

published in their transactions. In England, university and extension courses already exist everywhere, and while these are criticised as "mostly sociological," they are undoubtedly stimulating interest in the subjects throughout the entire educated community. The Industrial League and Council and similar bodies are also giving courses. These are characterized at present as "inspirational," but will doubtless become more specific as time goes on. In Belgium there are conferences conducted by the universities in industrial centers. In Canada the director of a technical institute states that scientific management is not taught in the schools, but there is every indication that it is being taken up by groups of educated members of the community everywhere.

One correspondent, who is especially interesting—a soldier in the great war and a prisoner in Holland—who kept up his studies in scientific management during that time and undertook the translation of an American book on the subject, informs us that the universities and other institutions are enormously interested in the subject and are spreading information throughout the country. Cornelia Stratton Parker, author and investigator of working conditions in industry, on her recent return from Switzerland and a tour through many countries abroad, tells us of the growing interest in educational as well as other fields. In Japan there is a psychological institute as well as a technical university, and translations of books on efficiency have been made. We have also very recently received the journal of a Society of Chinese and American Engineers in China which includes in one number reprints of two American articles having to do with management, one on an indexing system for Engineering Societies by Mr. Craver, and the other one on applications of motion study. We know also of installations by a Chinese graduate of an American college. The work in the Dutch universities, especially in the University of Delft, is well known and so also is the work of the German universities, where in Berlin, Dresden, Aachen and others centers of thought, not only the principles but the technique of management and psychology are being developed to a high state of perfection.

We have had occasion to judge of the products of the Dutch universities and find them not only instructed in the principles, but able, after a small amount of instruction, to enter profitably into American industry and to make positive contributions not only to production but to technique.

It is not surprising to find that the work of applied psychology is carried on by well established institutions, but it is surprising to find that the work of vocational guidance which is comparatively new has so soon become established as of scientific value, is conducted by institutes, is closely affiliated with both applied psychology and scientific management, and is obtaining excellent results. In Spain the Institut d'Orientacio Professional is adequately supported by the city and province, though it was founded by the initiative of the professors. It tests young men intensively in order to place them congenially in conveniently located places. It has four sections—informational, physical tests, mental tests and statistical. Its tests are exhaustive and the results are correlated with findings in America and in Spanish industry. The institute also conducts tests for the conductors of the Municipal Auto Bus Company and for military aviators. Thus the professors keep in close touch with industry itself. It plans cooperation with engineers and is endeavoring to secure a burden in the department of the Minister of Work at Madrid, which shall investigate scientific management and its application to the entire country.

Similar institutions exist in England, France, Italy, Czechoslovakia and other countries. In Czechoslovakia the Institute of Applied Psychology is a part of the Masaryk Academie of Work, which insures due emphasis on the industrial side. The head is a psychologist who has medical and technical experts affiliated with him. The boys of the country are tested with the latest tests and apparatus of all countries. The results are most noteworthy, and those in charge feel that they "have passed from the period of the speculative swamps into the running waters of empirical research." Their findings are most interesting, for they are not only endeavoring to discover in every case the lowest grade of intelligence that can handle any given type of work, but also to make sure that any types capable of higher work are at once tested for advancement. In fact their findings along some of these lines of work seem pioneer work. In Denmark the advantages of small committees to handle problems of vocational guidance and placement for local communities are advocated. These committees are to write texts for apprentices; a typical committee is to consist of a professor of a psychological laboratory, a professor of economics, a government director, a working man and an employer. It is planned that such a committee in a chief city shall

serve as an example for the formation of similar cooperating committees throughout the country.

There is much consideration abroad of the philosophy of management and of the relation between administration and management. This we see in England, and very plainly in the discussions in France. The interest in management seems to have developed along three lines. These are described as Taylorism, Fayolism, and Amarism, according to the findings of our own Taylor, of M. Henri Fayol, a distinguished scientist, and of Prof. Jules Amar, who has for years cooperated with us in investigations concerning the crippled soldier, fatigue; and other lines of activity. The literature concerning Fayolism is of astounding volume and is creating an enormous amount of interest. Prof. Amar's writings are well known in this country as well as abroad and their distinguished significance is universally acknowledged. The distinction between these three branches of activity in France is very plainly drawn and must be thoroughly understood if the situation in France is to be appreciated.

There is little talk as yet abroad of the application of scientific management in selling and finance, although the subject is being considered in Germany. This is not surprising, however, in that in this country also the application in these fields followed the application in the field of production.

One of the most vital questions abroad is that of standardization. Sixteen countries at present handle this through standardizing organizations.⁶ In Holland the value of the results from the Dutch standardization office are universally acknowledged. It is assisted in its work by eleven special committees composed of engineers in practice and in scientific institutions. One of our foreign clients is rejoicing that the manufacturers have come to the point where they are actually wording their orders in terms used by the standardization committee. Perhaps these satisfactory results have also assisted in popularizing scientific management, for installations in Holland seem to be singularly successful.

The progress of standardization in Germany is noteworthy as are the results. There is an increase in "vertical" management. This means that the larger works, manufacturing finished products of great value, make sure of the basis of their manufacture by purchasing factories manufacturing products

⁶"Progress in Industrial Standardization During 1923." by A. W. Whitney, Chairman, American Engineering Standards Committee.

of a lower degree of finish and even mines. Also, the horizontal organization has spread more and more. Works of the same kind associate for purchase or sales purposes and an association of this kind tries in its turn to become a link in the chain of a vertical organization. Throughout the country there is felt a need for more science, for accurate time and motion study, which is closely allied to the emphasis on standardization. The unstable currency has led to "a calculation of values in weight or measures of material used—and in amount of working time." This is so eminently satisfactory that it will probably continue even after the currency becomes more stable. There is also an enormous increase in better tools and in better material, such as stellite.

In Czechoslovakia the leadership in standardization is held by the Masaryk Academie of Labor. This has been functioning along lines allied with scientific management for only a short time. During 1922 and 1923 the work was largely educational. This has been so successful that they are now pressing forward to more intensive standardization. With the approval of President Masaryk and under the direction of an enormous number of scientists of first rank, work processes are intensively studied and the results put at the disposal of the entire community. Around the table gather, with an equal voice in the proceedings, psychologists, physiologists, economists, sociologists, engineers, employers and workers, with the work tools at hand, with the work processes demonstrated—all endeavoring to find the One Best Way for each work process for the individual worker involved with his available tools and material. The wealth, the resources, the brains, the interest, and the cooperation of all Czechoslovakia stands back of this work.

In Russia there is a strong and deep interest in scientific management, and in standardization, as also in applied psychology and vocational guidance. Mr. Walter N. Polakov informs us: "In Russia, the scientific management movement assumed several peculiar characteristics. In the old world its aim was making profits in the environment of free competition. In the Soviet Republic it was called upon to help in making goods on the basis of cooperation. It was therefore not limited to a plant, but extended over industry. Another temporal rather than local characteristic was shortage of skilled mechanics after the War, in which more men were lost than by all the Allies together, and especially after interventions, when proletarian regiments formed of skilled workers were wiped out.