
CURRENT SCIENCE—50 YEARS AGO

The Spirit of Research.*

In an interesting address to the Fellows and Associates of the Institute of Chemistry at their Annual Meeting, Prof. J. F. Thorpe dealt with certain aspects of the profession of Chemistry both in academic life and in industry. (*Vide J. and Proc.*, 1935, Pt. II, p. 121.) Although these remarks were primarily intended for the chemists, they do nevertheless hold true for others as well; it appears therefore to be of importance to extract the relevant portions of the address.

These remarks relate to the application of team-work for the solution of important and urgent problems. This idea of team-work is the legacy of the Great German Schools led by Bensen, Victor Meyer, Fischer and others and in England by Perkin Jr. of recent memory. In all these instances, the individual was deeply engaged in one major problem with a number of research workers, while other questions of moment were also examined by him side by side. Thus, individualism marks out generally the man of superior merit and it is an innate quality which can neither be manufactured in the laboratory, nor its power be suppressed or hidden for long. Those who lack it, are mere workers under direction, however great their manipulative skill may be. Unless this quality is discovered and given free play, the force that directs other minds becomes dormant and rusty. In the present day, team-work has lost this sense of expression of the individual and is replaced by grouping a number of workers, working for the state under some recognised leader. This feature is the resultant of war-time activities, when all brains and manipulative skill were harnessed by one, two or more powerful individuals, who co-operated among themselves. These were extraordinary circumstances.

Post-war conditions have not tended to modify the above system but extended it in a more virulent form—a feature which is the very essence of many Research Associations and industrial firms, resulting in or aiming at Mass Production. In consequence, individualism is not generally recognised resulting in necessarily killing craftsmanship. One of the chief aids

to the development of individuality is indicated by *the impetus of acknowledgment and publication*. In order to encourage the workers in a team, it is quite essential to secure the publication of results under the names of the workers concerned which, many a time, is lost sight of by those above. By so doing, the individual workers feels confident, that he is capable of taking up other work, when the need arises for it.

How this capacity for the expression of the individual in a person can be detected, is a matter for serious consideration and is generally solved by the persons concerned, in the light of their experience. It is, however, significantly true that neither our modern system of education nor the training in the post-graduate course, provides adequate ground for such recognition. According to Prof. Thorpe, the institution of Ph.D. degree in several universities, represents one way of overcoming the defects. This method may be open to question, particularly when we consider that many universities have abolished or are considering the abolition of this degree. It is claimed that the three qualities—self-reliance, patience and initiative, so necessary to work of merit—are evinced by an average worker for the above degree. Men of experience may have a different tale to tell. Another defect, inherent to the selection of the proper individual lies in the fact that different universities have different standards in science training. In the case of higher degrees the institution of qualifying examination by the Institute of Chemistry, is of great benefit to the research worker in the making. In this way, he becomes a “qualified” chemist.

Speaking about the system of research control by committees, it has been said that it is also the outcome of the war and has continued even to-day. Given wide breadth of view and strong human sympathy on the part of the persons composing the committee, it is one of the best methods of solving some urgent problem, but in wrong hands, it is highly susceptible of destroying personal initiative and individuality. Team-work in such cases demands that there should be free discussion among the members of the team. It is, however, rather unfortunate that the members cannot individually claim personal merit for any discovery or work of outstanding merit, while the results of such

* Published in *Curr. Sci.*, Vol. III, May 1935, p. 580.

investigations form the property of the whole team. The snag, in such cases, is that the humble worker does not get adequate recognition for his work, which is rightly due to him. On the other hand, if members of a team do not exchange notes or discuss freely for fear that some one else might get the credit for what is originally his, the benefits of co-operative effort are completely lost. It is a happy sign that this attitude is fast dying out. In fine, team-work requires suppression of the self of its component parts, in the interest of the team, while those in charge of the investigation or the employers, should scrupulously avoid suppressing

individualism of these parts. In the words of General Smuts, "The disappearance of the sturdy, independent-minded, freedom-loving individual and his replacement by a servile standard of mass-mentality is the greatest menace of our time."

These timely remarks coming from such an eminent authority, it is hoped, will not be lost sight of in the development of scientific and industrial research in this country, which is yet on its path to recognition in the scientific world.

"CHEMIST."

NEWS

MARKETING PURE RESEARCH

... "In a world dominated by information and entertainment, our ideas . . . are a lucrative source of trade for publishers of specialist journals, books and scientific weeklies, venues of conferences and television/film makers and videotape manufacturers, not to mention the manufacture and sale of scientific instruments and supplies, and those locally important industries, the universities. . . . Given the enormous amplification available via the teaching establishments and the media; it may be that the cost of pure research—the pursuit of knowledge for its own sake—is only a tiny fraction of the turnover it creates in ideas,

interest, mental well-being, and happiness in the public at large, all of it paid for one way or another, and irrespective of the so-called applied spin-offs. The remoter the field of research often the more exciting and therefore marketable the facts and ideas generated."

[(Andrew Packard in *New Scientist* 105(1440): 63, 24 Jan 85 (Letter to the editor)). Reproduced with permission from Press Digest, *Current Contents*®, No. 12, March 25, 1985, p. 17 (Published by the Institute for Scientific Information®, Philadelphia, PA, USA.)]

RESEARCH OR DIE

... "Ten years ago, national R & D [research and development] spending was less than a quarter of what it is today, and researchers in government and industry frequently had to lobby and cajole to keep what they had, let alone get more. It's all different today as the otherwise tightfisted Reagan Administration pours money into research, Congress adds still more, and industry vigorously boosts R & D spending in its own laboratories. Even allowing for inflation, 'real' purchasing power for research has increased enormously in recent years. What's produced such financially backed veneration for activities that not long ago had to skimp? The simplest answer is that the political and industrial paymasters of research believe that it pays

off in new devices, weapons, medicines, and techniques The speedup in laboratory work has accelerated the process of incorporating new scientific findings into new products. Time elapsed between scientific findings and their incorporation into patent application is reported to be declining, especially in biotechnology and electronics. For many industries, the pace of discovery has reached the point where the rule is research or die."

[(Daniel S. Greenberg in *Engineering times* 7(1):4, Jan 85). Reproduced with permission from Press Digest, *Current Contents*®, No. 12, March 25, 1985, p. 17, (Published by the Institute for Scientific Information®, Philadelphia, PA, USA.)]
