TECHNOLOGY

Electronics Used to Help Patent Office

➤ THE U.S. PATENT OFFICE in Washington is being mechanized.

Long plagued with a building full of patent applications and under heavy critical fire for being too slow in granting patents to inventors, the Patent Office hopes to step up the searching with automatic electronic techniques.

Preliminary success to mechanize patent searching with these methods has already been accomplished, Louis C. Ray and Russell A. Kirsch of the National Bureau of Standards told the American Association for the Advancement of Science meeting in New York.

Pilot operations have been made, the Government scientists said, using the Bureau's high-speed electronic computer, SEAC. With better than human accuracy, they reported, SEAC automatically searched through highly complicated patents in the field of chemistry to determine whether a chemical compound had previously been discovered.

Moreover, they said, the methods developed for the Bureau's SEAC can now be used by other, equally powerful electronic computers.

The experiment was conducted in cooperation with the Department of Commerce and the U.S. Patent Office.

It is the first step in a long-range program to bring automatic machines to the assistance of technical experts who examine patent applications.

Science News Letter, January 12, 1957

PUBLIC HEALTH

Polio May Hit Students Hardest

➤ HIGH SCHOOL and college students may be hit the hardest by polio in the future if they do not get protection by Salk vaccine immediately, Basil O'Connor, president of the National Foundation for Infantile Paralysis, said.

Although good progress has been made with the vaccination of infants and grade school children, the biggest lag during 1956 has been among teen-agers and young adults, he reported.

The shocking fact is that only one out of every six Americans between 20 and 35 years of age has even been started on the three-shot series of innoculations, he said, and "we are like an army facing a relentless enemy with every other soldier carrying a wooden gun."

By the middle of last November, 44,000,000 persons had received at least one shot of vaccine but 39,000,000 of these were either expectant mothers or under 19 years old. Most of those under 19 were also under teen-age.

There is enough vaccine now on hand or in the making to practically wipe out paralytic polio if every American up to 35 years gets the full protection, the National Foundation for Infantile Paralysis reported. However, there are still 53,000,000 men, women and children under 35 who have yet to receive their first shot.

The polio shot series takes eight months to complete and time is running out, Mr. O'Connor warned.

The total number of polio cases dropped 45% from the 1955 total due to the Salk vaccine in 1956, the first full calendar year of polio prevention with vaccine.

This reduction was very gratifying and represented the lowest number of cases reported since 1947, Mr. O'Connor said, but there were still nearly 16,000 persons struck down with the crippling disease.

"Polio still proved it packed a deadly epidemic punch," he said.

Science News Letter, January 12, 1957

ANIMAL PSYCHOLOGY

Thinks Dove's Glance Can Cause Female to Lay Egg

➤ CAN a male dove's glance egg on a female dove? This is the $24,000 question being answered by Dr. Daniel S. Lehrman, a Rutgers University psychologist, Newark, N. J.

Dr. Lehrman thinks that once a male dove has had physical contact with a female dove and a fertile egg has been produced, then a mere look from the male is enough to cause the same female to lay another, unfertile egg.

To find out whether or not he is right, Dr. Lehrman is placing male and female doves, who have been parents, in isolation from three to five weeks. Then he puts them in separate cages, separated by a pane of glass.

The New Jersey scientist will then watch the courting process and see if the female lays an egg, as he thinks she will. Then, he will take a father dove and allow him to court a female who has never been a mother. He will watch these birds to see if the male's glance, in breaking through the "glass barrier," can stimulate the "inexperienced" female into producing an egg.

In all cases, he explains, there will be no physical contact and no bird is ever hatched from such an egg.

Dr. Lehrman's experiments are being supported by a $24,000 grant from the National Science Foundation. He says that basically, he is "interested in learning how the psychology and anatomy of an animal and its experience cooperate to produce its characteristic behavior."

In this case, he points out, he is trying to discover whether or not the experience of love-making even without physical contact stimulates physical-chemical reactions in the dove's body, resulting in egg laying.

"In short," he adds, "is this egg laying process after courting the same type of thing that occurs when a dog gets hunger feelings after hearing the dinner bell?"

Dr. Lehrman said his findings with doves do not apply directly to humans.

Science News Letter, January 12, 1957

IN SCIEN

GENETICS

Pay for Youthful Vigor By Decline in Old Age

➤ THE VIGOR enjoyed in youth is due in part to the inherited characteristics that cause a decline in later years.

This theory was presented to the American Association for the Advancement of Science meeting in New York by Dr. George C. Williams of Michigan State University.

"Those of us who live to old age pay the full price of this youthful vigor," Dr. Williams explained. "Those of us who die young enjoy the benefits but escape having to pay the price."

Invisible particles of heredity, called genes, carry characteristics from generation to generation. Minor good effects may balance major bad ones if the good effects come early in life and the bad ones late.

"If most of a population is dead by the age of 60, a gene that kills at 70 will seldom be disadvantageous and may even produce minor benefits early in life," Dr. Williams said.

Science News Letter, January 12, 1957

MEDICINE

Antibiotic Saves Bacteria Instead of Killing Them

➤ AN ANTIBIOTIC known as chloromycetin actually prolongs the life of certain bacteria instead of killing them, scientists at the University of Glasgow have found.

The drug is one of the "bacteriostatic" antibiotics, those that act by inhibiting the growth of bacteria. The "widely held belief" that bacteria are slowly killed by this type of antibiotic is not necessarily so, the scientists report.

They found that under certain conditions *Escherichia coli*, a type of bacteria found abundantly in man's intestines, were not killed at all by the antibiotic. In fact the drug actually preserved the life of all bacteria kept in cold storage. At warmer temperatures, many of the bacteria quickly died unless given a dose of the antibiotic.

A number of factors determine whether an antibiotic like this either kills or preserves bacteria, the scientists report, including the type and amount of bacteria, the temperature and the concentration of the antibiotic.

Differences in these conditions probably explain why some researchers have reported that the antibiotic actually kills this type of bacteria.

Drs. R. B. Morrison, Samiha El Bagoury and S. Fletcher report their findings in *Nature* (Dec. 29, 1956).

Science News Letter, January 12, 1957

SCIENCE FIELDS

MEDICINE

Treat Appendicitis With Drugs Instead of Surgery

➤ ACUTE APPENDICITIS more than 24 hours old should be treated "conservatively" with drugs instead of surgery, Dr. Eric Coldrey, Rotherham Hospital, reports in the *British Medical Journal* (Dec. 22, 1956).

Future physicians may look back on today's doctors as being too appendectomy-minded, says Dr. Coldrey, who has been using his conservative treatment on acute appendicitis cases for the last four years.

Instead of surgery, Dr. Coldrey's treatment includes bed rest, nothing to eat or drink besides water, and six-hourly injections of penicillin. In severe cases, other drugs including streptomycin, tetracycline or sulfadimidine may also be given.

The patient's pain is relieved by using morphine and pethidine, either singly or in combination.

Most of the cases treated this way "settle down" and no surgery is necessary, reports Dr. Coldrey. After the pain and sickness have gone, and the patient's temperature and pulse have fallen, there is a gradual return to a normal diet, he reports.

For acute appendicitis of less than 24 hours duration, Dr. Coldrey still follows the usual custom of emergency surgery, but he believes all acute cases that occur away from skilled surgical help should be treated conservatively.

"The unskilled surgeon will be saved a lot of anxiety and the patient have a better chance of survival," he reports.

Science News Letter, January 12, 1957

BIOCHEMISTRY

Treatment of Defectives Predicted for 2005

➤ BY THE YEAR 2005 many kinds of mental retardation may be treated by the use of artificial enzymes.

One hereditary form of mental abnormality that doctors call phenylpyruvic oligophrenia may be prevented by placing in an artery of a new-born child with the defect a synthesized catalyst in a polythene tube. This synthetic catalyst would do the work that normal enzyme molecules do in the normal infant and the child would then develop in a normal way.

This hopeful prediction that many kinds of mental deficiency may be reduced or wiped out in another half century is made by the chemistry Nobelist, Dr. Linus Pauling of the California Institute of Technology, in the *American Journal of Psychiatry* (Dec. 5, 1956).

"I think," Dr. Pauling reports, "that it is likely that many kinds of mental retardation are molecular diseases."

By molecular diseases, he explains, is meant disease caused by molecules of abnormal structure present in a patient in place of the molecules of normal structure that are present in normal human beings.

Sickle-cell anemia, a hereditary disease prevalent in large areas in Africa, Dr. Pauling reports, is such a molecular disease.

In this disease, the hemoglobin molecules have such an abnormal structure that they clamp on to one another easily to form long rods which line up side by side to produce a liquid crystal. As the crystal grows inside the red blood cell, it becomes longer than the diameter of the cell and twists it out of shape.

Before it is possible to treat mental deficiency with artificial enzymes, Dr. Pauling warned that it will be necessary to know about the detailed arrangement of the thousands of atoms that make up each one of the molecules of the enzyme.

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MEDICINE

Drugs Replace Long Bed Rest in Rheumatic Fever

➤ RHEUMATIC FEVER VICTIMS are going back to their normal activity much sooner than was recently thought safe.

This has become possible with the new techniques for preventing streptococcal infections, such as "strep sore throat," with long-acting penicillin and sulfa drugs.

Since strep infections are known to precede rheumatic fever, much of the disease can now be stamped out with effective streptococcal control.

This control requires early treatment of all strep infections, as well as the prevention of new strep infections in former rheumatic fever victims since each new attack increases the danger of heart involvement and more serious illness.

These former patients should get continual monthly injections of long-acting penicillin, or daily doses of either penicillin or sulfa drugs, an American Heart Association Committee reported. This type of antibiotic therapy is kept up indefinitely to lessen the chances of any recurrence of the disease.

In the past, rheumatic fever patients have had to spend many months or even years of convalescing in some protected environment where their physical activity was greatly reduced.

Drs. Harrison F. Wood and Philip R. Lee, New York University College of Medicine, have now advised the American Heart Association, that with the new antibiotic therapy "patients are mobilized to full activity within a few months after the active phase of the disease has ended."

Most of the patients who have recovered from a first attack of rheumatic fever can now carry on ordinary physical activities during and after convalescence, Drs. Wood and Lee said.

Science News Letter, January 12, 1957

DENTISTRY

Most Teeth Lost from Hidden Gum Disease

➤ IF YOU are over 35, most of the teeth you lose may have been ruined by a gum disease that you never knew you had, Dr. Clifton O. Dummett, chief of periodontics and preventive dentistry, Elmendorf Air Force Base, Anchorage, Alaska, reports in the *Journal of the American Dental Association* (Jan.).

These periodontal diseases, popularly known as pyorrhea and gingivitis, are inflammations of the gum which can come on so gradually that they destroy tooth and bone before the victim is even aware that something is wrong, his report states.

A study of almost 1,300 persons in Boston showed that about 90% had the disease, but only nine percent were aware of it. Another study estimated that 50% of all men either had some form of the disease by the time they were 45 or had lost all their teeth as a result of it.

Periodontal disease, a worse offender than dental decay, begins with an inflammation of the gums which extends deep into the tissues. The gums begin to recede and there is a breakdown of the bones and fibers which support each tooth. Then, even good teeth may be lost.

Present studies show that the disease is influenced by bodily disease and gets worse with age.

"Special vigilance" is needed to keep the condition from recurring or progressing, he added, and the essential home weapon is the toothbrush.

Science News Letter, January 12, 1957

PSYCHOLOGY

Devise Test for Picking Compatible Groups

➤ THE KEY to putting together the best possible working group, whether it be a board of directors or a United Nations peace team, has been found.

It is a test designed to measure FIRO, or a person's "Fundamental Interpersonal Relations Orientation."

The test for FIRO, the most important factor in getting along in a group, was devised by Dr. William C. Schutz, a Harvard University psychologist.

Dr. Schutz reports the test is an objective way for picking the right combinations of people for any small group assigned to do a specific job.

The results of the test on experimental groups to date show great promise for the test's use by industrial, community, governmental and military organizations. It is foreseen that members of a group can now be selected in advance for their "compatibility" as a team.

The test itself, Dr. Schutz says, is a kind of brief questionnaire designed to describe the way certain fictional persons feel and act in varying group situations.

Science News Letter, January 12, 1957