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The Editor is always glad to receive for examination illustrated articles on subjects of timely interest. If the photographs are *sharp*, the articles *short*, and the facts *authentic*, the contributions will receive special attention. Accepted articles will be paid for at regular space rates.

THE AMERICAN SCHOLARSHIPS AT OXFORD.

Probably no will made public in years has attracted so much attention as that of the late Cecil Rhodes. It is characteristic of the man that its provisions should be on such a vast scale as to affect the interests of three continents. The feature of the will which is of the greatest interest to Americans is the magnificent provision for the establishment of scholarships in Oxford University for American students. This desire to bring the three great branches of the Anglo-Saxon race into closer unity and understanding appeals to our imagination and fills us with astonishment, even in a country where we are accustomed to having enterprises established on a gigantic basis. We believe that this is almost the first time in the history of the race that an individual, by means of his will, undertakes by a single provision of that will to bring about so many praiseworthy and far-reaching results. The objects he strives for are apparently: First, the binding together of three great peoples in a bond of common brotherhood; second, the establishing and inspiring of high educational standards; and, third, the establishing, as far as possible, of an ideal standard of manhood.

We believe, also, that this is the first time that a scholarship or fellowship has ever been offered in any university in which the standard of attainment was not based upon scholarship alone. In the present instance, however, the incumbent must possess other great qualities besides that of learning. He must be recognized as a man among men. In selecting the incumbent his character is to be taken into consideration; his manliness and love of athletic sports; and even the qualities of kindliness and unselfishness are to be taken into consideration.

The questions of how the incumbent is to be selected, and how these qualities are to be determined upon are only vaguely set forth in the provisions of the will. The terms of the will state that two candidates shall be admitted from each State and Territory and that the amount of the scholarship shall be $1,500. It is interesting to quote Cecil Rhodes' own words in connection with this matter:

"My desire being that the students so elected to those scholarships shall not be merely bookworms, I direct that in their election regard shall be paid to their literary and scholastic attainments and fondness for and success in manly outdoor sports, such as cricket and football, and their qualities of manhood, truth, courage, devotion to duty, sympathy for and protection of the weak, kindliness, unselfishness and fellowship exhibited during their school days, moral force, character and instinct to lead and to take interest in their schoolmates, for these latter attributes will be likely in after life to guide them to esteem and perform public duties as the highest aim.

"As suggestions for the guidance of those having the selection of the scholarships my ideal of a qualified student would combine these four qualifications in the proportions of three-tenths for the first, literary; two-tenths for the second, fondness for sport; three-tenths for the third, the qualities of manhood, and two-tenths for the fourth, exhibition of moral force. According to my ideas, if the maximum number of marks were 200 they would be apportioned, sixty each for the first and third, and forty for the second and fourth qualifications. The marks for the several qualifications should be awarded independently, for the first, by examination; for the second and third, on ballot of their fellow students, and for the fourth on the report of the headmaster of the candidate's school. The awards should be sent for the consideration of the trustees or some person appointed to ascertain by averaging the marks in blocks of twenty the best ideal of a qualified student."

It must be admitted that as we think over these provisions of the will and the rather nebulous manner in which these provisions are set forth, the plan seems almost Quixotic. It seems as if the testator hardly realized the difficulty of trying to determine how in each State or Territory it would be possible to find the most available representatives to receive the scholarship. From what schools or colleges is the incumbent to be selected. In an empire like Germany this problem is not nearly so difficult of solution. It would be a comparatively simple matter, perhaps, for the Kaiser to elect that the applicant should be selected, in the manner provided by the testator, from certain institutions. Of course, such a method of selection is not possible in the United States. It is probable that large discretionary powers have been vested in the executors of the will. If they are familiar with the conditions of our institutions of learning in this country, it is probable that some method of alloting the scholarships can be determined upon. Perhaps it would be possible to appoint a joint international committee which could delegate to certain schools or colleges, according to their geographical situation and their literary standing, the privilege of offering, perhaps, to their first year men an opportunity to present themselves as candidates. It will be very interesting to follow the fate of these provisions. The problem as presented is entirely novel, and in order that the object of the testator may not utterly fail, it requires the most judicious and tactful handling. At all events, it should place before the youth of the land a high ideal of what scholarship in its highest sense should mean.

UNJUST AND UNGENEROUS.

We regret to see that Marconi is not to be spared the ungenerous criticism which has been made against so many distinguished inventors, just as soon as they had demonstrated the commercial practicability of their ideas. This criticism usually takes the form of denying the originality of the invention, and insinuating or openly stating that the inventor is claiming credit and appropriating profits that rightly belong to another. The last notable instance of such a charge occurred a few years ago, when an attempt was made to prove that not to Bessemer but to some obscure Pittsburg iron worker belonged the credit of inventing the converter with its epoch-making effect upon the world's steel and allied industries. The SCIENTIFIC AMERICAN took an active part in that controversy, which ended in the universal indorsement of Bessemer's claims; and the position we took then upon the question of credit for inventions is the same that we hold to-day in the mat ter of the Marconi telegraphy.

We believe that if the profits and honor of an invention are to be claimed by any one man, they belong, not to the inventor of some one detail, however essential it may be, but to the man who by a comprehensive study of the whole problem and by patient practical experimentation, develops the idea from the first crude device, or from many separate unrelated devices, to the complete, practicable apparatus, capable of taking its place among the serviceable appliances of our modern life.

Such an inventor is Marconi, and such an invention is the system of wireless telegraphy which bears, and we venture to think will for all time bear, his name. Clerk Maxwell suggested and Hertz discovered the etheric waves by which the transmission of electrical impulses is rendered possible; Onesti discovered, Branly and Lodge improved, and Marconi perfected a coherer by which these impulses might be picked up and thrown upon a telegraphic receiver; and to Marconi belongs the credit of developing what was merely a curious toy into a wonderfully perfect system, which takes rank with the invention of Morse as one of the greatest in modern times.

The scientific world has always been the more ready to give Marconi full credit for his brilliant work, because of his modesty, and the unvarying candor and fairness with which he has acknowledged his indebtedness to Maxwell, Lodge, Branly and other workers in the field of etheric telegraphy; and hence the recent unseemly attack made upon him by Prof. Sylvanus Thompson in the Saturday Review, so far from shaking the public confidence in Marconi, has merely served to awaken astonishment, that charges so manifestly unfair should emanate from a physicist of such high standing. Thompson is entirely in error when he says that Marconi uses without acknowledgment these devices of Lodge, for he has always, at least during his many visits to this country, been ready to give ample credit to their inventor.

Apart, however, from all question of these acknowledgments, is that of the actually accomplished facts of wireless telegraphy. We do know that messages have been sent over 1,500 miles of water, and that signals have been sent clear across the Atlantic; we do know that only one man has done this, or to-day can do it, and we know furthermore that these epoch-making achievements have been wrought by that one man as the crowning triumph of long years of indefatigable experiment, invention and design. Can Lodge send signals across the Atlantic and messages for 1,500 miles? Can Slaby? We think not, and we also venture to believe that had the practical Marconi never turned his thought and zeal to the problem, Lodge's coherer might to-day have been merely a curious laboratory toy, and Slaby's professional zeal might have been confined to the quiet of the classroom and the lecture hall, and might never have been quickened into commercial activity by the alluring possibilities of etheric telegraphy, as demonstrated by the early successes of the young Italian.

THE AIRSHIP AND THE AEROPLANE.

There is no question that as between the airship and the aeroplane, the latter is the more scientific and mechanically the more attractive type of air locomotive—if we may use the term; although it must be admitted that in the present state of the mechanical arts, a practicable aeroplane as yet exists only upon paper. The airship with its huge, unwieldy, and perishable gas-filled balloon, has nothing to recommend it but the fact that it can float at a predetermined adtitude and does not depend for its ability to remain in mid-air upon the continuous working of its motors. The aeroplane does; and the instant its propellers cease to revolve, its buoyancy is lost. But at what a cost and risk the airship maintains its equilibrium is shown by the numerous disasters that have befallen Santos-Dumont in the various (six in all) airships which he has built. The whole trouble with the gas-supported ship lies in the vast bulk of the balloon, and the great area that it presents to the wind. In any but the most moderate breeze, the craft is more or less unmanageable; and we do not yet know how to build a motor which will be light enough to be carried by the balloon and have at the same time sufficient power to drive it against a strong breeze. And even if such a motor could be built, the frame and fabric of the balloon would collapse under the wind pressure to which it would be subjected. In view of the many and baffling problems presented, we cannot but admire the persistence and pluck of Santos-Dumont, who is to try again—this time on our side of the water.

But why do we not hear from Langley, Maxim and others whose experimental work of the last decade was so extremely interesting and so full of promise? The advances that have been made of late in the development of light, high-powered motors, should materially assist in the development of a successful aeroplane.

MEN OF WEALTH AS INVENTORS.

The impression that the American young man of wealth passes his time simply in seeking his own amusement is very far from being the case, as is evidenced by the number of well-known names which may be found among the list of those who have received letters patent. Narrow as the scope of this list may be, it nevertheless proves that the inventive genius of the American is not confined to the mechanic or the farmer, but that men of wealth do their share in enhancing the industrial development of the country.

Perhaps the most widely-known rich inventor is Cornelius Vanderbilt. Most newspaper readers have learned merely that he is the patentee of a locomotive boiler of some peculiar construction. Exactly what the peculiarity of this construction is, perhaps only the readers of technical papers know. As a matter of fact, the main feature of the invention consists in a firebox made cylindrical in cross section and having its rim corrugated in a transverse direction; the firebox being located eccentrically within a firebox section inclined to the horizontal, to reduce the water space below the firebox line at the back end, the forward end being submerged to a less extent than the rear, to increase the effective heating surface for a rapid generation of steam. So efficient is this improved construction, that the Vanderbilt boiler is used by the principal roads throughout the country. In 1900 six locomotives were built at the Baldwin Works equipped with Vanderbilt boilers; in 1901 twenty-three were in use on various railroads. Mr. Vanderbilt has not stopped with the invention of a firebox. He has also devised a new type of locomotive-tender which is now in practical use; a process of making truck-bolsters, brake-beams, etc.; a draft-gear; a car-truck, and a tank-car which is now widely used. The annual royalties accruing from these various inventions are substantial and must represent a handsome amount.

Col. John Jacob Astor likewise finds time to invent new machinery. Several years ago he patented a pneumatic road-cleaning machine; and only a few weeks ago he received a patent for a novel turbine which is to be used primarily for the propulsion of steamers.

Both Mr. Astor and Mr. Vanderbilt have devoted their attention exclusively to industrial invention. Mr. P. Cooper Hewitt, on the other hand, has branched out in the field of electricity and physics. At a *conversazione* held last year at Columbia University, and at a recent meeting of the American Society of Electrical Engineers, his mercury-vapor lamp was exhibited—the practical culmination of research in a new field in electro-physics. Turning his attention to the