TECHNOLOGY

Automation in Railroads

Railroads, slow in adjusting to the age of automation, are now catching up and computer-makers foresee the day when railroads are fully automated—By Walter Wingo

➤ THE RAILROADS, classic symbol of the industrial revolution, and the railroad workers, old veterans of trade unionism, are stumbling over themselves in adjusting to an age which already has left them far back on the tracks—the age of automation.

Compared to other forms of transportation, the railroads have been slow to take advantage of rapid changes in technology.

The reason, according to railroad managers, is that you cannot save money with automation when the unions force you to keep the very workers the new machines were designed to replace.

The railroads, nevertheless, have started to automate, and—to use an already-outmoded expression—the trend is picking up steam. The most obvious change has been the switch to the diesel-electric locomotive.

The old steam engines required maintenance "round houses" about every 100 miles of track. The diesel needs only a fueling station every 300 or 400 miles with provisions for light repairs.

The large repair shops also have changed. Assembly-line methods are used in most of them for putting together parts such as wheels and axles.

The old "pick and shovel" gangs who went out to repair tracks are mostly replaced by machines, which, in a few swoops, remove old spikes from ties, put in new ties, drive spikes and raise, level and align sections of new track.

The wayside station houses are vanishing, as railroads install automatic speed control systems. Computers pick up coded impulses from the running rails and signal train engineers to slow down, speed up or wait at the next siding.

This is done with lightning speed, displacing the old dispatcher surrounded by telephones and worries.

Railroad automation has been most prominent in yard operations. A few centralized "push button yards," operated by two men each, can replace several smaller yards run by many men.

Electronic computers consider hundreds of factors about cars that come into the yard—including the weather conditions along projected routes—and automatically guide the cars to the best tracks to await hook-up.

Computer-makers foresee the day when the railroads will be fully automatic and the railroad engineer will be a man in a white shirt carrying a slide rule.

But, old-time railroad men will tell you, it will be a long haul before that day comes.

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MEDICINE

Malformed by Quinine

➤ SEAL-LIKE LEGS and missing arms of babies as a result of pregnant women taking high doses of quinine for abortion (unsuccessfully) were reported in New York by the German physician who discovered the link between thalidomide and birth defects.

Dr. Widukind Lenz of Hamburg University told the Second International Conference on Congenital Malformations that attempts to produce abortion with quinine had caused other malformations. The brain, skull and spine have been injured, with resulting idiocy in some cases, a condition not typical of thalidomide.

Difficulty in collecting reliable information on abortions has been the cause of few reports being published, Dr. Lenz said, emphasizing that any drug given to a pregnant woman should be reported regardless of abortion attempts.

Although no reliable figures are available on the number of deformed babies born as a result of pregnant women taking thalidomide, Dr. Lenz estimated that 5,900 had been born in West Germany. Only two deformed babies have been born since the withdrawal of thalidomide, and both mothers had taken the drug.

The sensitive period for taking thalidomide appears to be between the 34th and 50th day after the last menstrual period. Studies have shown that complete or almost complete absence of the legs does not occur if thalidomide is taken after the 45th day, the geneticist said.

Another drug used to bring about abortion is aminopterin, legitimately used in treating leukemia. Malformations from taking this drug, which blocks the action of folic acid, are similar to those produced by quinine.

Tolbutamide, the antidiabetic drug, has produced at least one reported case of malformation similar to thalidomide, but Dr. Lenz believes the case against tolbutamide is weak.

Myleran, another drug used in treating leukemia, has produced dwarfism, cleft palate, clouding of the cornea and other malformations when started from the second month of pregnancy. There were no reported defects of the extremities.

"Everything should be done to discontinue our involuntary and blind experimenting with human embryos," Dr. Lenz concluded. "We know very little about chemically induced malformations in man. I sincerely hope that we will never have the occasion to learn very much about them."

Animal experimentation to discover more about congenital malformations, especially the cause of teratology, the monster-like deformities produced by thalidomide, has been unreliable in predicting human results, Dr. F. Clarke Fraser of Montreal Children's Hospital, Montreal, Canada, told the conference.

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Neglect Cell Surface

➤ THE INDIVIDUAL cell is where the first damage in birth defects takes place, and more attention should be paid to changes in the cell surface that can indicate such damage.

A change in the cell surface is the first indication that an unspecialized cell is turning into a specialized body cell of a particular type—nerve, muscle or bone. This process is called differentiation.

Unspecialized cells have surfaces that are round and smooth, Dr. C. H. Waddington of the Institute of Animal Genetics, Edinburgh, Scotland, told the Second International Conference on Congenital Malformations in New York.

However, just before the cells become specialized, they change their shapes, become sticky, and attach themselves to each other or to the container in which they are being studied.

The kind of attachment is a clue to the type of cells being formed. When chemicals are added to the test tube in which the cells are growing, the cells do not form surface attachments and do not differentiate.

Thus, the surface reaction serves a necessary trigger in the overall program of cell development.

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MEDICINE

Antibiotics Do Not Help Multiple Brain Abscesses

➤ ANTIBIOTICS are valuable but they are not miracle drugs.

When Europeans with staphylococcic and other severe infections developed multiple brain abscesses in Southern Rhodesia, South Africa, 100% died, in spite of early treatment with antibiotics. Africans, however, developed solitary abscesses, and most of them recovered, a report in the British Medical Journal said.

Dr. Laurence F. Levy of the Salisbury Hospitals Group, Salisbury, Southern Rhodesia, explains that brain abscesses have become rare among persons with high standards of living. But when they become multiple, they are likely to be fatal in spite of treatment.

Dr. Levy said it was his contention that the Africans with their poorer standard of living and late medical treatment predominated in the solitary abscess group because any infection severe enough to produce multiple abscesses kills the patient before the complication sets in.

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