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Science has been rendered illustrious in every age by those who have furthered man's knowledge through their creative genius.

In times gone by it was the great thinkers who solved problems by the logical development of their thinking. Later came the great experimenters who started out from observation and went on to create new theories, thus opening doors for the future.

Again, we have the laboratory scholars who made in every branch of science, new discoveries frequently as the result of isolated effort tenaciously pursued for years. We have also had scholars who were capable of transforming laboratory results into practical achievement, sometimes of a revolutionary nature.

Mankind is indebted to all these scientists for the success of science as a factor in development and progress.

Commemoration presented during the Plenary Session of April 17th, 1975 of the Pontifical Academy of Sciences.

Hence it is that in the modern world the number of scholars engaged in research is growing, while specialization in the various branches renders collaboration indispensable.

In a world such as our own, in which the existing number of active scholars in the various scientific fields greatly exceeds the total number of scientists who have lived from the beginning of history up to the present, the organizer of research at a higher level, that of the technocrat is emerging. This is the one who, on behalf of the community organizes the available scientific and technological instruments and directs research towards those problems which are of greater interest for the public good.

Such a person needs to be endowed not only with very high qualities as a man of science, but also with great gifts of character and initiative, the gifts of a "condottiero" a leader more than a manager who must not only organize research itself but must shape the policy of scientific research.

The Pontifical Academy has been fortunate in possessing among its Academicians two very highly qualified men as brilliant leaders in the scientific field, Francesco Giordani and Domenico Marotta, chemists of the same age, contemporary promoters of a vast number of initiatives. The former devoted himself to the organization of industrial research by means of a particular institution the IRI which was a valuable instrument for development by the State of the national industrial system. Marotta, on the other hand, devised an organization for research in the field of public health, as well as a wider international collaboration between Italy and other countries in the research field.

Francesco Giordani, whom many of us remember with affection, died a premature death many years ago. Domenico Marotta, on the contrary, left us only one year ago, at the age of 88, after a long and intensely lived life in which he experienced the conflicting outlook of two very different centuries, the struggles of a society in process of evolution and the demands made by an increasingly rapid outstripping of structures.

Like the life of any other leader, his was marked by victories and glory but also by reverses and bitter disappointments.

Domenico Marotta, the last representative of that Italian school of chemistry made illustrious by Cannizzaro, Piria and Paternò, reflects in his life the evolution of science in Italy and particularly of chemistry in the last century.

On the conclusion of his studies at the University of his native Palermo, he was accepted as assistant in the Institute of Chemistry in Rome, at that time directed by Stanislao Cannizzaro, also from Palermo, one of the most famous names in world chemistry and at that time a Senator of the Realm.

In this stimulating environment, where Emanuele Paternò and Arturo Miolati taught among others, and side by side with Bellucci and Bargellini, Marotta found an incentive to his scientific training and in particular a vast view of scientific problems.

He was fascinated by the brilliant activity of Paternò — an eclectic in his advanced view of chemistry, a precursor of studies in stereochemistry and photochemistry — and when the latter invited him to become his collaborator in the Laboratory of Chemistry of the Public Health — he left the University to devote himself completely to this new task.

Up to that time Marotta had carried out his research in the field of organic and inorganic chemistry in the first place and later in the analysis of foodstuffs, and had developed the analytical method for the control of alimentary substances and waters.

Since 1913 he had been teaching bromatology at Rome University. He developed still further his studies in this field in the chemical laboratory of the Ministry for Internal Affairs which later, in conjunction with some other laboratories, was to become the Institute for Public Health. When this Institute was set up with Rockefeller Foundation funds and with a wide outlook on its field of activity, Marotta became the Director.

In the creation of this Institute for advanced research in

the sciences connected with health, a number of research workers were brought together and a variety of specializations and competences were combined, ranging from physicists to microbiologists, from chemists to parasitologists, from veterinarians to engineers. It was here, in this work, that the personality and ability of Domenico Marotta shone forth for all to see in the late 30.

We may call to mind the initial successes of the Institute, the experiment on slow neutrons in collaboration with Fermi, the successful campaign against malaria in Italy, the construction of the first Italian electronic microscope.

The long interval occasioned by the war, the bombardment of the Institute, which was subjected in particular to political and military pressures of all kinds by the occupying forces, did not lessen Marotta's determination or affect his temperament. In point of fact, in those tragic times he had even taken upon himself some further responsibilities as High Commissioner for Health.

At a later stage he astonished the Allied Military Government by producing in the Institute, in 1944, the smallpox vaccine under the most difficult conditions, and thus provided the means to prevent the spreading in Italy of dangerous infection-centres created by troops coming from the East, and this, at a time when the war made it impossible to obtain supplies from abroad.

In face of the apparently insoluble problems of reconstruction, Marotta revealed once more his qualities as an organizer, facing up to the solution of enormous problems, mainly in the field of health but also in many branches of industrial production.

He succeeded in persuading and convincing the politicians and thus obtained the means necessary for research at a time when such things were the object of much argument. He moreover endowed this Institute — which through his initiative had become the Istituto Superiore di Sanità — with a combination of men and instruments and means of such out-

standing quality that it became a unique centre of its kind, not only for European scholars but for those from all over the world in the health field, an indispensable instrument, in fact, for the protection of public health.

He understood that scientific research must be the instrument for the strengthening of the health field.

To bring Italy back to a frontline position in this field, he obtained the collaboration of Ernest Boris Chain, winner of the Nobel Prize for Medicine and a leading light in the antibiotic era. Chain remained for a number of years at the Istituto Superiore di Sanità, where he formed the school and research centre in biochemistry and microbiological chemistry which attained worldwide fame.

At the same time Marotta invited Daniel Bovet to form within the Institute a research group for advanced studies in therapeutical chemistry and pharmacology, with a new conception of these researches, which in 1957 won for Bovet the Nobel Prize for Medicine, an indirect recognition of the entire work of Domenico Marotta in this field.

With a renewed campaign he opened the Institute to a number of promising young research workers. At a difficult moment he made the exceptional equipment of the Institute available for national and international collaboration. Thus, by means of a whole series of initiatives, he made the Institute a shining beacon for research in the entire world and a valuable instrument for the promoting research of public health in Italy.

This public action was accompanied by his action in the associational field by the consolidation of the Italian Chemical Society which he transformed into an exquisite instrument for cooperation between chemists in the various branches of teaching, production and international research, through a series of highly successful meetings with chemists from other countries.

The National Academy of Sciences, known as the Academy of the Forties and famous for its eighteenth-century traditions and for his activity for the Italian Risorgimento, was also

strengthened and renewed by him as an instrument for international collaboration in the scientific field.

Due to his exceptional practical ability in the scientific and technical field, he was called upon to give his advice in matters of scientific organization by those who held the reins of government, among them Alcide De Gasperi, the outstanding figure in the rebuilding of Italy.

Since he was an innately reserved man, we rarely find in his writings any explicit statement of his thinking. However, I think I can say that apart from what emerges from his practical achievements he was always inspired above all else by love for his country. "Every act of my life has been imbued with a deep love for my country", he said on a certain solemn occasion, "for in my case as in the case of us all, a single flag has guided and continues to guide our work, namely, our national tricolour".

His prodigious activity enabled him to direct the Institute with a firm hand until his 75th year, which actually coincided with the 25th anniversary of foundation of the Institute. On this occasion he received from all parts of the world unanimous recognition of his work.

Allow me to draw a veil over all that this fine old man had to suffer and the struggle he had to face in the long years which ought instead to have been devoted to meditating and summing up the work of an entire lifetime while making new valuable contributions. Seven stormy years passed over his head, but in the end it was acknowledged that his work had been carried on in the interests of the State alone.

Perhaps it is the fate of all precursors to be misunderstood, to arouse the reactions of mediocre people who pass over their great achievements and exaggerate, on the other hand, their supposed mistakes. This was also Marotta's fate.

Let us remember today that with scanty means at his disposal he created and left behind him not merely a model of what a modern research institute should be, directed towards the ends of public and social health, but also a new approach

to scientific research, thus contributing in a remarkable way to the progress of science in the world.

Marotta's work for fifty years was directed solely towards the public good and Italy's advancement in the field of culture and the arts, of which he was a tenacious and enthusiastic champion through his work at the "Dante Alighieri", but more especially in the development of scientific research which he fostered in every way.

He found his ideal in Sir Francis Bacon's "The New Atlantis" in which, as he writes, in the foreword of the Italian translation he had performed "one of the three founders of the experimental method describes, in the supposed house of Solomon, scientific research laboratories and research organization such as can only be conceived today".

Marotta tried to build his own Solomon's temple by creating the Istituto Superiore di Sanità: "in the midst of not a few difficulties and not always free from danger" he wrote "with the strength which I was always able to draw from my faith in scientific research and the love I bore my country", thus offering one of the most interesting modern examples of research organization in the spirit of Bacon's motto: "Scientia est potentia".