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[I should like to add a footnote...]

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Artykuł umieszczony jest w kolekcji cyfrowej Bazhum, gromadzącej zawartość polskich czasopism humanistycznych i społecznych tworzonej przez Muzeum Historii Polski w ramach prac podejmowanych na rzecz zapewnienia otwartego, powszechnego i trwałego dostępu do polskiego dorobku naukowego i kulturalnego.

Artykuł został zdigitalizowany i opracowany do udostępnienia w internecie ze środków specjalnych MNiSW dzięki Wydziałowi Historycznemu Uniwersytetu Warszawskiego.

Tekst jest udostępniony do wykorzystania w ramach dozwolonego użytku.



my colleagues at the University of Leeds are frequently in the position of trying to explain why the craftsmen succeed with their techniques. And in the bio-social sphere, such as in agriculture, the difficulties are even greater.

My last comment concerns the effect of technology on science in the middle period. To be sure technology provided problems and instruments to science, but there was something even more important: a basic component of the new idea of "science" which was advanced by the founders of the "mechanical philosophy". The case of Bacon is well known. I would remind that Descartes used *Dioptics* as an illustration of his *Method*; there he started with physical theories of light and vision, proceeded to the mathematical problems of the shape of lenses, and concluded with specifications for a lens-grinding machine.

D. J. de Solla Price

I should like to add a footnote to the words of Professor Daumas on the problem of technology (French *technique*). It seems to me most useful and important to distinguish between two lines, practically distinct and different in their historical character. It is a matter of Low Technology and High Technology. As for the Low Technology, it is an uncomfortable fact for the historian that writing and the written language are comparatively late pieces of technology.

By the time of this development and, by definition, the end of pre-historic times, man had already acquired quite complex techniques for housing, agriculture, waterworks, leather tanning, dyeing, metal work, weapons and all sorts of tools. Starting on the most early times at such a high level, subsequent change was quite gradual and slow until the Industrial Revolution. With High Technology it is a quite different matter. Beginning quite early, but flowering in Hellenistic times, there grew up a special devices technology of scientific instruments — astronomical devices, planetary and other automata, astrolabes and geared machines for calculation and demonstration. It is specially interesting that much of this history is attested not from texts but rather from extant artifacts in our museums. What is important about this artisan tradition is that it gives rise directly to the medieval and renaissance schools of clockmakers and other mathematical practitioners. These are most important, not only because they dominated the experimental philosophy of the XVIIth and later centuries, but also because they are the tradition from which spring the mechanical techniques of the industrial revolution.

It has been pointed out long ago that the clock is the prototype machine. Thus it is the High Technology which interacts strongly with science, but it is only late in its development that this tradition evolves in a form where it transforms the means of production and daily life previously dominated by Low Technology.

V. I. Ostolsky

The lecture of Professor Daumas has drawn the attention of Symposium's participants to one of the most important domains of historico-scientific and historico-technological investigations, to the problem of how arise and how shape the mutual ties between science and technology.

The significance of this still most insufficiently examined problem hardly needs any particular demonstration. The enormous acceleration of the scientific progress, characteristic of these days, is due — to a large extent — to a constantly increasing interaction and mutual penetration of scientific knowledge and engineer experience. Without carefully considering and retracing the history of the development of those factors, we are unable to rightfully estimate the current events and to establish their actual causes and effects in the sphere of science and production, of economics and social relations.

The cognitive value of Professor Daumas's lecture is quite obvious. His initial theses — the acknowledgment of the groundlessness of the classical opposition between science and technology, the ascertainment of the plurality of spheres of human activities, within the bounds of which science and technology cannot be examined separately, the affirmation of the continuity of links existing between them within the space of the whole history of civilization — will constitute a rational basis for the subsequent research work. However, as particular investigations go on, there should — we think — change and become more exactly defined the particular components of the proposed general conception. So, in the course of such investigations there will more accurately clarify itself the notion of constancy of the direct stimulating influence of technology upon science and will be singled out some groups of natural sciences (for instance, the complex of biological disciplines), whose origin, development and perfection were conditioned by other needs and other necessities of mankind, while the rapprochement to the domain of engineer activities took place only in later periods. Thus, probably, more and more perceptible will be the necessity of detailedly studying the phenomena of the reverse influence exerted by science