

are beneath the car, out of sight, and are geared by a system of spur-gears to the axle of the car-wheels. Each motor is swung in a cradle one end of which pivots on the car-axle, — the axle passing through bearings in the cradle, — while the other end is fastened to the car-frames by heavy spiral springs above and below. These springs are for the purpose of avoiding any sudden strains. Between the gear on the motor shaft and that on the car-axle is an intermediate gearing which is fitted on its axle with rubber cushions to give additional relief from shocks. The whole gear system works easily, and makes very little noise. The switches for controlling the current are on both platforms, the car running in either direction. The coils of the field-magnets of the motors are divided into a number of sections, and the switch makes different arrangements of these coils, putting them all in series (when the current is least) or in parallel (when the current is greatest), or using different combinations for intermediate powers. The cars are under perfect control: they start easily, and can be backed instantly in case of emergency. Brakes are used both for the wheels and on the track, the ordinary wheel-brake not being sufficient for some of the steep grades that occur. Power is supplied from a central station in about the middle of the line. There are six dynamos, giving 500 volts and 80 amperes each. The line was opened for traffic with ten cars running. They were crowded with passengers during the day; and the heavy travel, together with the inexperience of the drivers, was a severe test for the system. There were a few small troubles, but these were soon rectified; and, on the whole, the day's work seemed to prove the system a success.

BOOK - REVIEWS.

Political Economy. By FRANCIS A. WALKER. 2d ed. New York, Holt. 8^o.

It would be superfluous to commend to American readers any economic writing by President Walker. His clear style, vigorous thought, and terse expression have long since placed him in the front rank of economic thinkers, whether American or European. His wide experience and his philosophic insight raise him far above those scribblers of ephemeral pamphlets who are crying now for socialism, now for co-operation, now for *laissez faire*, and all under the name of 'political economy.' President Walker sees very clearly that economics, if it is a science at all, is only to be studied in the ever-varying phenomena of human nature, and he would be the last to attempt to regulate or produce either character or productivity by statute.

The present volume is the best adapted to the present needs of students in the United States, of any that have come from the press. Not only are the general topics of political economy treated fully and with ample illustration, but a concluding part (and a generous one) is given to the discussion of present problems under the head of 'Some Applications of Economic Principles.' We do not follow President Walker in his virtual indorsement of the Ricardian theory of rent, or of Malthusianism; for, despite what he says, both doctrines appear to us to be mere approximations, and not certainties. It is the assumption of their certainty, and the basing of elaborate deductions upon them, which have made so many of the theoretical conclusions of political economy so absurdly at variance with facts. On the wages question President Walker is particularly strong and clear, and his conclusions incontestable. It is interesting to see a professed economist write of the system of protection as the author does. His fellow-economists are given to abuse and the hurling of epithets as soon as the subject is mentioned; but President Walker, in a fairer spirit, writes, "If the protectionist can show that restraints imposed by law upon the industrial action of his countrymen, or the men of any country he chooses to take for the purposes of the debate, have the effect not, indeed, to generate productive force, but to direct the productive force generated by human wants, setting in motion labor with a better actual result than under the rule of freedom, he will make his case. But this is to be proved, not taken for granted; and it is only to be proved by sound and serious argument, not by strenuous exertion and senseless clamor" (pp. 508, 509). This is a position which all rational men can accept; and it is infinitely removed from the line of argument, or rather of invective, pursued by Professors Sumner and

Perry. President Walker's argument in Paragraph 615, we do not, however, quite understand; for it seems to imply that the advocates of protection insist on that as a universal fiscal policy with a view to making industrial entities correspond to political ones. As we read their arguments, on the other hand, no such claim is made. It is only asserted that protection is best for the United States at this time. At all events, a free-trade argument on the basis indicated by the writer would be both valuable and interesting.

We cannot refrain from expressing the wish that this book may find its way into more of our colleges, for it is worthy of them.

Nuttall's Standard Dictionary of the English Language. New edition, revised by Rev. James Wood. New York, Warne & Co. 8^o. \$1.50.

GREAT improvements have been made of late years in concise and handy dictionaries. Those formerly in use contained but a small proportion of the words in the language, and many of the definitions were nothing but synonymous terms; so that, for every purpose of real scholarship, reference had to be made to a large dictionary. But now we have several dictionaries of convenient size and low price, which really serve their intended purpose, and one of the best of these is that now before us. We have not examined the work in detail; but such examination as we have been able to give it shows it to be worthy of the popularity it has already attained. The definitions — always the main point in a dictionary — are up to the level of those in other English dictionaries, and the various meanings of the same word are distinguished with much fulness and accuracy. Illustrative examples from authors are not given, as the smallness of the book forbids it; but there are some pictorial illustrations, though not so many as in some other dictionaries of a similar character. The orthography is that usually employed in England, including the *u* in such words as 'honour.' The pronunciation is indicated by respelling, with only a slight use of diacritical marks, — a method which, for young people and for many older ones, has certain advantages. The present revised edition contains many new words of science and literature, and indicates in a brief way the derivation of the more important words when this is not obvious. At the end of the volume are the usual vocabularies of proper names, and a brief list of proverbs and quotations from foreign languages, with their meaning in English. The type employed in the book is necessarily small, though not so small as in some other concise dictionaries, and it is new and clear. The book is a medium octavo of eight hundred pages, and will be useful to all who wish for a dictionary of this character.

Hand-Book of Volapük. By CHARLES E. SPRAGUE. New York, The Office Co. 12^o. \$2.

Volapük. By KLAS AUGUST LINDERFELT. Milwaukee, Casper. 16^o. 50 cents.

THE bibliography of Volapük now comprises about a hundred books, but, probably for reasons well presented by Professor Bell in *Science* of Jan. 27, very few of these works are in English. The above are two out of the first half-dozen books on the subject in the English language, though many periodicals in this country have given considerable space, especially during the past few months, to Volapükian literature. Mr. Sprague, who appears to be at the head of the movement in this country, gives, in the introduction to his hand-book, a brief history of the new language and of its rapid progress in Europe. He states that it was invented and first published in 1879 by Johann Martin Schleyer, a German priest, whose object was, "first, to produce a language capable of expressing thought with the greatest clearness and accuracy; second, to make its acquisition as easy as possible to the greatest number." He sought to accomplish these ends "by observing the processes of the many languages with which he was acquainted; following them as models wherever they were clear, accurate, and simple, but avoiding their faults, obscurities, and difficulties." The result of his labors is a language whose "rules have the advantage of being absolute, and unburdened with exceptions," as Professor Bell puts it. A clear and attractive exposition of the new language, in small compass, is given by Mr. Sprague, who modestly claims that the most obvious application of it, in the immediate future at least, is for international correspondence, especially commercial correspond-