ing the same purpose. Edison, for his fundamental and valuable patents in electric-lighting, has received less share in the stock of the Edison Company than have the patentees of some small improvement in an electric gas-lighting or fire-alarm device in the companies that have been formed to promote them. It is too often the case that the small cash capital subscribed is used to make a good showing for the company until the promoters have sold their stock, when the company is very liable to suspend. All this very seriously retards the progress of electrical industry. Neither those who lose in companies like the above, nor their friends, are very likely to invest again; and the result is, that the companies that can do legitimate and remunerative work have trouble in getting the capital necessary to develop their business as fast as they would otherwise be able. That there is an immense field for work, and remunerative work, is shown by the wonderful growth of such companies as the Edison, Brush, Thomson-Houston, Westinghouse, Sprague, and others. But we would advise all investors in electrical companies to first find whether they are legitimate business enterprises, with a fair amount of capital allowed for patents, supposing they work under patents, and then to try and find out whether there is any merit in the plan that is to be introduced. The promoters of the company are not the best persons from whom to take evidence as to its value. As for investments in local lighting companies, if there is an efficient management, and if a proper local franchise can be obtained, then, unless a very uneconomical system is chosen, and the local conditions are unusually unfavorable, it is the experience of the last few years that the company should pay good dividends. While we believe, then, that electricity offers an excellent field for investment, and that well-managed companies will pay, yet we cannot too strongly urge investors not to rush blindly into investments on the strength of the representation of interested parties. The advantages of electricity for lighting must lead to its almost universal adoption in the near future, while its adaptability to the distribution of energy opens an almost limitless field for motor-work. The one thing that could most retard its progress would be a condition of public distrust caused by unwise investors, who will equally injure electrical interests and themselves.

THE THIRTEENTH ANNUAL REPORT, which President Gilman has just presented to the board of trustees of Johns Hopkins University, is very interesting reading. It incorporates reports, drawn with some attention to detail, by the various heads of departments, dealing with the specific work accomplished under their respective supervision. This is a feature of considerable value to those who are following closely the development of university work in the United States, and is not unfamiliar, as President Barnard has printed such appendices to his annual report to the trustees of Columbia College for several years past. Mr. Gilman characterizes the academic year 1887–88 as one of steady advance. "The number of students has increased, the standard of scholarship has been maintained, the publications have been as many as ever, the fidelity and enthusiasm of the principal teachers cannot be too strongly commended." Reference to the financial condition of the institution is made in these words: "Our only cause for anxiety is one of which you are fully aware, — the loss of income from the stocks which were given to the university by its founder. Your wisdom, gentlemen of the board of trustees, will no doubt devise some efficient relief. I believe it to be a reasonable expectation that the efforts which you have put forth, and which you have encouraged others to put forth, for the establishment of a university, will receive financial support when you are ready to ask for it." The academic staff included, during the year, fifty-seven teachers. The number of students enrolled during the year was four hundred and twenty, of whom one hundred and ninety were residents of Maryland, one hundred and ninety-six of other States, and twenty-five of foreign countries. Of this number, two hundred and thirty were already graduates of other institutions. The degree of B.A. was conferred on thirty-four candidates, and that of Ph.D. upon twenty-seven, during the year.

The guiding principle upon which Mr. Gilman has developed the university is eminently sound. In view of the numerous newspaper reports and articles concerning Columbia College and its development, the perusal of the following passage from the report before us is recommended to the trustees and faculties of the latter institution. "We continue to adhere," says Mr. Gilman, "to a definition which is hallowed by age and confirmed by experience, that a university is a body of teachers and scholars, — *universitas magistrorum et discipulorum*, — a corporation maintained for the conservation and advancement of knowledge, in which those who have been thoroughly prepared for higher studies are encouraged to continue, under competent professors, their intellectual advancement in many branches of science and literature. In this society we recognize two important grades: (*a*) the collegiate students, who are aspirants for the diploma of bachelor of arts, to which they look forward as a certificate that they have completed a liberal course of preliminary study; and (*b*) the university students, including the few who may be candidates for a higher diploma, that of doctor or master (a certificate that they have made special attainments in certain branches of knowledge); and a larger number who, without any reference to a degree, are simply continuing their studies for varying periods. Corresponding to the wants of these two classes of students, we have two methods of instruction, — the rule of the college, which provides discipline, drill, training, in appointed tasks, for definite periods; and the rule of the university, the note of which is opportunity, freedom, encouragement, and guidance in more difficult studies, inquiries, and pursuits."

THE CLAIMS OF THE ENGLISH LANGUAGE TO UNIVERSALITY.[1]

ALL efforts to create a new language for international use are really unnecessary, because we already possess a vehicle of communication, in our native tongue, which, if not perfect, is sufficiently so, and is at least as good as any that has been proposed. Whatever imperfections may be discerned in English, their removal, if thought necessary, can be easily accomplished in books for foreign learners. But, taking our language *as it is*, and comparing it with other languages, I think I may claim assent to a few fundamental propositions.

The first proposition is, English is as readily *understood* by foreign learners as a foreign language is by English learners. This statement might be strengthened; for the inflection of words in other languages requires much preliminary study to enable a learner to translate; whereas the student of English has only to deal with words which are, for the most part, unchanging, and the full meaning of which, consequently, he learns at once. English is therefore, in reality, *more* readily understood by a foreign learner than a foreign language is by an English learner.

The second proposition is, English is as readily pronounced with *intelligibility* by foreign learners as a foreign language is by English learners. Accuracy of pronunciation, according to native standards, is by no means essential to intelligibility. This is especially true of English. We hear speakers mispronounce every element in a sentence, yet they are understood; and the substitution of one sound for another is a very common habit: as in forming *th* instead of *s*, and "lisping all the hissing sounds;" or "croaking the sound of *r* far back in the rasping throat;" or "protruding the sound through the narrow, rounded aperture of the approximated lips;" or in substituting *t* for *k*, as when little Missie "calls her tiny kitten to come, that she may catch it." We understand the lisper, the burrer, the infant prattler, and the foreign stumbler

[1] Address delivered by Dr. A. Melville Bell before the Nineteenth Century Club, New York, Dec. 12, 1888.

over our speech; and, however imperfect the latter's pronunciation may be, it is in general quite as intelligible as our own attempts at foreign utterance.

The third proposition is, The *correct* phonetic elements of English may be acquired with native accuracy by foreign learners as readily as the elements of a foreign language can be similarly acquired by English learners. The "broken English" of foreigners, and the wretched attempts at foreign speech by school tyros, result simply from the want of timely and precise direction. There is not a sound in any language, which a learner, of any nationality, cannot be taught to produce with all the characteristics of native utterance; and English sounds, as compared with the phonetic elements of other languages, are organically easy of formation. The difficulties of pronunciation which have been complained of in connection with English, arise mainly from the ambiguities of spelling. Let a learner see exactly what he has to pronounce, and he will do so with facility. There are, indeed, clusters of consonants — the very strength of the language — which test articulative ability to enounce them smoothly and without hiatus; but a good speaker delivers them — to quote the words of Austin's 'Chironomia' — "as beautiful coins newly issued from the mint, neatly struck by the proper organs, deeply and accurately impressed, perfectly finished, distinct, sharp, in due succession and of due weight."

The fourth and last proposition is, In regard to the expression of *ideas* with definiteness, fulness, and directness, — the main object of speech, — English is not inferior to any language. Inflected languages are generally briefer in expression; but English, with its separate words, not only for ideas but for nearly all the relations between ideas, is more elastic and variable in construction; admitting of niceties of distinction in phraseology, which are a source of precision and appositeness, emphasis, or elegance in diction.

These propositions merely assert the claims of English to a degree of fitness for international use at least *equal* to that of any language. Other considerations will be found to establish a *supremacy* that is no less indisputable.

The crowning recommendation of the English language for universality is the simplicity of its grammar. In this respect English is immeasurably superior not only to other national tongues, but also to every form of artificial language that has been devised. The various moods and tenses, declensions and conjugations, which burden other grammars have practically no existence for us. We express by combinations of simple words the import of complex inflections. The words are easily learned and remembered; whereas the inflections are perplexing to learn, and their recollection is a constant tax on the memory. If brevity were the principal desideratum, then the meaningful adjuncts to root-words — in substantive, verbal, and other terminations — might be preferable to the detached words by which we convey the same ideas. But brevity would be too dearly purchased at the cost of such a category of shifting enclitics. English is happily almost free from these, but it presents a solitary example of such freedom, as if the language had been predestined to universality, and by this means made ready for its great function. An English word expresses a thought definitely, absolutely, fixedly; the words of an inflected language are unsteady in the mind, and they veer to point after point of the logical compass, under the influence of the little rudders of grammatical inflection.

But, while English grammar is unquestionably the simplest of all grammars, it is still susceptible of further simplification. The chief advantage claimed for some artificial languages is that their rules are absolute, and free from exceptions. But there is no reason why English should not be relieved from its small growth of irregularities, and its rules made equally free from exceptions. For example: its irregular forms of the plural in nouns, and of the preterite in verbs, might be made regular: that is, it might be permissible to form the plural always by adding *s* to the singular, and the preterite always by adding the sound of *t* or *(e)d* to the infinitive, and write 'childs' for 'children,' 'mans' for 'men,' 'mouses' and 'gooses' for 'mice' and 'geese,' 'goed' for 'went,' 'knowed' for 'knew,' 'seed' for 'saw,' 'singed' and 'bringed' for 'sang' and 'brought.' The literary forms of such words would be alternative modes of expression, for which a preference might be indicated because they are established in our literature. The dictionary would read, —

Ox: *plural* oxes, or oxen.	Do: *preterite* doed, or did.
Sheep: " sheeps, or sheep.	Let: " letted, or let.
Tooth: " tooths, or teeth.	Seek: " seeked, or sought.

Such changes need not be prescribed, but simply allowed, *ad libitum*. They would, for the most part, be a mere revival of old forms, many of which are not entirely obsolete.

A few other irregularities might be similarly rectified. For example: why might not degrees of comparison — when not expressed by the separate words 'more' and 'most' — be always formed by adding *er* and *est* to the positive? In this way the words 'gooder' and 'goodest,' and 'weller' and 'wellest,' would be allowable alternatives for the irregular words 'better' and 'best,' which now do duty as comparatives for both 'good' and 'well.' To *legitimize all words formed on accepted rules — without disturbing established exceptional words — would remove the only source of difficulty from the language.* A few more words would be added to the dictionary, but the vocabulary would be enriched by a corresponding increase of phonetic variety.

These suggestions are made now for the first time. The advisability of adopting them must be left to the decision of other minds. But there can be no doubt that the recognition of such alternative modes of expression would be a convenience to learners in their early attempts at *writing* the language.

English has a further recommendation for universality, in its already wide diffusion. It is the vernacular tongue of a far larger number of persons than any other language; and it is undoubtedly studied as a foreign tongue by a larger number than any other. By its phonetics, its copious expressiveness, and its ready intelligibility, English is at least as well adapted for international employment as any language; while, in regard to grammatical simplicity and widely established use, it has a fitness pre-eminent over all other languages, natural or artificial.

How, then, can we account for the fact that this obvious fitness is not universally recognized, and that schemes for artificial languages are still seriously entertained and laboriously developed? The reason is not far to seek. The English language and its orthography are two distinct things. The language is almost all that could be desired; the orthography, almost all that can only be deplored and condemned. Our spelling is disorderly, difficult, misleading, marred both by redundancy and deficiency of letters, and it requires more time and labor to master it than the language itself does. And why? Simply because, for distribution among upwards of forty phonetic claimants, we have only two-thirds of that number of letters. Fully one-third of our sounds are thus compelled to be wanderers and sorners among the letters. This condition of things in human society would convert it into a mass of paupers and criminals. In the republic of letters the results are also depraving. Between letters and sounds there are no acknowledged rights of *meum* and *tuum;* the homeless sounds have to steal a shelter as best they may, now here, now there, among the letters; and the letters have to share their quarters, willy-nilly, with strange interlopers. In plain language, the alphabet is so extremely defective that it *cannot*, without amendment, adequately represent our speech.

How is this necessary amendment to be effected? Here irreconcilable discord arises between words. Each word claims its customary appropriation of letters, and — possession being nine points of the law — each resolutely holds to what it has. "I should not be known in any other dress," says word after word. One adds, "I came from France with the Conqueror;" another, "I hail from classic Rome;" a third, "I boast of Anglo-Saxon origin;" a fourth, "and I of sacred Eastern origin." "I am from Ireland," "I from Wales," say others. Danes, Swedes, and Dutch, Arabians, Spaniards, Greeks, and a host more, assert their claims; and each word points with pride to some poor ragged vestige of old national costume supposed to be distinguishable in its orthography.

But all this attempting to record the nationality of words in spelling has nothing to do with the requirements of popular writing. The spoken *sound*, and not the written sign, is the real word;

and only the sound, and not the verbal genealogy, calls for representation. The derivation of words belongs to etymology, and not to orthography.

Our defective alphabet, and the consequent irregularity in spelling, form the only obstacle to the international diffusion of English. This obstacle may be removed for international purposes without disturbing our own spelling. I now refer for a moment to the system of letters denominated 'World-English,' in which a distinctive character is furnished for each sound in the language. By this means the orthography of every syllable becomes absolutely regular. A large proportion of the common alphabet is retained unchanged in World-English, but each letter is limited to the expression of one single sound. New letters are, of course, introduced for unrepresented sounds, and these are designed to resemble old letters as much as possible. The effect is, that any reader of ordinary English deciphers World-English without the slightest difficulty. At the same time — the writing being perfectly phonetic — the exact pronunciation of every word is indicated in the spelling.

I need not say any thing more concerning World-English, except in reference to certain prevailing misconceptions as to the scope and object of the system. Some critics have looked on the new orthography as only a fresh attempt at spelling-reform ; and they argue, that, as the new letters are not to be found in every printing-office, the introduction of the system must needs be hopeless. This view is entirely a misconception. World-English does not interfere in any way with ordinary spelling. The object is simply to provide a separate method of learning to read and speak the language, for the benefit chiefly of students in foreign countries, but incidentally also as a help to beginners at home. Books, magazines, and newspapers do not require to use a single one of the new letters.

Other critics have objected to the association of English sounds with the vowel-letters *a, e, i,* as giving a preference, they say, to narrow usage over the wide usage of Continental Europe, which would require these letters to be sounded *ah, ā, ee.* This is another misapprehension of the system. The World-English alphabet is not — like that of Visible Speech — a universal alphabet. Its exclusive object is to teach ONE language, and to do so with as perfect conservation as possible of the phonetics of ordinary letters. To have associated the sounds *ah, ā, ee,* with the letters *a, e, i,* would have defeated the very purpose of the scheme. World-English does not assimilate English to other tongues, but only facilitates the acquisition of the language, exactly as it *is* spoken in England and America.

My allotted space does not permit me to say more. I trust, however, that this brief statement will have sufficiently established the claims of English to universality. I have confined my remarks to this single point. If the language were merely as well adapted as any other for international use, its being the native tongue of the two greatest nations on earth should decide the question of its superiority for social, commercial, and scientific intercourse throughout the world.

Volapük, Lingua, and other schemes proposed for universal language, will, I fear, prove but wasted efforts. The field is occupied. Every zone is being covered with broad growths of world-overspreading English. Let us improve, while we may, what none can supplant, and none need wish supplanted. World-English has performed one not unimportant service, in showing how established spelling may be preserved, while the orthographic obstacles are removed that have hindered both the diffusion of the language, and its *recognition,* as the most fit medium for international communication universally.

HEALTH MATTERS.

The Pollution of Water-Supplies.

DR. CHARLES SMART, surgeon U.S.A., presented a report at the recent meeting of the American Public Health Association on the pollution of water-supplies.

The report gives special emphasis to the conclusion reached at the previous meeting, that, when there is sewage in a water-supply, there is danger of typhoid infection. Some of the evidence is briefly cited ; and the financial interests involved are held responsible for the hesitancy to acknowledge this specific danger, for as soon as a city relieves itself from the oppression of the moneyed interests, and procures a wholesome water for its citizens, it immediately recognizes the connection between sewage and typhoid. Vienna recognized this connection when it found, that, by substituting the water of a mountain-stream for the sewage-water of the Danube, its annual deaths from typhoid fell from three hundred and forty to fifty, and shortly afterwards to eleven, in every hundred thousand of the population ; and an improved sewerage system had nothing to do with this, as the sewerage system was in existence during the period of high typhoid rates.

The efforts made by municipal authorities and water companies are then passed in review. The advantages of sedimentation, which is the method generally adopted in this country, are recognized, and particularly when sedimentation is promoted by the use of precipitants, such as chloride of iron, as recently suggested by L. H. Gardner of New Orleans, La. The changes that take place during storage are held to be purifying in their nature, notwithstanding the vast increase in the number of bacteria developed in the stored waters. The slowness of the sedimenting process, often necessitating a large expenditure for storage-basins, has led to the experimental use of such filtering-beds as are employed so generally for municipal supplies in England ; but the expense attending them is large, and the coldness of our winters begets difficulties which are not encountered in the milder climate of England. Attention is then directed to the patent filters that have of late been manufactured for use on a large scale. Their ability to furnish a clear water is conceded ; but the object of the filtration of a water-supply for domestic or public service is its wholesomeness when used for drinking, and its transparency gives no testimony on this point. Artificial filtration has neither the time nor the surface to effect percolation after nature's methods. In these artificial filters, as much water is transmitted under pressure in half an hour as nature purifies on the same area annually. Bacteria of nitrification, which effect the purification during the passage of a water through the soil, cannot be harnessed to the work of the artificial filter. Artificial filtration consists of the mechanical separation of a water from its suspended impurities, while the essential of natural filtration is the thorough nitrification of the dissolved albuminoids of the water, the removal of the suspended matters being incidental and merely secondary.

But although sedimentation and filtration give a more or less clear water, and one in which the organic matters that are prone to decompose are destroyed and rendered harmless by bacterial agencies, if an infected sewage has entered the water, the living germs of typhoid-fever are not removed or deprived of their virulence by any of these modes of purification. The infected water which prostrated twelve hundred of the eight thousand inhabitants of Plymouth, Penn., and killed a hundred and thirty of those whom it prostrated, passed through three storage-reservoirs on its way to accomplish its deadly mission ; and the springs of Lauzun, in Switzerland, contained the germs and propagated the disease, although their waters had undergone a thorough filtration. From the particulars of the latter epidemic, it is held, that, while sewage irrigation may give effluents that will preserve our streams from becoming open sewers, it will never furnish a water which can be afterwards used as a drinking-supply.

The conclusion reached is an emphasized reiteration of that of every committee which has investigated this subject, — that a water to which sewage has had access should, from that fact alone, be excluded from all further consideration as a possible water-supply for domestic purposes. Money is held to be all that is wanting to solve the question of pure water-supplies. Engineering difficulties fall into insignificance when surveyed from a satisfactory financial standpoint. It is often said to be beyond the power of money to purchase health, but the sanitary student can readily demonstrate that in many cases this is not so. Money expended in the distribution of a wholesome water-supply will purchase health for the thousands who otherwise fall victims to the fever which is endemic in our cities and towns. Typhoid-fever is a disease to which every one is exposed. The susceptibility to it is inherent in our consti-