced to their simplest form and the roots of the Aryan languages have made it more than probable that the material elements with which they both started were originally the same."<sup>1</sup>

In the second place, we have to say that we think the inferences from Aryan phonology are somewhat overdrawn. Remembering that we are concerned with roots, and not with current words, we do not seem to see the same prevailing variation and interchange of sounds that Professor Müller speaks of. Let any one take a comparative phonological table of most of the Aryan languages, — such, for example, as is given in Curtius's *Gründzuge der griechischen Etymologie*, — and I think he will be struck by the general correspondences, rather than by the variations, especially if he had just been reading the strictures above quoted. We do not think that there is a "constant" play between gutturals, dentals, and labials, such as the citation of the somewhat exceptional instance of the words for five would seem to indicate. Even if we count in the families in which *lantverschiebung* of the mute letters has held sway, we shall find the characteristics of our old Aryan mother not unfaithfully transmitted to her many descendants. Not only has the whole structural type been preserved in each, but we may also readily recognize a family likeness in each special feature throughout the whole system. But it does not seem quite just to us to throw in the Teutonic languages with the rest as representing phonologically the Aryan family, as when the phonetic differences between German and Sanskrit, Greek and Latin, are cited. If we take the last three languages, and along with them almost any form of Aryan speech that is not Teutonic, we think that roots (not words) occurring among them which have identically the same sound and meaning must be the same roots. *Lantverschiebung* in the mutes is not a regular, but rather an exceptional, principle

<sup>1</sup> *Lectures on the Science of Language* (Am. edition), p. 282. The same opinion had been even more strongly expressed in the *Letter on the Turanian Languages*.

of change in the Aryan tongues, and in the languages of the world at large. The great development of the Teutonic family and their influence on history and civilization have given their dialects a greater prominence than is their due among the Aryan tongues, and hence Grimm's law assumes a larger space in linguistic treatment than the scope of its actual influence within the Aryan sphere would properly entitle it to. The languages which have remained nearest to the original Aryan type are free from the regular operation of this principle; and we have not the slightest reason for supposing that the Semitic family was subject to its influence in its earliest days before its accessible roots came into use; rather, judging by the general aspect of human speech, we would assume that it was not. These roots are all that we have to do with in our inquiries, and the oldest accessible Aryan roots are all that we have to regard upon the other side of the comparison.

We have thus tried to present, as fully and fairly as possible, all the objections that have been made to attempts at comparing the two systems of speech, as well as to show frankly the difficulties that beset the path of the investigator. The reader will be in some measure prepared for the general statement of the principles which shall guide us in our comparisons. These we shall now proceed to state particularly.

As to the forms to be compared, we have already said, what must be self-evident, that it is necessary to take them in their primary signification. To obtain this will be a matter of great difficulty, requiring great delicacy of treatment, especially in the Semitic family. It is notorious how much all the critical lexicographers, as well as other investigators of Semitic roots, differ among themselves in multitudes of important cases. Still, it seems to us that an amount of success has been already attained which justifies the hope of still more satisfactory results.

The next condition of our comparison is, that the material to be compared must be reduced to its simplest form. This involves two principles: first, that any sound which can be

shown not to have belonged to the original expression or symbol of thought must be rejected in the so-called roots of both families; and second, that all the sounds themselves must be referrible to the primary phonetic stock of each system of speech. The former of these principles will be most appropriately adjusted when we come to take up in their order the different classes of comparable forms. The latter ought to be set forth explicitly at once, as being of universal application.

As to the sounds of the Aryan language at the time of the first separation we have no need at present to say anything. They are well ascertained, and may be seen in any of the comparative grammars. They will be alluded to in their order when we classify the Semitic sounds. This we now proceed to do.

We begin, as is most natural, with the gutturals. In the Semitic tongues, especially in Arabic and Ethiopic, the most highly developed phonetically, these have become numerous, and some of them very peculiar in sound. The question that concerns us is whether they are all primitive, or whether they were not developed at an early stage of Semitic speech, before the different dialects branched off. The latter we think to have been the case, and find evidence of various kind for this position. First, we have the analogy of that great family whose inner history has been most clearly revealed,—the Aryan. It started with no true gutturals at all, but in several of its dialects, notably in the Armenian and Celtic, they are found variously and strongly developed. If this could and did take place after the separation of the different members of the Aryan stock, it is as easy to believe that a similar result could take place in the Semitic idiom after separation from the Aryan. This we insist upon strongly against those who, like Professor Sayce,<sup>1</sup> hold that the very existence of such Semitic sounds precludes the theory of Aryan affinity. In the next place, we think that in the growth of Semitic speech, with its peculiar structure,

<sup>1</sup> See our second Article, Vol. xxxiii. pp. 355 ff.

it was inevitable in attempting to express the great variety of notions bred in the minds of an intellectual people, that they should employ a greater variety of sounds than those with which they at first started. There was a two-fold inner necessity for this. First, the vowels could not be used in forming new roots among the Semites, but only in forming derivatives, or in expressing different aspects of the root-idea. Secondly, there was no compounding of words with prepositions or other modifying terms to express new relations or kindred notions. When the need for various expression was felt, resort must have been had unconsciously to the stock of consonants, from whose fundamentally distinct sounds there gradually arose variations, at first, perhaps, slightly, and finally quite strongly marked. Other causes no doubt conspired with these in each case of differentiation, and we think it probable that the strongest gutturals, such as are met with both within and without the Semitic family, were produced by those general influences, such as food, climate, and mode of life, which led to their development in the Armenian and both of the great Celtic dialects. But we think that these finer distinctions, peculiar to the Semitic, such as the Arabic ح and ع, as well as some of the non-guttural variants, were due not only to such occasions, but to those others which are peculiar to Semitic speech. Hence, as it appears to us, the immense range of consonantal expression shown in the Semitic idiom, exceeding anything in the pure Aryan languages, even the Sanskrit,<sup>1</sup> some of whose sounds (the "cerebrals") are probably borrowed, and others mere euphonic variants. But, in the third place, however we may account for the variety of consonants, the fact of the gradual development of the different sounds does not rest entirely upon theory. We can trace the process of development in the later stages of development. The Arabic ع is not found as a fixed independent sound in the other

<sup>1</sup> Max Müller's *Science of Language* (Am. ed.), p. 180, gives the number of Sanskrit consonants wrongly as thirty-seven. The independent consonants are apparently twenty-six, against the twenty-eight in Arabic.

dialects, not even in Ethiopic, which went hand in hand with it so long after the other dialects left the parent stock. We can see a tendency to its use in Hebrew, or rather a pronunciation of the  $\text{v}$  somewhat resembling it, since we find the  $\text{v}$  sometimes represented by the Greek  $\gamma$  in proper names in the Septuagint, even in the middle of a word when it is usually not represented at all (e.g.  $\rho\acute{\epsilon}\gamma\mu\alpha$  for  $\text{רַעַמָּה}$ , Gen. x. 7). But this only shows how it was possible for the Arabs to develop an occasional into a fixed sound,<sup>1</sup> and so throws light upon the subject of the origin of the Semitic gutturals generally. In Hebrew one character stood for both sounds, and therefore we must assume that the divergence was of later origin than the invention of their alphabet. So with the  $\text{h}$  in Hebrew and its representatives in the northern Semitic dialects. The Arabic and Ethiopic made of this letter, which had a fluctuating, uncertain character in Hebrew, two distinct unvarying sounds, for which they devised special characters,  $\text{ح, خ; ه, ح}$ . Looking at this tendency to multiplication of guttural sounds, which is so unmistakable in those languages which had the best scope for the development of their inherent capabilities — a tendency whose operations can be so easily traced; and looking, on the other hand, at the liability to the reduction of those gutturals to the simple smooth and rough breathings which we find essentially in all languages,<sup>2</sup> we naturally conclude that they were all gradually developed out of those primary sounds. That this is so is reduced almost to a certainty when we attempt to utter those sounds, and find that they are all distinctly related in two orders which have as close a relation to one another as  $d$  bears to  $t$ . The Arabic  $\text{ع}$  and  $\text{غ}$  (=  $\text{v}$ ) are developed from

<sup>1</sup> Ayin, the most peculiar of the gutturals, seems to have had a tendency in two opposite directions after its origination, more marked than in any other of its class. The tendency to greater strength and variety we see exemplified best in Arabic. The inclination to weakness and assimilation we see in the later history of all the other dialects, while in Assyrian it is only and always a mere vowel. — Cf. Sayce's *Assyr. Grammar for comp. purposes*, p. 32 f.

<sup>2</sup> See p. 357 in our second Article, and compare Ewald's *Ausführliches hebr. Lehrbuch*, § 58.

l (=x), while  $\epsilon$  and  $\zeta$  are developed from  $\varepsilon$  (=n); the former order being just the sonants of the latter respectively. For the sounds in each order essentially the same organs are employed. The possible modifications in position may be illustrated by the use of the German *ch*, or better still by the Welsh *ch*, as compared with the ordinary *h*. The peculiarity of the Semitic pronunciation is, that it has brought out the  $\epsilon$  with its surd  $\zeta$  more distinctly than any other language; though, as Dr. Merkel tells us,<sup>1</sup> an approach to the  $\epsilon$  or  $\varepsilon$  is heard in German speech under certain circumstances. A more minute physiological analysis of these sounds than we can give here<sup>2</sup> would only confirm what we have said of the easy gradations of the Semitic gutturals, and of their development from the simple breathings.

From all this it appears not only that the variety and peculiarity of these Semitic sounds offer no bar to a comparison with other linguistic systems, but also that we have arrived at the same phonological level as that upon which the primitive Aryan breaths are found to stand. Let us look at the Aryan side of the equation for a moment. We find here that, so far as we can determine, they had only the spiritus lenis,<sup>3</sup> not the spiritus asper. This, however, does not prevent a final equalization of the sounds in question; for the history of speech shows how soon the *h* was developed, as phonology shows how easily it arises and falls into disuse.<sup>4</sup> *H* is really the surd of  $\varepsilon$  (=x). If the organs remain in the position which they assume upon the pronunciation of any vowel at the beginning of a word, and if then we blow

<sup>1</sup> C. L. Merkel's *Physiologie der menschlichen Sprache* (Leipzig, 1866), p. 74.

<sup>2</sup> The reader is referred to Max Müller's *Science of Language* (Am. ed.), Vol. ii. p. 148, and to the works alluded to in that chapter, particularly to those of Lepsius, Brücke, and Czermak; also to the thorough and very able work of Merkel above cited.

<sup>3</sup> Schleicher's *Compendium d. vergl. Grammatik d. indogerm. Sprachen*, 4. Auflage (Weimar, 1876), p. 11.

<sup>4</sup> See the sounds of Zend, Old-Italian, Greek, Old-Irish, etc., in Schleicher's *Compendium*; and compare the phenomena of the so-called Cockney speech, as well as the use or disuse of *h* in Modern French.

instead of breathing, or, which is the same thing, make a surd instead of a sonant sound, we shall have a light spiritus asper instead of the spiritus lenis.<sup>1</sup> We have no doubt that the same thing was done by the Semites as by the Aryans, and that from the fundamental smooth breathing they also differentiated their *h* sound. From these, as we have seen, the surd and sonant orders of gutturals were thereafter developed. Hence we see nothing to prevent us from regarding all the Semitic gutturals as comparable with the spiritus lenis of the Aryans, which the Greeks alone expressed by a definite sign, since they borrowed their alphabet directly from a Semitic people. Of course this can be *proved* only by adequate comparison; but we are concerned now to show that the formidable list of Semitic gutturals ought not to divert us from the attempt to institute such a comparison. From what has been said it is clear that we are not justified in receiving, with Dr. Delitzsch the Aryan *gh* as the analogue of what we may call the surd or *h* order of Semitic gutturals. In the first place it is most probable that the Aryan sonant aspirates, *gh*, *dh*, *bh*, arose, during the separate history of the family, from the earlier *g*, *d*, and *b*, just as in Sanskrit the surd aspirates *kh*, *th*, and *ph* arose after its separation from the main linguistic stem. In the second place, remembering that we have to compare with the spiritus asper, or the simple *h*, we find that its origin in the Aryan languages is not due exclusively, or even in any large degree, to an original *gh*. In the old Aryan tongues there were apparently two types of guttural sound; the one being conveniently represented by the Greek  $\chi$  and the other by the Greek  $\dot{\chi}$ . The latter sound is of various origin. It either arises independently, as often in Greek and Latin, and other idioms, or represents an original *s*, *y*, or *v*, as frequently in Greek, or is due to the dropping of the *g*, *d*,

<sup>1</sup> The physiological conditions of the utterance of each spiritus are given by Merkel, *op. cit.*, pp 72-74, who also shows in the same connection how natural the transition is from one kind of guttural to any other. He restricts unduly, however, the scope of the  $\kappa$  sound, distinguishing it from the French *h*, to which it is really equivalent when it begins a word or syllable.

or *b* from the original aspirates, as occurs irregularly in all the Aryan tongues, especially in the Celtic. It is never due directly, in our opinion, to an original *gh*. *Gh*, it is true, is represented in Latin at the beginning of a root by *h*, as it is in Greek by  $\chi$ ; but this *h* was originally a rough guttural<sup>1</sup> like the Greek, and the sound was heard along with the ordinary *h* in common speech, as it was in Anglo-Saxon,<sup>2</sup> and other old Teutonic languages, until the latter sound took its place entirely. Further, the rough Roman *h*, as well as the Greek  $\chi$ , must, we think, have passed through a stage in which it had the *kh* sound.<sup>3</sup> But it may be asked how the Sanskrit *h* arose. It represents mostly an original *gh*, and is manifestly a corruption of it. It is a sonant, and is the only *h* in the Aryan tongues that is not surd. It was evidently, therefore, not primarily formed from the other aspirates through the dropping of their first element; if so it would have been a surd, as the *h* so arising became in the other Aryan languages. Its pronunciation probably somewhat resembled that of the German *g* in *Tage*, though it is not safe to speak with authority on such an obscure matter.<sup>4</sup> This theory would best agree with its development from *gh*. Here, then, we admit, is a guttural breath derived from *gh*. May it not have been so also with the Semitic family, if we allow it to have had at one time the *gh* sound? Certainly not; for its modifications would have brought it into range with the sonant or  $\aleph$  order of gutturals, whereas Dr. Delitzsch makes the *gh* the Aryan representative of the  $\aleph$ , or surd order. Moreover, it stands most nearly related phonologi-

<sup>1</sup> Corssen: Ueber Aussprache Betonung u. Vocalismus d. Lateinischen Sprache (Leipzig, 1868), Vol. i. pp. 96, 97.

<sup>2</sup> March's Anglo-Saxon Grammar, p. 17.

<sup>3</sup> The Celtic (Old Irish) *ch* is corrupted from *c* (*k*), occasionally from *g*; Zeuss, Grammatica Celtica, 2d ed. (Berlin, 1871), pp. 63-71, comp. pp. 74, 78; Schleicher's Compendium (4th ed.), pp. 273-279. The Aryan *gh* becomes *g* in Celtic.

<sup>4</sup> Schleicher (Compendium, 4th ed., p. 17), gives it the sound of the German *h*, made sonant. Bopp (Kritische, Gramm. d. Sanskrita-Sprache, 4th ed., p. 20 f.), makes it equal to the Greek  $\chi$  softened. This agrees more nearly with our own view, and harmonizes better with our theory as to the genesis of each sound.

cally to **ع**, the Semitic guttural; which, as we have seen, was not the first, but the very last of the Semitic gutturals in the order of development.

We have dealt thus at length with the guttural sounds, because they are so numerous and so peculiarly Semitic, and seem to present obstacles in the way of a comparison with the Aryan family which the other classes of sounds do not. The conclusion at which we arrive is, that all of these gutturals in our comparisons ought to be disregarded, as they are of purely Semitic development. The spiritus lenis, **-'** or **κ**, is all that was common to Aryan and Semitic at the time of their separation, if they ever spoke a common idiom at all.

It is impossible for us to write, in this connection, at the same length of the other classes of comparable Aryan and Semitic sounds. The same principles which were maintained with regard to the development of the variant gutturals will hold with regard to the differentiation of other sounds within the bounds of their own generic classes. We shall therefore proceed more rapidly to an examination of the remaining contents of the Aryan and Semitic alphabets.

Next to be considered are the other weak sounds *v* (*w*) and *y*. As far as can be made out at the present stage of linguistic science, these were radical sounds in the two great families, though their history has been strikingly different in many respects. As to the Aryan *v*, the fact admits of no question; as to the *y*, though it does not occur in many Aryan roots, yet these are very ancient, and its use both in the pronouns and in inflective elements shows that it could not very well have been developed from an original *i*,<sup>1</sup> from which it often arises in both Aryan and Anaryan linguistic forms. It is to be noted, however, that in roots, not in formative elements, the use of *v* preponderates largely over that of *y*. The same holds true in the Semitic family. *Y* is much more rarely found in the trilateral roots than is *v*.

<sup>1</sup> In some roots, no doubt, the *y* was very early developed from an original *i*, as in the root *yā* to go, as compared with *i*.

What is most remarkable, however, about these sounds, from a comparative point of view, is that they are vastly more numerous in roots of the Semitic family than in those of the Aryan. This is certainly a most instructive fact, as it is one that cannot be ignored in any just investigation of the general question of Aryo-Semitic relations. It may be accounted for in this way: Over and above the normal representatives of the Aryan *y* and *w* in Semitic, there would be two occasions of a large addition. First, it is natural to assume that these primary vowels of the Aryo-Semitic stock would often harden into semi-vowels; *i* and *u* would thus become *y* and *v*, in a consonantal system like the Semitic. Again, on the theory of original biliteral roots in Semitic, these would become trilateral through the use of weak letters such as *y* and *v*. Hence a Semitic *w* or *y* would in comparisons have to be regarded sometimes as having no representative in the Aryan speech, sometimes as representing an Aryan *u* or *i*, and sometimes their own phonetic equivalent. It is scarcely necessary to say that the Semitic forms in which either of these sounds occurs require great delicacy and caution in treatment; for we must not only ascertain to what class each belongs as regards its origin, but also to discriminate carefully between the two letters, inasmuch as they so frequently interchange, especially in some of the dialects. On these sounds we have nothing further to remark, except to say that, according to our present light, Dr. Delitzsch does not seem to be justified in excluding the Aryan *y* from his table of phonetic correspondences.

The sounds *l* and *r* come up next for discussion. Dr. Delitzsch, in his table above cited, makes the Aryan *r* representative of the Semitic *r* and *l*. We have no objection to this statement; but it requires to be properly explained, from a consideration of the true relations of the two sounds to one another. First, as to the Aryan sounds. It is usually held, mostly through the influence of Schleicher<sup>1</sup> and Fick,<sup>2</sup>

<sup>1</sup> Compendium, etc., pp. 11, 162.

<sup>2</sup> This is assumed throughout his *Vergl. Wörterbuch d. indogerm. Sprachen*.

that the primitive Aryan had no *l*, and that in all the cases of the appearance of that sound in the diverging languages, it arose from the *r*. This is one of the most interesting questions in Aryan phonology, though one which cannot be discussed here. We only remark upon it that the contrary opinion, which has been defended by Heymann,<sup>1</sup> seems to be entitled to at least as much support.<sup>2</sup> With regard to the Semitic *l* and *r* the sources of evidence are still fewer and more doubtful. But as to both families we would maintain that both sounds once existed, though vaguely and even interchangeably pronounced. In behalf of this we would cite the history of the sounds in all families that possess them. There are no sounds in human speech so liable to confusion and interconversion.<sup>3</sup> Even in the Aryan tongues, where as a rule *l* is developed from *r*, the change from *r* to *l* is not infrequent.<sup>4</sup> In the Dravidian family of languages, the Tamil, Telugu, Canarese, etc., *r* also changes into *l*, though the reverse is very often the case.<sup>5</sup> In some of the dialects of Polynesia, of South Africa, and of the Indians of North America the confusion is almost universal.<sup>6</sup> In some words the speaker is heard to pronounce *l*, and in other words *r*, when the sound is radically the same. In some languages the *l* is wanting, as in Zend, as also in old Persian,<sup>7</sup> in Ar-

<sup>1</sup> Das *l* der indogermanischen Sprachen gehört der indogerm. Grundsprache (Göttingen, 1873).

<sup>2</sup> A full review of the controversy and of the state of the question is given in Pezzi's *Glottologia aria recentissima*, pp. 17-24. The author himself holds to the belief that *l* was a primitive Aryan sound.

<sup>3</sup> Even cultivated persons speaking highly developed languages are liable to this infirmity, e.g. Alcibides who was ridiculed by Aristophanes for his use of *l* for *r*, *Vespai* 44. Cf. *Plutarch, Vit. Alc. 1*.

<sup>4</sup> See some examples in M. Müller's *Science of Language* (Am. ed.), ii. p. 184.

<sup>5</sup> *Rev. R. Caldwell, Comp. Grammar of the Dravidian Languages*, p. 120, cited by M. Müller, ii. p. 185.

<sup>6</sup> Even among the dialects which are generally supposed to have no *r* sound at all, and whose speakers are thought to use *l* in place of it in trying to utter a foreign word, cases are not unknown of the utterance of the *r*. The writer has had as a guide on angling excursions a Micmac Indian, — a tribe usually thought incapable of the *r*, — who actually changed a foreign *l* into an *r* more frequently than the reverse, saying *ricker*, for example, instead of *liquor*.

<sup>7</sup> *Zeitschrift d. deutschen Morgenl. Gesellschaft*, Vols. xiii. p. 379; xvi. p. 11.

menian,<sup>1</sup> and in several dialects of Japan, of Africa, and America.<sup>2</sup> *R*, again, is wanting in Chinese, in many dialects of America and Polynesia, and in the Kafir language.<sup>3</sup> Some languages, again, have two *r*'s, as the dialects of Australia;<sup>4</sup> while others have two *l*'s, as some of the Siberian idioms.<sup>5</sup> One tribe, at least, of the last-named family, the Tchuktches, have two *r*'s and two *l*'s.<sup>6</sup> It is only necessary to add that in the literary period of the Semitic languages *r* sometimes becomes *l*,<sup>7</sup> though the reverse is not yet proved. From all this it seems clear that in all languages both sounds were originally one, and that, in most cases, a sound vibrating between the two. In most languages as they advanced in age the two were clearly discriminated. In the Aryan, for some time before the divergence of its dialects, they were probably not yet perfectly distinct.<sup>8</sup> In Semitic they must have been divaricated very early in its separate history. It follows, accordingly, that for purposes of comparison *r* and *l* in both families may be regarded as representing the same primitive sound. To the hypothetical Aryo-Semitic speech one might then justly apply the remark made by Dr. Bleek of the Setchuana dialects: "One is justified to consider *r* in these dialects as a sort of floating letter, and rather intermediate between *l* and *r* than a decided *r* sound."<sup>9</sup>

*M* and *n* do not require much discussion for the settlement of their relations in the two systems. Unlike the last two

<sup>1</sup> Zeitschrift d. deutschen Morgenl. Gesellschaft, Vol. xiii p. 380.

<sup>2</sup> Ibid., Vol. xii. p. 453.

<sup>3</sup> See the references in Max Müller's Science of Language, ii. pp. 179, 180.

<sup>4</sup> Friedrich Müller, Grundriss d. Sprachwissenschaft, ii. Band, 1. Abth. (Wien, 1879), pp. 1, 81, etc.

<sup>5</sup> F. Müller, op. c. p. 100.

<sup>6</sup> F. Müller, op. c. p. 134.

<sup>7</sup> So אֶלְתִּימָר Ezek. xix. 7; Isa. xiii. 22, for אֶלְתִּימָר, palaces: אֶלְתִּימָר Pa. cv. 15 for אֶלְתִּימָר, to make to shine (comp. Ewald, Ausf. hebr. Lehrbuch, 8th ed., 1870, § 51 c.). In Assyrian even a sibilant generally becomes *l* before a dental (Sayce, Comp. Assyr. Grammar, p. 30), but it must first have become *r*; hence the name Chaldaeans, as compared with אֶלְתִּימָר.

<sup>8</sup> Comp. Pezzi, Glottologia ariæ recentissima, p. 24.

<sup>9</sup> The Library of His Excellency Sir George Grey; Philology (Capetown, 1858), Vol. i. p. 135, quoted by M. Müller, Science of Language, ii. p. 184.

sounds, they are totally distinct in their origin in all languages. As nasals they are liable to occasional interchange in both families, but are not regularly inter-convertible. In the Semitic roots care must be taken to distinguish between the undoubtedly radical *n* and the same sound where it seems, at least to the advocates of the biliteral theory, to have been used as a mere determinative, as it appears to be one of the letters most frequently employed for the purpose. Moreover, being next in weakness to *y* and *v*, it is liable to take the place of other liquid letters, as well as to interchange with *y*, a matter of very frequent occurrence. *M*, on the other hand, is much more stable than *n*. It passes into *n* much less frequently than the reverse occurs, and very rarely takes the place of the other liquids.<sup>1</sup> Of course, in Semitic the *m* is liable to interchange with the other labials — a phenomenon appearing in all languages possessing these sounds.<sup>2</sup> The Semitic *m* and *n* may be provisionally taken to represent the corresponding Aryan sounds, with important restrictions which may operate in consideration of the foregoing cautions.

We pass now to the sibilants of the respective systems. At first sight, a comparison seems very difficult, if not impossible. In the primitive Aryan there was only one *s*, the ordinary fundamental sibilant. In the Semitic idiom there are several, and it will be necessary to examine them, to classify them, and to reduce them, if possible, to their fundamental primitive sounds, so that we may get a proper basis of comparison with the Aryan *s*.

A careful comparison of the Semitic sibilants leads us to the conclusion that before the breaking up of the family there were developed three distinct sounds, answering respectively to the Hebrew ש, ז, and צ. These sounds are found in all the dialects,— Arabic, Ethiopic, Aramaic, Hebrew, and Assyrian,

<sup>1</sup> A rare instance of *m* arising from *l* is shown in the Arabic *جَنْجَنَة* *skull*, answering to the Hebrew *רִבְבָּה*.

<sup>2</sup> That is, nearly all known languages. In a few they are wanting altogether, as in those of the Six Nations and the Hurons in North America; in others some of them are absent, as in a few of the dialects of Africa, and throughout Australia.

with their subordinate varieties,— and to them all the other sibilant modifications may be reduced. The *z* sound (pronounced as in English) is the sonant of the surd *s*, and arises from it normally in all languages which possess it, though also occasionally springing from other sounds. Hence we have to account for the two sounds  $\text{v}$  and  $\gamma$ . These conclusions we shall try to make clear.

In the first place, the *s* and *sh* sounds (Heb.  $\text{ס}$ ,  $\text{ש}$ , and  $\text{שׁ}$ , Syr.  $\text{ܫ}$  and  $\text{ܫܫ}$ , Arabic  $\text{س}$  and  $\text{ش}$ , Ethiopic  $\text{ሰ}$  and  $\text{ሠ}$ , Assyrian *s'* and *s*<sup>1</sup>) sprang from the same source. This might be argued from the history of the sounds in languages generally, in which *sh* is developed from *s*. But we have other evidence, drawn from the phenomena exhibited by these sounds in the history of the different Semitic idioms. The distinction between the  $\text{v}$  and  $\text{w}$  sounds, by which the former approximated to the sound of  $\text{v}^2$  was made in Hebrew alone sufficiently important to be represented by a special sign. Leaving these aside, as of clearly late origin, we find that the *s* and *sh* sounds have fluctuated and varied greatly from the time of the separation of the different branches of the family. If these dialects be divided roughly into Northern and Southern Semitic,— the former including Hebrew, Aramaic, and Assyrian, the latter, Arabic and Ethiopic,— it will be found that the *s* sound of the northern division is represented mostly by the *s* sound in the southern, while the *s* of the former corresponds radically for the most part to the *sh* of the latter. Yet the correspondence is not sufficiently regular to make this a fixed principle of sound-shifting; nor can the division given above be regarded as anything more than a very general classification. A multitude of facts could be adduced, in addition to the above, if space permitted, to show how these

<sup>1</sup> *S* = Heb.  $\text{ס}$ , and *s* =  $\text{שׁ}$ . I follow Sayce's method of transcription as it is probably the one most familiar to Americans.

<sup>2</sup> That  $\text{v}$  and  $\text{w}$  were originally distinct in Hebrew is proved by the fact that the  $\text{v}$  is represented in Arabic by  $\text{س}$  more frequently than by  $\text{ش}$ , while the  $\text{w}$  is represented only by  $\text{ش}$ . See Ewald, *Ausf. hebr. Lehrbuch* (8th ed., 1870), § 50 a. In later times  $\text{v}$  and  $\text{w}$  were much interchanged.

sibilants varied and interchanged from the earliest known Semitic times, and that too according to no stable law of permutation, but according to local and tribal peculiarities, such as has made the *sh* sound difficult to the Ephraimites,<sup>1</sup> and to many others throughout the world, or the *s* sound difficult in the later Ethiopic,<sup>2</sup> to a great extent in Celtic,<sup>3</sup> and in various other idioms. The conclusion is that the supposition of a development of *s* and *sh* from two fundamentally distinct sounds, — a notion improbable on general principles, — is untenable also on historical grounds. What the original sound was, it is impossible to determine with exactness. Most probably, however, as we shall see presently, it was that of the Hebrew ש, or the ordinary *s*, with a slight tendency to palatization which would account for the frequency of the *sh* sound in the southern dialects, and its preponderance in the northern, where other influences were also brought to bear, tending the same way.

The *z* sound (Heb. ז) arose sometimes from *s* and sometimes from the sound represented by the Hebrew ג. In either case, as we shall see, the primary source was probably the same. It clearly was not an original Semitic, as also it was not an Aryan, sound.

It remains, then, to account for צ and its representatives in the other dialects. This is peculiarly Semitic, running through all the branches of the family. Yet is only peculiarly Semitic as a constant letter; for the sound itself is probably heard in every language possessing sibilants at all. In English, for example, we utter it in such words as *cost*, as distinguished from the *s* in *cast*. It is due there to the vowel sound with which it is connected; but in the Semitic languages its sound is the same no matter what may be the accompanying vowels. In the northern Semitic there seems to have been a slight hardening of the first part of the utterance, with almost a

<sup>1</sup> Judg. xii. 6.

<sup>2</sup> See Dillmann, *Aethiop. Grammatik*, p. 51. His whole discussion of the Ethiopic sibilants is very instructive, and confirms very strongly the view here advocated.

<sup>3</sup> Schleicher, *op. cit.*, p. 265. Zeuss, *op. cit.*, p. 119 f. et al.

complete closing of the organs, giving the effect of a slight *t* sound before the sibilant. But even this sound was usually transcribed by *ς* in the Septuagint, as *Σαβαώθ* for *סַבְאוֹת*, and very seldom by *ζ*. The pronunciation primarily was evidently that of a strong *s*, made with the tongue turned back against the roof of the mouth. It stood related to the ordinary *s* as the Hebrew *שׁ* to *ס*. Various lines of evidence point to the conclusion that it was not an original sound, but one developed from the primitive *s*. First, its organic association with the latter. The original *s* was probably, as we have seen, pronounced indefinitely, and perhaps somewhat variously. There was that tendency among the Semites to multiply consonantal sounds which we have already discussed. What more natural than to take the occasional sound of *s*, just described as existing in English and elsewhere, and make it a fixed one, without regard to the vowels accompanying, especially when it is considered that the vowels played a secondary part, and were necessarily varied continually within the same invariable consonantal formula? The Semites, in developing their roots, necessarily had the sense of consonantal stability developed and continually exercised; while the Aryans have regarded the preservation of the vowels as essentially bound up in vital union with the consonants. The Semites, then, would be inclined to hold fast to each distinct consonantal sound when once made familiar to their ears. The Aryans could not; for the same vowels being retained in each utterance would prevent the discrimination of the consonantal variations, just as we are still ordinarily unconscious that the *s* in *cast* and the *s* in *cost* are different sounds. Secondly, the same thing is illustrated in the history of the most fully developed Semitic dialects, — the Ethiopic and especially the Arabic, — where the tendency, having once fairly set in, was carried so far that not only the simple *s* and *t*, but also the *d* and the *z*, had their secondary sounds. It is fair to argue, within certain well-considered limits, from the living facts of a language to its inherent tendencies, and in these later develop-

ments of the Semitic idiom we see exemplified the principles of its primeval working. In the third place, the  $\gamma$  sound seems not to have been originally a distinct sibilant, for it interchanges with the  $s$  and  $z$  sounds so frequently in kindred roots that we can hardly attribute the coincidences to the confusion of the sounds. One must have developed from another. For proof of this statement we must appeal to the lexicons, since we cannot afford the space needed for an adequate exhibition.

It is now proper to show how all the Semitic sibilants may be classified as to their immediate origin. To the Hebrew  $\gamma$  and its equivalent in Aramaic and Assyrian answer the Ethiopic  $\text{አ}$  and  $\text{ፀ}$  and the Arabic  $\text{ص}$ ,  $\text{ض}$ , and  $\text{ظ}$ . These were all developed at first from the  $\gamma$  sound, though on account of their similarity to other sounds, such as those of  $\text{r}$  and  $\text{z}$ , they were often interchanged with the latter, and more rarely with other sounds. According to the modern Arabic pronunciation, which may be taken as sufficiently near the ancient for our purpose, there were thus two orders of sounds; the one uttered with the tongue close to the teeth:  $\text{ص}$ ,  $\text{ض}$  ( $\text{ፀ}$ ),  $\text{ز}$ , or their equivalents; and the other with the tongue turned back against the roof of the mouth:  $\text{ص}$  ( $\gamma$ ),  $\text{ض}$ <sup>1</sup>, and  $\text{ظ}$ .<sup>2</sup> In these groups  $\text{z}$  and  $\gamma$  represent the primary sounds of their respective ranks. The historical development is probably to be represented by the order of the letters as they here stand, except that  $\text{z}$ , in all likelihood, arose later than  $\gamma$ . While all of these were thus primarily developed from one sound, it ought to be observed that sometimes we find a sibilant degenerated from a mute, as  $\text{ض}$  from  $\text{z}$ ,  $\text{ز}$  from  $\text{r}$ . In comparisons these must, of course, be carefully distinguished from those which are unquestionably of sibilant origin.

The last group of consonants to be considered are the

<sup>1</sup> Pronounced as  $d$  would be in the emphatic English syllable *odd*. The original sibilation was gradually lost. In Ethiopic it was resumed again. See Dillmann's Grammar, p. 52.

<sup>2</sup> Pronounced as  $z$  in the combination *ozz*.

so-called mutes or explosives, represented in English by *k*, *g*; *t*, *d*; *p*, *b*. Looking first at the Aryan alphabet, we find that before the breaking up of the family they had not only the primary sounds shown above, but that the sonants were also aspirated so as to yield three additional letters, *gh*, *dh*, and *bh*. That these latter arose later than *g*, *d*, and *b* we have already hinted in treating of the supposed correspondence between *gh* and the Semitic gutturals. This is a question which is, of course, not to be solved through accessible historical evidence. The sonant aspirates were very important and well-established phonetic elements when the several Aryan dialects branched off, and are represented more or less in them all. To show that the unaspirated sounds preceded them in origin, we shall point, first, to the fact that the aspirating tendency was evidently still present at the Aryan dispersion. The surd mutes *k*, *t*, *p*, were then unaspirated. They assumed the aspiration afterwards, not only in Sanskrit, but also in other Aryan dialects. But it may be said that the roots in which these aspirates are found are more numerous than those which contain unaspirated letters, and therefore the former class of sounds might seem to have been the earlier. In our view this only shows the strength of the tendency to aspirate the sonant mutes, after it had once well begun. Otherwise we would be led to curious conclusions. Take the sounds *b* and *bh*, for example. Schleicher, who also thinks<sup>1</sup> that the aspirates are of later origin than the simple *g*, *d*, *b*, asserts that he does not know of a single example which proves beyond doubt the existence of *b* in the old Aryan idiom as it is accessible to us. And it is certain that this sound is never found as a final in Aryan roots, while its existence at the beginning is perhaps more than doubtful. If the aspirates were also original sounds, we should thus be compelled to believe that in the Aryan system the simple *b* was originally unknown, though all the members of that family subsequently developed it as one of their most

<sup>1</sup> See his *Compendium*, etc., p. 11; *Ibid.*, p. 160. See the references there given for fuller discussion.

important elements, and although the same idiom had from the beginning the corresponding surd *p* unaspirated — a supposition almost, if not quite, incredible according to general linguistic experience. The conclusion seems, on all grounds, inevitable, that the primary Aryan mutes were simply *k, t, p, g, d, b*.

An examination of the Semitic mutes leads to precisely the same result. At the outset we must observe that the spirant sound assumed by *b, d, g, k, p, t* after vowels, which was, perhaps, due to Aramaic influence, and is only found in that language and Hebrew, with their dialectical varieties, was of late origin. It was unknown in Arabic, Ethiopic, and apparently in Assyrian.<sup>1</sup> The change of *p* into *f* in Arabic, which wholly lost the former sound, cannot be surely traced to a like influence. The same is true of the Arabic *th*. Leaving out these incidental variations, and beginning with the palatals, we find that besides the ordinary *k* we have a deeper palatal, the Hebrew *q*, represented throughout the whole family. It had its origin some time before the separation of the Semitic tribes, as is proved by its individuality and vitality throughout the history of Semitic speech. It was doubtless developed from the ordinary *k* sound through the same tendency that led, in the same family, to the production of the deep gutturals. Yet it had also strong affinities with the *g* sound, as is shown by the great number of cases in which they interchange, as well as by the fact that in later Semitic times it has shown a tendency to a sonant utterance, as in Babylonian<sup>2</sup> and in some dialects of Modern Arabic.<sup>3</sup> So it also interchanges, though less frequently, with the gutturals; and, in all cases of its citation in comparisons, its true relations will have to be ascertained.

Next, as to *t* and *d*. The latter sound has a variant only in Arabic and Ethiopic. This has been developed from the *ṭ* sound, as already seen; but from its resemblance to the primary *d* sound, the latter was often interchanged with it.

<sup>1</sup> Sayce, *Comp. Assyrian Grammar*, p. 36.

<sup>2</sup> *Ibid.*, p. 30.

<sup>3</sup> See Merx, in the *Zeitschrift d. morgenl. Ges.* xxii. 273.

□ with its representatives owes its origin to the primary *t*, though it often takes the place of *ʔ* on account of the organic association of these sounds.<sup>1</sup> Less frequently it stands for an original *d*. The Arabic ط arose from *t*, as is shown, among other ways, by its correspondence with the Aramaic פ when the Hebrew has ו.

As to the labial order of mutes no difficulty occurs. The Arabic ق is, of course, only the primary *p* become a spirant. It corresponds regularly with the *p* in the other dialects. The Ethiopic shows most peculiarity here. It has the *f* of the Arabic, and, besides the ordinary *p* (perhaps slightly assibilated) another, whose pronunciation it is difficult to discover exactly, but which seems to have been uttered quickly and emphatically, perhaps after the manner of □ as compared with פ. The two last seem to have been mostly developed from an earlier *b*, though sometimes also from *p* itself. These labials in Ethiopic are the most fluctuating sounds in the language, and have rendered their comparison with labials in the other dialects somewhat uncertain in many cases. The Semitic *b* had virtually the same pronunciation throughout the whole system. It should be added that in all the dialects not only does *b* sometimes take the place of *p*, but the other labial *m* takes the place of either. Naturally, however, this did not take place in the earliest Semitic times, and a careful examination ought to enable us, as with other cases of permutation, to determine the primary forms. This hasty survey brings us to the simple sounds *k*, *t*, *p*, *g*, *d*, *b*, as the original Semitic mutes.

We have thus reduced both the Aryan and the Semitic consonants to their primary limits. We have found that the original Aryan stock consisted of the following sounds: *k*, *t*, *p*, *g*, *d*, *b*, *s*, *r* (*l*), *m*, *n*, *y*, *v*, with the spiritus lenis. The original Semitic stock has been reduced to precisely the same sounds. No root, therefore, can be found in either

<sup>1</sup> If the tongue be very slightly moved from the roof of the mouth while the organs are in the □ position, and an emphatic hissing sound be made, the result will be ʔ.

family which contains a letter not reducible ultimately and legitimately to some sound in the above catalogue. As yet we have said nothing to show how far these letters radically represent one another respectively in the two systems. But a necessary step has been taken and a formidable difficulty overcome in the preparation for the work of comparison. That is all we are entitled to say till the end of our comparison is reached.

A question naturally arises as to the representation of the primary Aryan vowels in the Semitic. With Schleicher<sup>1</sup> and others we think that, at an earlier stage of the Aryan idiom than that accessible to us, there were but three simple vowel sounds, *a, i, u*. The same sounds, as the Arabic language shows, comprised the primary vowel stock of the Semites; though in some of the dialects, especially in Hebrew, their development was as various as in any of the Aryan tongues, while even true diphthongs, though not easily originated under the tri-consonantal system, also came into use in the later history of the idiom. It does not come within the scope of this Article to show how the Aryan relation of vowel and consonant may be reconciled with the Semitic association of these elements, which is so strikingly dissimilar. This it will be proper to do when we come to treat of the constitution of ultimate roots in the two systems of speech. We shall conclude the present discussion with an exhibition of the final results of our phonological comparison.

At the time of the breaking up of the Aryan family it possessed the following stock of consonantal and vowel sounds: ' (spiritus lenis = Aleph or Hamza),<sup>2</sup> *k, t, p, g, d, b, gh, dh, bh, y, v, r (l), s, m, n; a, i, u, á, ai (ê), au (ô), âi, âu*. Of these we found to be primary and fundamental: ' , *k, t, p, g, d, b, y, v, r (l), s, m, n; a, i, u*.

At the time of the Semitic dispersion the language pos-

<sup>1</sup> Compendium, etc., (4. Auflage), p. 11.

<sup>2</sup> Schleicher only omits this from his tabular view of Aryan consonants because it is so little used in Aryan writing. Of course it is necessary to exhibit it in the present connection.

