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Instruments and Man

By devoting this issue of *Science* largely to instruments, we recognize the important part that instruments play in modern science, technology, and business organization.

Everyone is familiar, at least by hearsay, with some of the achievements made possible by modern instruments, achievements in the development of sensing devices capable of operating under extreme conditions and sensitive to physical changes far beyond the range of human sense organs, computing machines of extreme rapidity, and devices for automatic control of machining and assembling operations.

There can be no serious question about the indispensability of the new instruments for scientific advance: many current discoveries would have been quite impossible without use of the specially designed instruments made possible by modern technology, instruments that could not have been devised at an earlier stage in history. Improved instruments will surely be no less important for research progress in the future.

This is all to the good. But a good many people are less certain about the benefits of the application of instrumental processes to factories and offices. The automatic factory and the automatic office are no longer dreams of the future; they are already present and will be more abundant in the future.

No one can forecast how rapidly conversion to automatic factories and offices will occur, but a glimpse into the future can be obtained by considering the program of the Third International Automation Exposition to be held in New York City next month. The titles of two conferences sponsored by the exposition are signposts to the future: "Human engineering—automation and man" and "The challenge of automatic data processing to senior officers." The exposition has arranged 54 "clinic classes" to acquaint industrialists with the machinery of automation. The classes will be grouped under the following headings: office automation and data handling; process automation; analog computers; digital computers; electronic, hydraulic, pneumatic, and electromechanical techniques; automatic production, assembly, cleaning, and fabrication; servomechanisms; and optical techniques.

Increased automation will undoubtedly intensify the changes that have been under way since the beginning of the industrial revolution in the conditions of employment and the use of leisure. Whether or not we can, as some think, gradually adjust to these changes without major unheaval remains to be seen. Our past history gives us grounds for hope.—G. DuS.