SCIENCE:

PUBLISHED BY N. D. C. HODGES, 874 BROADWAY, NEW YORK.

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A NEW ORTHOGRAPHY.

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THE orthography of the English language is distressingly bad. A reform in spelling would relieve education of one of its heaviest burdens. The hardest task of the first six years of the child's school-life is the spelling lesson. Indeed, the labor never ends. The veteran school teacher dares not venture too far from his dictionary. None of the phonetic systems which have been presented have met with such favor as to pass into general use. Yet reform must be possible.

In the phonetic systems now before the world there are two barriers to their general adoption. In the first place, the change from the present spelling is too great and too abrupt. The human race is like a heavy body in motion. Change of direction must be effected gradually. In the second place, the proposed systems are too complicated, and present distinctions which are too nice to be generally appreciated. To be acceptable, a system must possess two leading characteristics: (1) It must make the least possible departure from that now in use, and (2) it must be so simple that it may be read at sight and that the little child can learn it understandingly.

I think such a system is within our reach and that it might be brought into general use in a few years. I suggest the following:—

1. The present alphabet should be retained with as little change as possible. This is important, because new characters frighten the people and lay additional burdens on the printer. Besides, the language can be very well written with the characters which we have. The only deficiency is found with the vowels, and this can be supplied, as I shall show later.

2. Each character should have a fixed sound, and should retain the same sound in all its positions. In carrying out this rule, too much nicety must not be attempted. The vowel sounds are so variable that to represent all of them we should have to multiply characters almost indefinitely. We should thus have many words spelled differently in different positions and as coming from the mouths of different speakers. Every word should have a fixed form, and should retain this form in all its positions, though its pronunciation should vary. The written word is the symbol of an idea, and, at best, but approximately represents the spoken word. What we want is a compromise between the two which will do the least violence to pronunciation and afford the greatest ease in spelling. The mind tolerates a certain amount of ambiguity rather than endure too nice distinctions. This is illustrated in the varying sounds of the vowels as now used. Again, obscure sounds cannot be well represented phonetically. In syllables where they occur the vowel indicated by the etymology of the word should be retained.

3. Words should be spelled as they are pronounced, and each sound should be represented by its proper character wherever it occurs. Here, as before, too much nicety must not be attempted. Let us have a judicious compromise. The great difficulty of English spelling does not depend upon the fact that each of the vowels has several sounds. It is rather because each of these sounds is represented, not only by the other vowels, but also by a wonderful variety of combinations of vowels and consonants. For example, the long sound of *a* is indicated in at least twenty different ways, as in the following words: B*a*ss, f*a*te, p*ai*n, p*ay*, d*a*hlia, v*ei*n, th*ey*, gr*ea*t, *eh*, go*a*l, g*au*ge, champ*a*gne, camp*ai*gn, str*ai*ght, f*ei*gn, *eigh*t, *ay*e, obeyed, w*eigh*ed, h*alf*penny. So there are twenty-four combinations expressing the long sound of *e*, twenty-six for the sound of *a* in all, among which are *augh* in aught, *ough* in thought, and *augha* in Vaughan; and for the sound of short unaccented *a* Miss Soames finds no less than thirty-four letters and combinations. No wonder the child, when learning to spell, is ready to give up in despair.

Now all that is very desirable can be attained through our present alphabet by giving to each letter a fixed sound and supplying a few vowel sounds by the use of double letters. The names of the letters should be so changed as to give to each vowel and vowel combination the sound which it represents and to make the names of the consonants uniform. We will take the five vowels and give them the names which they have in the European languages, and let them, when written singly, represent the short sound of these vowels. Let the long sounds be indicated by doubling or adding the letter *e*. For the diphthongs retain the ordinary combinations. The vowel system will then stand as follows:—

Vowels.

Long.	*Intermediate.*	*Short.*
aa, as in father,	*a*, as in last,	*a*, as in mat,
ae, as in mate,		*e*, as in net,
ie, as in machine,		*i*, as in mit,
oe, as in note,		*o*, as in not,
ue, as in rule,	*oo*, as in foot, bull,	*u*, as in up.

Diphthongs.

ei, like *i* in pine,	*ai*, as in air,	*oi*, as in boil,
au, as in laud,	*ou*, as in house,	*yu*, as in you.

Examining this table, we see that the short vowels present no change from their present usage. The Italian *a* is expressed by doubling the letter. The long *a* really corresponds to short *e*, and there is a fitness, therefore, in representing it by *ae*. This is commonly done now, except that the *e* usually goes to the end of the syllable. The other long sounds are also appropriately indicated by adding *e*. The intermediate *a* is so little used that it hardly seems necessary to provide for it a separate character. Its sound is usually suggested by the consonants which follow it. The sound of *u* in bull is well represented by *oo*. The long *u* is really *yu*, and it is so indicated. The least satisfactory of all, perhaps, is the use of *ei* for the long sound of *i*. The combination *ai* would have been better, but this occurs now in so many words and its sound is so well fixed that it was not thought best to change it. As a compromise, the letter *I* may still be retained for the personal pronoun. When these double vowels are once in use, they will naturally, in the course of time, be combined into one character.

Since the short vowel sounds do not occur in accented, open syllables, the lengthening *e* may be omitted in these, and the spelling thus further simplified. As an additional compromise, the letters in such positions might retain their present sounds

With the consonants, we need have little trouble. We will obtain the name uniformly by adding to each letter and combination the long *a*. The sound being indicated by the name, it is not necessary to give sample words. With an approximate classification into surds and sonants, stops and continuants, they are as follows:—

Consonants.

p, pae,	*b*, bae,	*t*, tae,	*d*, dae,
f, fae,	*v*, vae,	*k*, kae,	*g*, gae,
c, cae (chae),	*j*, jae,	*th*, thae,	*dh*, dhae (they),
s, sae	*z*, zae,	*sh*, shae,	*zh*, zhae,
r, rae,	*l*, lae,	*m*, mae,	*n*, nae,
h, hae,	*y*, yae,	*w*, wae,	*hw*, hwae (whay).

In this table but few innovations will be observed. *c* is made equal to *ch; dh* and *zh* are used for the sonant *th* and *sh;* and *h* is placed where it belongs, before the *w* in the combination *wh*. The letters *q* and *x* are not needed, but may still be used to avoid the awkward *kw* and *ks*.

In teaching this alphabet to children, and in spelling, the two characters which represent the long vowels and diphthongs should be pronounced as one sound, and not separately.

The following extract will give an idea of the appearance of the printed page in this system:—

Soundz at Ievning.

Swiet waaz dhe sound, hwen oft, at ievning'z kloez,
Up yondur hil dhe villaj murmur roez.
Dhair, az I past with kairles steps and slo,
Dhe mingling noets kaem sofnd from belo;
Dhe swaen responsiv az dhe milk-maed sung,
Dhe sobur hurd dhat loed tu miet dher yung,
Dhe noizi gies dhat gabbld o'r dhe puel,
Dhe plaeful cildren just let lues from skuel,
Dhe waac-dog'z vois dhat baed dhe hwispring weind,
And dhe loud laaf dhat spoek dhe vaekant meind;—
Dhies aul in swiet konfyuzhun saut dhe shaed,
And fild iec pauz dhe neitingael haed maed.

OLIVER GOLDSMITH.

My object in this paper is not to present a finished system, but to show that the spelling reform is practicable, and to suggest a modification of the alphabet which will bring the desired relief. The time and energy wasted by a child in learning to spell would, if otherwise employed, be sufficient to give him an ordinary education. Let us do something at once to relieve education of this great burden.

The plan here proposed has the following additional advantages:—

1. The printed and written pages have no very unfamiliar look.
2. Print and script are easily read at sight by one who sees them for the first time.
3. One can learn in a few minutes to write in this system.
4. Its adoption will make no existing books obsolete or useless except a few primary school books.
5. It will give no special offence to the philologist.
6. It will lead easily to a better and more philosophical phonetic system.

ELECTRICAL NOTES.

The displays of high-voltage electricity which formed so prominent a feature of the late electrical exhibition held in the Crystal Palace, are not absent from the present one, but neither the display of Professor Elihu Thomson nor that of the Westinghouse Company approach, so far as spectacular effect is concerned, the exhibitions of Messrs. Siemens and Mr. Swinburne at the Crystal Palace. These latter were truly magnificent displays. They were, however, produced by high potentials obtained in the ordinary way, by transforming up, and on this account the experiments of Professor Elihu Thomson possess much more interest from a scientific point of view. The method used by the latter, as most electricians are aware, consists of passing a very rapidly alternating current through a few turns of a coarse copper wire wound round a glass tube placed in oil. Close to the coarse wire primary is wound a secondary of finer wire, and in this a very high voltage is induced by the current in the primary. This secondary current is also of very high periodicity, and all the Spottiswood and Moulton effects can be produced with it.

Owing, probably, to the resonant qualities of the room in which the Westinghouse exhibition takes place the noise of the discharge produces a very disagreeable effect on the nerves, even of those accustomed to working with high-potential discharges, so much so that one cannot help wondering at times if the powerful surgings in the ether do not directly excite the nerves as a battery does. It is true that in most of the high-frequency experiments no such effect is observed, but this may be because the quantity of current is in general very small. Meantime the coat-tails of the spectators can be seen, as Rudyard Kipling would put it, "crawling with invidious apprehension."

One of the signs of the times is the exhibit of electrical heating and cooking apparatus shown by the Ansonia Electric Company in the gallery of the Electrical Building. Here we see all manner of utensils, baking ovens, gridirons, chafing dishes, saucepans, coffee pots, etc., all arranged so that by simply attaching a plug to an ordinary lighting circuit they are put in operation at once. The subject is such an important one that the writer has thought it best to go into it more in detail (*vide infra*). Meanwhile it may be mentioned that the exhibit is well worth a visit.

The new Helios arc lamp, exhibited by the same firm, will also attract attention. This may be said to be, perhaps, the first thoroughly successful arc lamp for alternating currents. It is almost absolutely noiseless, and almost absolutely steady, more so than most direct-current lamps. These results are accomplished by the use of a low potential and of especially soft carbons.

It will be remembered that some years ago Mr. Edison brought out the kinetoscope. In this instrument a combination was made of the well-known zootrope and the phonograph, so that at the same time that the motions of the moving object were seen, the accompanying sounds were heard. The apparatus was exhibited at some of the charitable entertainments in New York through the influence of Mrs. Edison, but since then comparatively little has been seen of it. It has now been more fully developed and forms a part of the Edison exhibit in the gallery of the Electrical Building.

Among the instrument-makers the exhibit of Messrs. Queen & Co. stands preëminent. Their display is on the ground floor near the entrance, and includes almost every kind of electrical instrument made. A number of new instruments have been lately brought out by the firm. First among these we may mention Professor Ryan's electrometer, for use in making alternating-current curves. This instrument, which has already been described in the electrical papers and has been in use for some time at Cornell, consists of an electrometer whose needle is charged through a very fine platinum or silver wire to the potential of the alternating current machine, at any part of its revolution, by means of the ordinary commutating device. So far it does not differ very greatly from the ordinary electrometer. It is a zero instrument, however, and is brought back to its original position by the action of a current in a surrounding coil of wire, which acts on a small magnet fastened to the electrometer needle. The instrument being once standardized, the potential can be found by measuring the current passed through the surrounding coil, and this, from the nature of the operation, is a very short process. While the instrument has been known for some time, this is the first occasion, we believe, that it has been placed on the market.

It is to be hoped that some firm will do the same for the dynamometer method of Dr. Duncan, which has been used with so much success at Johns Hopkins.

Another very fine instrument is the cylindrical bridge. It is a very mechanical piece of work, and looks as if it could be depended on. With the Carhart commutator, standard ratio coils, and one of the new Ayrton-D'Arsonval galvanometers the electrician has a most complete apparatus for the measurement of resistances to almost any degree of accuracy.

These latter instruments (the Ayrton-D'Arsonval galvanometers) will probably interest the electrician more than anything else in the line of measuring apparatus. With electrical railways running in every direction near one's laboratory, the path of whose earth returns varies from day to day, with every sprinkle of rain or difference of temperature, the use of an ordinary sensitive galvanometer has been entirely out of the question unless in the neighborhood of a very strict law and order society, when a little work might be done by getting up to the laboratory at some unearthly hour on a Sunday morning. For this reason the tangent galvanometer has faded from the scene, and is now only used as a means of illustrating certain principles of electricity, its place being taken by Lord Kelvin's balances. And now the Thomson galvanometer must go before these new instruments, for the difference in sensibility is so small that there is practically no advan-