

ENGINEERING

From Now On: Publication

Printing and duplication methods which make our current mass production of information possible are due for changes in the future.

By WATSON DAVIS

Fifth in a series of glances forward in science.

► THERE are many ways that civilization differs from primitive existence. It is not alone a matter of radio, television, automobiles and frozen food.

Being able to write something down on paper is the number one ingredient of civilization. Recording in this way allows others to know, even though they be remote in time and space. The dead may speak in books, an airmail letter conquers the world's geography, and a finding of science once recorded in a published report is safe against oblivion.

Ours is truly a cellulose (paper) and carbon (ink) culture. Tons upon tons of wood are used to make the paper of our newspapers, magazines and books. The machines that decorate the paper with intelligence are wondrous in their speed, facility and perfection.

Presses whip out gigantic newspapers by the tens of thousands per hour, type is set for printing with almost as much ease as the text can be typewritten, and pictures are not only reproduced with faithfulness but flashed across continents and seas.

Mass production for printing is highly perfected, although further progress is in the making for conventional letter-press such as this magazine uses (putting ink on a raised metal surface and then transferring it to paper). Even greater promise appears in developments of lithography, rotogravure, and variations of such methods that arose out of the lithographer's stone (the area that is to print is made to attract ink while the other does not). Electronic printing is on the way, with the printing plate and the paper never quite touching but the ink rushing electrically to the right places. There are several methods under development for setting type by photography or electronic methods.

All this is highly promising for mass production publication, so long as the forests hold out.

There are many difficulties in reproduction of short-run publications that experience rising costs of typesetting and press work. Mimeograph, lithography from typewritten pages, and even very short runs of purple print, thanks to methyl violet dye, have their place. They do not solve the problem for a thousand copy circulation.

Photographic reproduction, particularly in the form of microfilm, enlargements from these pint-size images on film, or photostats, do an effective job in getting

individual copies of library material to the users.

If perfected, micro-microfilm consisting of a couple hundred pages on the area of an ordinary library card, 3 x 5 inches in size, might serve effectively scientists and scholars who would be equipped with a reading machine just as they now have a typewriter.

To keep the written words moving among us and to store the vast records of our years, we need better and cheaper duplication methods. We need a hard look at the

PSYCHIATRY

Fears of Sick Children

► SICK children suffer from three kinds of fright, in addition to their illness, Dr. A. H. Vander Veer, associate professor of psychiatry and director of the service in child psychiatry, University of Chicago Clinics, reports in the *JOURNAL OF CHILD BEHAVIOR* (Jan.).

Of the various kinds of anxiety felt by a sick child, the simplest kind is that felt by the child when he feels that the adults around him are frightened. The fear is communicated to him, and he "absorbs their uneasiness as quickly as if it were a highly infectious disease."

The second variety of anxiety is the well-known fear of injury by some external power. Parents often in disciplining their children threaten them with the doctor. Therefore the doctor becomes a bogey man, one who does strange things with mysterious objects and is obviously a menace to the child's safety. The bedside discussion of the child's disease and condition carried on in the medical jargon around the child is also very disturbing to him.

The third source of anxiety for the child is fear of conscience. He often feels that the sickness is punishment for some misdeeds on his part, or he feels guilty because of the expense he is causing his family by his illness.

Dr. Vander Veer advises that parents prepare their children for medical and hospital experiences by telling them in understandable language about their treatment and environment. However, a child should not be told he is to have an organ of his body removed because children have a great fear of losing part of their body.

By this method of preparation the child is not thrown into a state of fright when blood counts are taken, anesthesia is given

world supplies of pulp wood. We may not be renewing the forests which our printed matter must have to continue by the present methods and in the present volume.

For the future we should:

A. Inquire into the science and technology of all printing and record duplication methods, without the restraining influence of any existing process.

B. Do something about the future supply of paper, including a world view of forest resources, using yardsticks of time, price and technology.

C. Investigate the possibility of a synthetic paper substitute not made from wood. Paper made from growing plants is, like food, a renewable natural resource. Yet if clay, for instance, could be made into a sheet plastic for printing, it might balance better the needs of the world.

D. Consider the mounting mass of written records and the growing inaccessibility, because of bulk, of our recorded intelligence.

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and other new situations confront him. The person who prepares the child should have a genuine interest in and good emotional contact with the child.

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PSYCHOLOGY

Clue in Childhood to Cut-throat Rivalry

► THE hungry baby who learns to fight with the neighborhood kids for the only available icecream cone may be expected to grow up to be a cut-throat competitor.

He will, that is, if observations of mice reported to the Eastern Psychological Association in Worcester, Mass., are found to apply as well to men.

Even though, as an adult, the individual may never feel the pinch of want, his baby struggle for food may cause him to fight fiercely for every morsel of gain.

The mouse experiment was conducted at the Roscoe B. Jackson Memorial Laboratory at Bar Harbor, Maine, by Dr. Emil Fredericson. There, baby mice learned to fight for a single piece of hard food given to a hungry group. The hungry mice bit each other, wrestled, squealed, and, if they could, ran away with the morsel.

When these same mice were grown, Dr. Fredericson found that they would still squabble if a group were given a single bit of food even though they were not at all hungry and a brimming hopper of food was right beside them. Other mice who had not learned to compete for food as babies did not squabble over it as non-hungry adults. There were no exceptions.

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