ACOUSTICS

Jet Noise May Cause Structural Failure

➤ THE NOISE of jet planes is becoming so intense it not only is reaching the limit of endurance of human personnel at airports or on carriers from which the jets take off, but it is actually great enough to cause structural failure of the airplane's metal.

This hazard was reported at a meeting in Cambridge, Mass., of the Acoustical Society of America and the Second International Congress on Acoustics by Dr. Alan Powell of the University of Southampton, England.

Unconventional designs such as the delta wing may be favored for the jet of the future, Dr. Powell said, so the jet and its noise can issue from the extreme rear of the plane, well away from any part of the metal structure.

From an engineering point of view, pressure of sound waves is small, but it is in the form of rapid vibrations that may vary at the rate of a million fluctuations an hour. The constant bending or stretching of structural elements as the structure is forced to vibrate causes a very rapid application of load on the metal.

Research is required, Dr. Powell suggested, to determine the best airplane design for standing up under the vibration.

Because the question of aircraft noise is affecting the airplane itself as well as long-suffering human ears, the public can be assured the designer will avoid as much noise as possible, Dr. Powell said.

Science News Letter, August 4, 1956

PUBLIC HEALTH

North Carolina Doctors Lead in Polio Fight

➤ CHILDREN in North Carolina will not get polio for lack of vaccination this summer, if the organized medical profession of the state can help it.

All over the state, clinics are opening to vaccinate children, from babies under one year to 19-year-olds, and pregnant women. The clinics are run and manned by the county medical societies, with the cooperation of the local health departments.

The action was sparked by the state polio committee of the Medical Society of North Carolina. Dr. Donald Koonce of Wilmington, N. C., is president of the society. Chairman of the polio committee is Dr. Samuel F. Ravenel of Greensboro, N. C.

This medical society is the first state society, so far as is known, to take such action, which consisted of appealing to constituent county societies to start a clinic.

The medical profession in North Carolina hopes to avoid the situation in Chicago, where polio has been attacking small children who did not get vaccinated either because of parents' indifference or lack of clinics.

The North Carolina program, however, got started before the upswing of polio in Chicago.

North Carolina is unique in that almost half its population, 1,935,000 out of a total slightly over 4,000,000, is in the polio vaccine eligible age group. The 42% to 43% of vaccine eligibles in North Carolina contrasts with the 33% average for other states.

When Drs. Koonce and Ravenel discovered that only about one-third of these vaccine eligibles had been vaccinated, although supplies of vaccine were adequate for all who need it, they decided to do something about it.

Along with the clinic program, where vaccinating can be done without fee when necessary, the county societies are working to educate the public to the safety and effectiveness of the vaccine, and to urge private physicians to continue intensive vaccination in their own offices of the under-19-year-olds in the families they attend.

Science News Letter, August 4, 1956

INVENTION

Develop Vaccine Against Deadly Cattle Disease

➤ A TEAM of scientists has perfected a vaccine against the world's worst cattle disease, rinderpest.

The new vaccine, described as the most effective ever produced, is already being used successfully in Africa and Asia where rinderpest kills millions of head of cattle annually.

Although the viral disease is unknown in the United States, scientists and cattlemen fear that it may slip past border inspectors some day. If this should happen, they point out, it would be a major disaster. Rinderpest is the world's deadliest catle disease, killing 90% to 100% of the cattle it infects. American cattle, scientists say, are highly susceptible to the disease.

Rinderpest is not carried by an insect, but is passed on by direct contact or indirectly in straw or bedding.

The new vaccine, developed by a team of Government scientists, was produced as a stockpile weapon in the nation's biological arsenal against the day rinderpest might reach the United States. Earlier work on a vaccine was done during World War II, when it was suspected the Germans were planning to use rinderpest as a biological warfare weapon against this nation.

The rinderpest vaccine is made of rinderpest virus material rendered non-infective by chemical means, cell material derived from *Mycobacterium butyricum,* a water-non-miscible substance and an emulsifier.

It is the invention of Drs. Fred D. Maurer of the Armed Forces Institute of Pathology; Donald E. De Tray and Kenneth L. Kuttler of the U.S. Department of Agriculture, and Alfred M. Webb of the Department of the Army Chemical Corps. They were awarded patent No. 2,756,176 and assigned the patent rights to the United States of America as represented by the Secretary of the Army.

Science News Letter, August 4, 1956

IN SCIEN

ANIMAL PSYCHOLOGY

Laboratory Rats Prefer Tap to Distilled Water

➤ TWELVE out of 12 non-thirsty rats prefer tap water to distilled water.

Taste tests conducted at the University of Illinois show "no rat in the group studied had a preference for distilled water." The same rats, when thirsty, however, lost their discriminating taste and one even "developed a preference for distilled water."

The scientists who made the study, Paul Thomas Young and John L. Falk, report the preference might play a part in the preparation of solutions for use with experimental animals in the laboratory. They offer several suggestions for the difference.

One possibility, they note, is that tap water has more minerals and is therefore superior from a nutritional point of view.

"From a psychological point of view," they state, "it is interesting that human subjects regard tap water as more palatable. Although these statements explain nothing, they are interesting, for if humans can distinguish the flavors of different kinds of drinking water, it is not surprising that rats behave in a similar manner."

The Illinois scientists make their report in the *Journal of Comparative and Physiological Psychology* (Aug.).

Science News Letter, August 4, 1956

TECHNOLOGY

New Process Makes Cheaper Color Printing

➤ COLOR PRINTING will soon cost less to process and will be completed faster.

A cheaper, quicker commercial color printing technique, developed by Eastman Kodak Company, Rochester, N. Y., has been standardized for use with ordinary 35 mm color transparencies.

Although a day and a half is usually required to prepare fully color-corrected negatives for lithographic printing, Eastman Kodak Company says lithographic plates can be prepared with the new process in less than two hours.

The new technique is a modification of conventional offset lithography. A black-and-white print of the original transparency, placed against the transparency in front of a strong light, reduces the contrast of the colors so they can be more easily reproduced by printing inks.

As in the old process, three color separation negatives are made, but they are all made on one strip of film. The negatives are produced simultaneously by an automatic camera designed especially for the process, intended for short-run printing.

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CE FIELDS

PSYCHOLOGY

Unpopular Persons No Judge of Others' Feelings

➤ AN INDIVIDUAL usually has only a vague idea of how other persons feel toward him, although his idea is somewhat better than a chance guess.

Unpopular people are particularly dense in sizing up the feelings of others toward them, Dr. F. Kraupl Taylor of the University of London and Maudsley Hospital, London, found in a study of both mental patients and college students.

The students were more correct in assessing how others feel toward them than were the mental patients, Dr. Taylor found. This may be, he explained, because the students had been associated with each other longer and knew each other better.

It may be, he believes, that the unpopularity of some persons is due to their obtuse misjudgment of the feelings of others. On the other hand, both their unpopularity and ignorance of the feelings of others toward them may be due to the fact that, for one reason or another, they have not been able to establish close and friendly relations with their companions.

It is interesting that the paranoid patient who thinks everybody in the world is against him may, nevertheless, be correct in assessing his popularity with any particular individual associate.

In general, Dr. Taylor reports in *Human Relations* (Vol IX, No. 1), the ability to judge one's own appeal on a "global basis" is quite independent of the awareness of popularity with individuals.

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METEOROLOGY

Debate Sun's Direct Effect on Weather

➤ WHETHER THE SUN has direct effects on weather that can be detected is still to be settled.

Attempts to show statistical relations between such solar effects as sunspots and resulting weather patterns "have not been convincing," Dr. Harry Wexler, the Weather Bureau's director of meteorological research, reported at the American Meteorological Society meeting in Boulder, Colo.

The big question now baffling weathermen is whether our weather starts at the top of the atmosphere, triggered by the sun's radiation, and works down, or begins near the earth's surface, with effects observed later at high altitudes.

Disturbances in the air over mountains, such as the Sierra wave, Dr. Wexler said, have been measured to a height at least four times that of the mountain. Such effects could be expected to reach to six times the mountain's height.

Storms might present the same sort of barrier to the movement of air currents as do mountains, he suggested, and the atmospheric disturbances thus caused would reach even higher than mountain-caused effects.

One way to test this theory, Dr. Wexler said, would be to measure the ozone concentration at high altitudes, since this would be related to stratospheric circulation. Other scientists have suggested that differences in ozone concentration caused by solar radiation serve to trigger disturbances in large-scale weather patterns.

Until further measurements are made, perhaps from earth-circling satellites during the International Geophysical Year, Dr. Wexler pointed out that present evidence was stronger for weather patterns being set near the earth's surface and propagating upward rather than for the reverse.

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GEOPHYSICS

Hams Can Help Track Earth Satellites

➤ AMATEUR RADIO OPERATORS, or hams, can help track the earth satellites to be launched during the International Geophysical Year starting next July 1.

The signal sent out at 108 megacycles by the moonlet's three-pound transmitter should be detectable over much of the United States, and amateurs could make a "real contribution" by setting up equipment to listen in on the broadcasts.

Cooperation of amateurs working in groups is being sought, since the job is probably too big for individuals to handle. Successful participation requires planning now, Roger L. Easton of the Naval Research Laboratory urges in *QST* (July), journal of the American Radio Relay League.

The simplified tracking system to be set up by the hams, known as "Mark II Minitrack," is based on the same principles as the primary Minitrack system, but equipment is simpler.

By comparing the path length from the satellite's transmitter to one station with the path length to a second antenna, the satellite's position in its earth-girdling orbit can be found.

An amateur network would not only back up the main system of Minitrack antennas, but would also allow nearly vertical observations of the satellite at some station during each orbit. Calibration of the tracking system is expected to be the most difficult job, and consideration is being given to possible methods.

For the amateur tracking installation, two antennas would be set up 500 to 1,000 feet apart on an east-west line in a field remote from population centers, industrial plants, busy highways and other sources of radio noise. The two antennas have to be level within one-half an inch.

Science News Letter, August 4, 1956

TECHNOLOGY

Data Storage Device Gives Rapid Access

➤ AN AUTOMATIC FILE that can pick one set of fingerprints or a picture out of thousands and automatically make a photographic print of it has been developed by a Government scientist.

Called an "automatic microimage file," the device is a data storage and retrieval apparatus that provides rapid access to any one of 10,000 information-containing microfilm frames.

It was designed and built by M. L. Kuder of the electronic instrumentation laboratory of the National Bureau of Standards, and operates on a continuous basis. The instrument automatically searches the microfilm and photographically prints out one frame every two seconds.

Input to the machine, Mr. Kuder reports in the Bureau's *Technical News Bulletin* (July), is from a perforated teletype tape containing coded locations of the desired frames in the order they are to be printed out. The assembled data produced by the machine emerges on a 10-inch wide strip of photosensitive paper of any required length.

Individual frames are then enlarged to one-half inch squares and processed by commercial automatic developing equipment.

The instrument is essentially a combination of a digital computer electronic circuit and a pair of precision servomechanisms.

Intended for Government use in agencies where large amounts of information are stored, but continually in use, the device can select pictures, drawings, fingerprints, sets of numbers, letters or other symbols.

Quantity and kind of data, Mr. Kuder says, is limited only by the size of the individual microfilm frame and the photographic resolution of the film emulsion.

Science News Letter, August 4, 1956

INVENTION

Rhenium Fabrication Method Earns Patent

➤ RHENIUM, long a difficult metal to work, can now be fabricated into metal sheet or wire by a combination of cold-working and annealing, according to an invention that earned patent No. 2,749,260.

A relatively new addition to the world of metals, rhenium has resisted working because an oxide present in the metal melts at a low temperature during hot-work, or the metal cracks early during cold-work.

Now, Chester T. Sims of Worthington, Ohio, has invented a method for working the metal. It involves subjecting rhenium to a number of mild cold-working operations, with intermediate annealing steps, then subjecting the metal to more severe cold-working operations and longer time intermediate annealings. Mr. Sims assigned the patent rights to the Battelle Development Corporation of Columbus, Ohio.

Science News Letter, August 4, 1956