

result from the conference is far less certain. The egotistic spirit of nations cannot be so easily exorcised. But it should be an admirable beginning. Even if the proposition leads to a partial success in result it will glorify the name of Nicholas among the greatest potentates of the age. But the surest guarantee of success will be that Russia herself first put the doctrine into practice.

Has Nicholas the iron will to match his beautiful aspiration and carry it out against all kinds of baffling opposition? Or will splendid impulse, as in the case of his grandfather and that grandfather's grandfather, retreat back, beaten in the fight, into the old traditional lines of Muscovite ambition, reckless as that of a Roman Caesar? Time only can tell.

#### Educational Expansion.

Dr. William T. Harris, United States commissioner of education, read a striking paper before the American Social Science association at Saratoga. Its subject dealt with the recent advances in college and university education in this country. Its statements are full of significance. Among other things, he asserts that in the last quarter of a century the records of enrollment among the students of the higher education, including the high schools and advanced academies, indicate a triple ratio relative to the population as against the preceding ratio. Three times as many students per million of people—that is an amazing fact more notable than our other landmarks of progress, brilliant as these have been! It is interesting to speculate on the causes. Two salient ones at once suggest themselves. In the first place, the needs of the age have compelled universities and colleges to introduce many specialized courses. Students, looking on the higher study as not merely a medium of mental discipline, but a direct avenue to professional work, have thus been tempted to use those agencies once devoted largely to the grind of Latin and Greek. The useful in study has greatly increased clientage where broad general culture alone would have failed in its appeal. Secondly, there has been an astonishing increase in the means of the middle classes, those neither very rich nor very poor. Social agitators constantly assert that the tendencies of the times make the rich richer and the poor poorer. This is contrary to all the sociological testimony. The vast expansion of national wealth has been among those occupying the golden mean. These two causes alone will account for the educational increase. It is a pity that Dr. Harris did not enter specifically into its rationale.

An article of great interest in *The Engineer*, an English technical weekly, entitled "American Progress In English

Industry," goes into a multiplicity of detail showing why the manufacturers of America are supplanting the English on their own soil and in their own home markets, a fact so remarkable as to be worth extended comment. Among other things the writer says: "Such a great deal has been heard of late about the progress of Germany as a rival to industrial England that the bitter cry of American competition seems to have been overlooked. It would not be far from the truth to say that British industry is pressed harder by the Americans than by the Germans. America is no longer the key to the Sheffield trade. Sheffield manufacturers having intimate relations with the United States and who go regularly on business there several times a year are impressed by the fact that transatlantic firms, both in their methods of working and in the way in which the artisans do their work, are far ahead of this country. At this moment the American is sending over in the regular way of business heavy consignments of steel. The time will come when costlier qualities will be imported in quantity to meet our demands." This striking admission emphasizes what the students of industrial science have long known. The mechanical ingenuity which has characterized American industry has tended greatly to offset higher cost of labor and enable us to meet foreign competition in many lines on its own ground. There have been relatively few great fundamental inventions and discoveries made in the United States, but those made abroad have been so modified and improved in practice as to have revolutionized their worth.

#### Bronze Casting.

The art of bronze work is one of the oldest in the world, magnificent specimens of the sculptor's work in this metal having been found on the sites of buried Assyrian cities and in the Egyptian tombs. Some of these examples of the world's pristine art date back not less than 3,500 years before the Christian era. The alloy of copper and tin, known as bronze, was one of the first metals to be worked on account of its greater fusibility, the mixture of the two metals offering increased facility also in hardening and tempering. The perfection of the process of bronze work as shown by the ancients, especially by the Assyrians and the Greeks, who used it so largely for their statuary, cannot be surpassed by modern times. It was one of the earliest arts, too, to be revived during the middle ages, and it was practiced steadily during what is known as the dark period. But it was not till the renaissance that this art, like the other fine arts, flowered into consummate beauty. Such artists as Benvenuto Cellini and Ghiberti illustrated it with their most famous efforts, and themselves took part in the details of the work as well as molded the mod-

els. This attention indeed has not been uncommon with all the greatest artists in bronze. Though Paris and Munich are now the best known centers of the bronze foundry art New York has of late years rivaled the most splendid and difficult products of this sort of art industry. We have given to the world a line of gifted sculptors, and they have not needed to leave this country of late years to find the most skillful means of reproducing their work in bronze. Indeed one bronze foundry in New York has lately executed a chef d'œuvre, which there is scarcely a concern in the world sufficiently venturesome to undertake. This great feat was the casting of an immense statue, that of the nature god Pan, which is to be erected in Central park, in one mold, the whole amount of metal poured having been four tons. The danger of cracks and flaws in casting, involving great loss, is imminent. To minimize this most founders cast their work in sections, there being sometimes several hundred piece molds in a single statue. The castings are fitted together to make the perfect figure afterward. Many will remember the "Lay of the Bell," by Schiller, how he tells us in glowing verse the anxieties of the bronze founder as he watches each stage of his difficult and beautiful process. In achieving this triumph of making such an immense figure in a single piece the American bronze workers have attained another triumph of art industry worthy of record.

The theory of evolution which is associated with the name of Darwin, but which is really almost as much under a debt to a number of other distinguished scientists, from Lamarck to Haeckel, has received from the latter scientist a very striking attestation. The great difficulty has always been in the chain of fossil proofs which would establish the doctrine by the logic of facts. The difficulty of securing these is of course evident, and their lack has been an almost fatal bar to the complete dominance of the theory. Scientific men themselves have not been distressed over these breaks in the fullness of testimony, but the person of ordinary intelligence, less acute in his methods of reasoning, might well incline to halt. Professor Haeckel, the most eminent living exponent of the evolution theory, declared the other day that recent discoveries in Borneo, Madagascar and Australia had now all but completed the chain of proof. This was at the meeting of the Cambridge congress of zoology, where his paper was the most striking feature of the proceedings. The great German scientist assures the world that the proofs are now irrefutable. The time he gives for the development of man from the lowest form of life is a thousand million of years, though Lord Kelvin and others doubted whether the scene of life on this earth could be more