MICROSCOPY

Microscope Has X-Ray Eyes

A microscope which utilizes X-rays has been developed. It may possibly rival the electron microscope in the future.

➤ A MICROSCOPE has now been given X-ray eyes to enable scientists to see very small internal details of living and non-living materials.

Excellent results in first tests of the instrument were reported by Miss Charlys M. Lucht of the General Electric Research Laboratory, where it was made, at the meeting of the American Society for X-ray and Electron Diffraction in Philadelphia, Pa.

She predicted that the instrument may compete in the future with the electron microscope, which is the most powerful magnifying instrument now in use. Electron microscopes use a beam of electrons instead of light to form an image of materials under study.

With the X-ray microscope, X-rays are passed through the material being studied and then strike a pair of curved mirrors at an angle of less than one-half degree. The mirrors bend the X-ray beams in such a way as to cast a magnified X-ray image of the sample on a photographic film.

The mirrors are platinum coated slabs of fused quartz which are as nearly flat surfaces as can be made. They are curved by mechanical pressure which can be adjusted by hand. This, Miss Lucht explained, makes it possible to change the curvature of the mirrors in order to improve focusing.

At present stage of development, magnifications of 100 diameters have been produced. X-ray images magnified 10 times are magnified another 10 times by photographic enlargement without serious loss of detail.

Objects studied so far have been fine mesh screens, selected for testing of the instrument's ability to show small details. Because the X-ray microscope, unlike the electron microscope, does not require samples under study to be in a high vacuum, it may make possible examinations of living materials at much higher magnifications than ever before.

Science News Letter, December 10, 1949

MEDICINE

Salmonella Baby Threat

➤ SALMONELLA Baby may be a runner-up to Typhoid Mary as an unsuspected disease carrier and spreader of epidemics.

A warning of this possibility comes from Drs. I. M. Mackerras and V. M. Pask of the Queensland Institute of Medical Research at Brisbane, Australia.

The diseases or epidemics Salmonella Babies might spread would be stomach and intestinal upsets and possibly the diarrheal diseases that cause havoc in hospital nurseries and similar institutions. Salmonella, pronounced sal-mon-ella, is the family name for a large group of organisms including those that cause paratyphoid fever and those that cause food poisoning, or ptomaine poisoning as it once was called.

During an epidemic in Australia, Dr. Mackerras found that babies under two years continued to harbor the Salmonella germs up to six months after they had recovered from their acute attack of severe stomach and intestinal sickness. Infections in older children and grown-ups were mild or unapparent and generally transitory.

Drs. Mackerras and Pask followed up this finding by examining specimens from a continuous series of babies admitted to maternal and child welfare clinics. The babies were mostly "feeding problems." Some had had "bowel upsets" but most were normal and none was sick enough to be sent to a hospital.

Sixteen strains of salmonella were found in 14 babies of this series. If the clinic records approximate a random sample of the child population of Brisbane at the time (19,000 children under two years of age), there would have been more than 600 salmonella infections scattered through the baby population of the city. Yet only 33 cases of sickness from salmonella were treated in hospitals during the survey period.

This suggests that the germs are normally harmless but that under certain conditions they can become virulent and cause sickness.

This state of affairs is probably general and of considerable significance in connection with epidemics, the doctors point out, "because infection may be widespread in a community but completely unsuspected and therefore not attacked.

"There is in fact a permanent potential epidemic risk and it easy to understand," the doctors state, "how epidemics often arise when children are crowded together under conditions which favor spread from child to child.

"We feel," they state, "that this infant carrier-rate of salmonella infections is just as important in the community as typhoid and dysentery carrier-rates in older persons. It certainly should receive close consideration in any plan of prevention."

The carrier rate, they report in the LANCET (Nov. 19), British Medical Journal is about 3.5%. In other words, between three and four of every 100 babies under two years in Brisbane is infected and a potential risk of epidemic spread.

Science News Letter, December 10, 1949

INVENTION

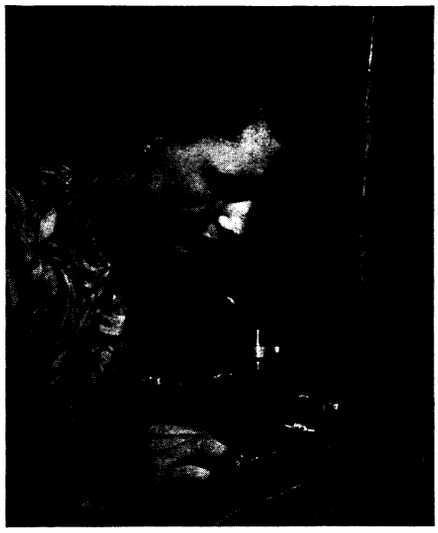
Xmas Tree Stand Clings To Floor by Suction

➤ WITH the Christmas season approaching, the government, at last, has issued an "in-season" patent. It is for a Christmas tree stand, a kind that clings to the floor by means of suction cups of rubber.

The main part of the stand is a metal plate which has a pocket on its lower side and projecting parts to drive into the stump of the tree on its upper face. Under it all, and fixed to the metal plate, is a sheet of flexible rubber fabric which is cupped into the pocket to form the "vacuum" to provide the suction to hold the tree from sliding around on the floor.

The device is designed also for use in securing a smoking stand or lamp stand to the floor or table. The inventor is Arthur D. Zedler, Yonkers, N. Y. The patent number is 2,489,845.

Science News Letter, December 10, 1949



X-RAY MICROSCOPE—Miss Charlys M. Lucht, of the General Electric Research Laboratory, demonstrates an experimental X-ray microscope. The microscope makes it possible to examine directly minute details of internal structure in materials through which light cannot pass.