America's Machine Age Has A Birthday

Engineering

AMERICA'S machine age, symbolized by the American Society of Mechanical Engineers, celebrated its fiftieth anniversary this week.

Sixteen of the foremost engineers of the world from as many countries described the influence of engineering upon the life of the people in their parts of the world, and were awarded the fiftieth anniversary medal, designed by Julio Kilenyi, portrait sculptor.

The United States was represented by Dr. C. E. Grunsky, president of the American Engineering Council, and Great Britain by Loughnan St. L. Pendred, editor of *The Engineer*. Other countries and their representatives were: Canada, Brig. Gen. C. H. Mitchell, dean of the faculty of applied science of the University of Toronto; Germany, Dr. Ing. Conrad Matschoss; France, Georges Claude; Japan, Dr. Masawo Kamo, of the Tokyo Imperial University; and Italy, Senator Luigi Luiggi.

South America's representatives were Prof. Donato Gaminara, of Uruguay, a member of the Pan-American highway commission, and Prof. Julio Garzon Nieto, a chief engineer with the Colombian government. From Austria, Hofrat Ing. L. Erhard, director of Technisches Museum, Vienna; from Belgium, Monsieur le Baron Gaston de Bethune, representing six eminent engineers; from The Netherlands, Prof. Ir. D. Dresden; from Scandinavia, Vilhelm Nordstrom, of Stockholm, Sweden; and from Switzerland, Prof. Dr. Aurel Stodola; from Czechoslovakia, Dr. Stan. Spacek; from Mexico, Senor Ing. Norberto Dominguez.

Herbert Hoover, Engineer-President, and Orville Wright, first to fly an airplane, were awarded medals.

President Hoover was the first recipient of the medal named in his honor, the Hoover Gold Medal, the gift of four leading engineering societies in recognition of his humanitarian services. The Gugenheim Medal "for notable achievement in the advancement of aeronautics" was given Wright.

The American Society of Mechanical Engineers Medal was presented William LeRoy Emmet, of the General Electric Company, for his contributions in the development of the steam turbine and the electric propulsion of ships. The Gantt Medal went to Fred J. Miller, former editor of the *American Machinist,* for achievement in scientific management.

Humbly Proud

Charles Piez, president of the American Society of Mechanical Engineers:

We are humbly proud of the fifty years of progress in mechanical engineering which this anniversary commemorates. Our colleagues and our predecessors have multiplied the conveniences of power of transportation, and of countless mechanical devices that have released human efforts for the accomplishment of larger purposes. They have made their contributions to the establishment of higher standards of living.

The spirit of this occasion is one of opportunity and obligation; opportunity to give the world the essential elements of the universal prosperity of which it has always dreamed; obligation to approach this task with a realization of the hardship it may bring to those unprepared for rapid changes in economic life, and to accomplish it without offense to the aesthetic and spiritual natures of educated people.

The method of engineering is to measure the facts and to build upon them; its purpose is to control the elements of man's environment, directing natural forces constructive to his welfare; its philosophy is the spirit of progress; its future usefulness will increase with a growth of knowledge and unselfishness; its faith is summed up in the inscription on the Fiftieth Anniversary medal: "What is not yet, may be."

United States

C. E. Grinsky, president of the American Engineering Council:

The use of machinery and of appliances to reduce manual labor will be further increased. There will be more time for study and recreation. With the decrease in the relative number of those who are producers of the food, clothing, shelter and other things that are considered essential for well being and comfort, there will be an increase in the number of those engaged in research work in teaching, in art, music, and literature. There will be vastly increased activity in the construction, operation and care of public works. There will be carefully directed effort to secure at public expense a conservation of natural resources particularly of the water of the lakes and streams. There will be great improvement in down-town traffic facilities with much substitution of large capacity busses for the cars on rails. The removal of street cars and the substitution of welding for riveting will go far toward the elimination of the (*Turn to next page*)

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offensive and disturbing down-town noise. There will be aviation fields conveniently located near every populated area and aerial transportation opportunity across the whole breadth of the country within 24 hours. There will be reels of photographed speech, and song, and music, so that entire operas and books may be listened to without leaving the home. Elimination of drudgery in the home will be brought within reach of all and, so too, light with all the properties and virtues of sunlight. Purified and tempered air will add to the attractiveness and comforts of home life, perhaps, indeed, persuading the masses that single family houses are to be preferred to apartments. And there will be a thousand other things, with the engineer in the background, which will exert a profound influence on the structure of society—an influence, let us hope, making in the main for more comfort, more happiness and for constant improvement in living conditions, the world over.

Great Britain

Loughnan St. L. Pendred, president of the Institution of Mechanical Engineers:

Another world to conquor lies open before the engineer. He has ministered, and will continue to minister, to the material wants of men, but something far far greater lies before him. It is not for him, perchance, in his vocation to peer into the "soul of things", but through him the attainment of that glorious abstraction may be made easier. He has brought men together and can bring them closer yet; he can knit the whole world into a single unit; he can remove the frontiers of the land, the sea and the air, and hasten the coming of a common tongue, a common understanding and a common will to good. With him, and him alone, rests the power to make war or preserve peace. He can decrease labour and increase leisure. He is the great educator. He can take men to see the wonders of the world abroad; he can diffuse great literature; he can bring the voice of great thinkers to the fire-sides of the humblest. Literature, music, art, and philosophy are in his train.

Germany

Prof. Dr. Ing. Conrad Matschoss, secretary of Verein Deutscher Ingenieure:

There was a time when the saying "Knowledge is Power" was in everybody's mouth, and was a household belief. Today we know that the knowledge unaccompanied by the ability to put it into practice is often no better than a dead weight which one has to carry about. One can be so full of knowledge that one is absolutely useless for anything else in the world. We have rightly placed practice in the foreground, and we know today that the character of the individual decides his success or failure in every profession. We do not believe that it is possible to form the character by systematic education, but we do believe that the school should give one an opportunity of bringing out what is already in the pupil.

Engineering and natural science have created a new age into which we, with our short span of life, have been transplanted.

Philosophical considerations and intellectual reflections are not enough to remould the world and to guide our confused civilization into the right paths. Here we need the will to decide and to act. We must recognize—to use the language of science—that there is no question here of a reversible process. There can be no going back to any imaginary good old time. We must strive to master the problem of man and machinery. We need a belief in a civilization in the future. It is not sufficient to be satisfied with improving machinery. Is "the increasing deterioration of human character," designated by the French philosopher LeBon in 1910 as a sign of the times, a real fact? The nerves of man cannot stand the pace of modern civilization, the new achievements have not been digested, salvation can only come by adapting ourselves to the new world around us. We must try to reawaken in mankind the love of work for its own sake, and we must realize that work in itself counts as one of the greatest moral forces in the world.

France

From a report by a number of French engineers:

Collaboration is the more effective as it extends to the work of a much larger number of engineers and to work accomplished in all countries. Indeed every discovery made by one of the searchers opens to all the others a new field for exploration or a more effective means for action which multiplies the possibilities that are open to all.

Canada

Brig. Gen. C. H. Mitchell:

Each country or region in which engineering is carried on, demands design, construction, and operation of engineering works in conformity with the characteristics of the country. These governing characteristics are both physical and human; they depend upon geography, climate, and natural resources, and above all, upon the habits and customs of the peoples in their tendencies and requirements of life and business.

Canada has conditions and requirements which are peculiar to the country in all these respects. Canadian engineering has, therefore, become and has remained distinctive and has definitely acquired its own qualities and characteristics.

Japan

Dr. Masawo Kamo of Tokyo Imperial University:

Half a century ago, Japan was an insignificant island nation of the Far East, its doors closed against the world, organized according to a feudal system, possessing a civilization which paid scant heed to mechanical and other material progress. Today Japan is considered a first class power and is steadily marching to a leading position among the industrial nations of the world.

These changes are largely attributable to engineering. In fact, we may say that the progress of Japan in the past five decades has been the progress of engineering in Japan.

Although Japan remains to a large degree dependent upon agriculture, with 55% of its inhabitants on the farms, no fewer than 21% are engaged in engineering and associated pursuits and the whole of the Empire's natural resources are mobilized for the benefit of the people as a whole.

Italy

Prof. Dr. Ing. Luigi Luiggi:

Modern roads for rapid transit are very costly to build and maintain therefore although Roman builders were famous for their roads, Italian engineers are faced with economic facts, and roads (*Turn to page* 236)

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leave still much to be desired from the point of view of automobiles. However, a great scheme of 20,000 kilometers of road improvements to be completed in 10 years is now in course of active realization.

In the meantime several "autostrade" built expressly for rapid transit of automobiles are already in service and more in construction. They are roads very solidly paved and reserved exclusively for automobiles. They are not in direct communication with ordinary roads and they can be entered only at proper places protected by signals like an ordinary railroad. Thus automobiles are free to travel at any speed they like, because the signals protect them from side collisions. It is a new idea which has found great favour with the public.

Switzerland

Dr. A. Stodola of Zurich:

Swiss technical science owes its origin to the economic needs of a country poor in raw materials and dependent upon the scanty yields of its soil. The initiative of far-seeing leaders gifted with creative genius found powerful and encouraging support in the natural liking and ability Swiss people have for technical activity. In early days Switzerland recognized that its very existence depended largely upon the quality of its products being of the very highest, and to live up to this standard is natural to the Swiss character which is averse to all outward show but prizes genuineness in goods and in character. In addition to this the Swiss engineer has instinctively endeavored to impart the stamp of beauty to his designs, a fact which has always been acknowledged by the technical world.

Belgium

From a report by a number of Belgian engineers:

Examples of Belgium's contribution to the technical progress of the world are:

The ammonia process invented by two eminent Belgians, the brothers Solvay. The dynamo invented by Zenobe Gamme of Liege. The first artificial silk factory at Tubize. The first plate glass factory exploiting the Fourcault process. The adoption at Langerbrugge of high-pressure boilers for the production of electric power, proving the possibility of reducing the cost of power by such a margin that electrochemical plants may come down from the mountains to the coal fields. This fact is particularly important for Belgium which controls practically no waterpower.

Scandinavia

Vilhelm Nordstrom of Sweden, representing Scandinavia:

Mechanical engineering has developed rapidly in Sweden and has contributed to the industrial progress of the world on a scale far out of proportion to the number of inhabitants. Even if we leave out many names, we still have a very significant list, including:

The founder of mechanical material testing, Per Lagerhjelm; the inventor of the ball testing method, Johan Brinell; the originator of absolute exactness in mechanical production, E. C. Johansson inventor of the Johansson precision gauge. The name of Gustaf de Laval is well-known in technical circles because of his revolutionary work in increasing the speed, peripherical as well as angular.

In the field of power and heat economy there are the brothers Birger and Frederik Ljungstrom, turbine inventors. Johannes Ruths is the inventor of a new method for the storage of steam. The Swedish Ball Bearing Company, based on S. G. Wingqvist's invention of spherical ball-bearings, now controls 35 per cent. of the world's supply in this field. The Swedish Match Company and the name of its far-seeing leader, Ivar Kreuger, are well known.

The inventions for lighthouses by Gustaf Dalon can be seen all over the world, for instance the installations in the Panama canal. Many other names might be mentioned, such as that of Alfred Nobel. We honor as the ideal mechanical engineer, John Ericsson.

Denmark's industrial development is based on a decidedly scientific foundation, and names such as Tycho Brahe and H. C. Orsted, the discoverer of electro-magnetism, give a certain splendor to this phase of Denmark's contributions to scientific industrial research.

South America

Prof. Donato Gaminaro, of Uruguay, representing South America:

Like youth that develops in an environment full of difficulties to be met, where great activity is called for and the prospects are bright, South American engineers have matured rapidly until now they are the real leaders in political and social life. Today in South America there are engineers in the presidency of Republics, in the presidency of universities, as members of Congress, and in other high places. The countries of South America are developing rapidly and engineering must necessarily be one of the greatest factors in their progress.

Austria

Hofrat Ing. Ludwig Erhard of Vienna:

Austria is still in the heart of Europe. This geographical position still provides us with natural advantages, and even in this dark period of our existence Vienna's culture and beauty are maintaining the reputation and tradition of centuries. Our cultural mission is deep-rooted and of real importance to the civilization of Central Europe. Whether or not we can maintain it in the future will depend to a great extent on the economic development of our country. With humble pride, the engineer engaged in our economic restoration finds himself at work on one of the most serious problems of European culture.

Dr. Welch—*Continued*

to guide the new medical school of the university, he was advised by eminent European professors that he could find no one better suited to the task than the young Dr. William Henry Welch. As a result, Dr. Welch became the first professor of pathology and first dean of the Johns Hopkins Medical School. In 1916 he was appointed Director of the School of Hygiene and Public Health, a position he held for ten years, although his duties as director were at first interfered with by his war service. Since 1926 he has been Professor of the History of Medicine at Johns Hopkins.

While he has remained unknown to the general public the world of science has long recognized his ability and achievements, and has bestowed countless honors and degrees upon him. Yet he is one of the most modest of men. Much of his accomplishment has been due to his charming but forceful personality which has won loyal followers to his standards and ideas.