

... Lasker

brain protein psychopharmacology field (see p. 374).

A \$15,000 Albert Lasker Special Public Service Award is being shared by Elliot L. Richardson, former secretary of the Department of Health, Education and Welfare, and Theodore Cooper, former director of the National Heart, Lung and Blood Institute, for the massive campaign they launched to make the American public aware of the dangers of high blood pressure and of the need to seek treatment for it (SN: 12/11/76, p. 377). □

Lowering the sites on ozone

The problem with ozone is that no one knows how much of a problem it is. Chemicals such as methyl chloroform and fluorocarbons can thin the ozone layer at high altitudes, skew the ozone distribution and, as a result, change the way heat is conducted through the atmosphere. But major questions remain about the amount of ozone damage, about ozone's natural resilience and about the effects of ozone depletion on health and climate. A report expected early next year from the National Academy of Sciences will address some of these questions.

Part of the problem is the lack of good measurements. For example, Don Heath of Goddard Space Flight Center recently said that measurements from the Nimbus 4 satellite indicate only about half the ozone depletion found by ground based stations. However, he pointed out, the discrepancy could be cyclic, short- or long-term, natural or man-made. Only more measurements, like those to come from the Nimbus 7, will tell.

Most ozone studies are limited to the stratosphere, the layer 15 to 30 kilometers above the earth. That's another part of the problem, Jack Fishman of Colorado State University said last week at a meeting in Gatlinburg, Tenn., sponsored by the Council for the Advancement of Science Writing. Atmospheric scientists, he suggests, should lower their sites to the troposphere, the layer 8 to 15 km above.

According to Fishman, the troposphere may be a significant and overlooked source of ozone production from carbon monoxide and nitric oxide. If he is right, he says, then increases in CO and NO from the use of fossil fuels may raise the amount of ozone level in the lower atmosphere and aggravate the problems caused by thinning in the upper layers. Traditional theory says ozone is produced in the stratosphere, carried into the troposphere and destroyed near the ground; 90 percent exists in the stratosphere, 10 percent in the troposphere. Fishman says, "There is strong evidence that at least a considerable portion [of the 10 percent] in the troposphere is produced *in situ*."

More ozone exists in the northern hemisphere troposphere than in the southern hemisphere troposphere. But because more ozone is destroyed over land than over sea, more ozone is also destroyed in the northern hemisphere. Therefore, there must be a greater source of ozone in the north. This extra ozone has been attributed to more weather activity in the north, which carries more stratospheric ozone downward. But when Fishman and co-worker Paul Crutzen examined the meteorological activities that might transport ozone into the lower atmosphere, they found no significant differences between the two hemispheres. The "reasonable" conclusion, Fishman says, is that the difference results from photochemical reactions in the troposphere.

Earlier work showed that OH is produced by the destruction of ozone near the ground. However, Fishman notes, OH also reacts with CO and NO to produce ozone. In the troposphere, he says, this series of competing reactions is normally in balance, but the heavier industrialization in the northern hemisphere may have provided enough CO and NO to tip the scale. Tropospheric measurements of ozone, NO and CO and comparisons of their distributions in the "pre-industrial" southern hemisphere and in the northern hemisphere will test his theory, he says. □

Natural prevention of genetic defects

It's hard to believe that in only a few years the technique of amniocentesis — the withdrawal of amniotic fluid from the womb of a pregnant woman to analyze fetal cells for genetic defects — has changed from a highly experimental diagnostic technique into a widely used one. Approximately 20,000 American women now take advantage of amniocentesis annually. What's more, the technique has come full circle and is now being used as a come full circle and is now being used as a research tool.

Geneticists have long known that powerful natural selective forces are at work to bring only healthy babies into the world. One-fourth of one-month-old human fetuses will be spontaneously aborted or miscarried because they are not genetically sound. Now Ernest B. Hook of the New York State Birth Defects Institute at Albany Medical College has analyzed results of amniocentesis tests and learned that such selective forces work well beyond the first three months of pregnancy, which was not previously thought to be the case, and they work for such serious genetic diseases as Down's syndrome (mongolism). Hook's work, reported in the Nov. 9 NEW ENGLAND JOURNAL OF MEDICINE, also examines the belief that women older than 40 years of age are especially likely to have a Down's child.

There had been some previous hints that miscarriages among Down's syndrome fetuses after the early part of pregnancy are rather common. So Hook decided to see whether this is in fact the case. He contacted the 149 prenatal diagnosis centers listed by the National Foundation-March of Dimes and asked them whether they had any cases on file of women having had fetuses diagnosed by amniocentesis for Down's syndrome and opting to have the child rather than have a therapeutic abortion. Hook also requested the outcomes of such pregnancies.

All but 15 of the 149 centers replied and reported, in total, 21 such cases. Of those 21 fetuses, Hook found, five had ended in miscarriage after amniocentesis had been performed, that is, during the latter half of pregnancy. This comes to a 24 percent chance of a spontaneous miscarriage during the latter half of pregnancy for a Down's fetus, versus a risk of only 3.5 percent for healthy fetuses (a figure previously obtained from amniocentesis test results). In other words, after the middle of pregnancy, there is about a sixfold higher risk of spontaneous death for a Down's fetus than for a healthy fetus, suggesting that Mother Nature continues to exert strong pressure even later in pregnancy to eliminate defective fetuses.

But perhaps the most valuable aspect of Hook's findings, says Godfrey P. Oakley Jr. of the Center for Disease Control in Atlanta in an accompanying NEJM editorial, is that it calls into question the widely held belief that women older than age 40 are at an excessively high risk of having a child with Down's syndrome. In other words, women older than 40 may be more likely than younger women to conceive a child with the syndrome, but it's quite possible that Down's fetuses conceived by older women may be even more subject to miscarriage throughout pregnancy than Down's fetuses conceived by younger women. If that is indeed the case, then women older than 40 would be no more at risk of giving birth to a Down's syndrome child than would younger women. The pregnancy outcomes of women past the age of 40 who have had amniocentesis for Down's syndrome, Oakley advises, should now be used to test this possibility. □

Death of a baby mammoth

Dima, the well-preserved mammoth discovered in Siberia (SN: 3/18/78, p. 167), died of blood poisoning approximately 44,000 years ago. That is the autopsy report just announced by the Tass news agency. "The mammoth died of blood infection," Tass said. "When he was still alive something hit his leg in two places and during his last hours of life he stopped eating." Soon after his death, the animal was buried by a mud flood. According to Tass, geologists had been unaware such flooding took place in northern Siberia. □