

# medical sciences

**Gathered at the meeting of the American College of Chest Physicians last week in Chicago**

## TRANSPLANTS

### New lungs do the job

Although pulmonary transplantation has been successful in the past, it is not fully known whether the success is due to the good lung maintaining ventilation or whether the transplanted lung is actually doing its share of taking up oxygen.

Dr. Spencer Koerner of New York says when a transplant is done, one must anticipate that both lungs are diseased and that the transplant must, therefore, be capable of assuming its function immediately. The physician studied this problem in 20 dogs by determining the vital capacity (the capacity of a transplanted lung to take in oxygen and excrete carbon dioxide) by means of a bronchspirometer.

To shut off absorption of oxygen, Dr. Koerner said, 100 percent nitrogen was used to ventilate the old lung, while the transplant lung was ventilated with 100 percent, 50 percent or 20 percent oxygen. The function of the transplanted lung was good in all three trials, even though nitrogen breathing diverts the responsibility and places a more severe functional stress on a transplant than would occur clinically.

"An unduly high oxygen intake would therefore not be necessary after any human lung transplant," Dr. Koerner concludes.

Although promising, lung transplants bring the risk of infection and other problems, besides the rejection phenomenon common to organ replacements. The longest survival thus far has been less than a year.

## DYSPNEA

### Exercise effects measured

Chronic obstructive lung disease produces one of the highest death rates in the United States. But effective therapy is still limited. With this condition, breathing is impaired so that exercise will cause shortness of breath (dyspnea). Yet lack of activity will decrease breathing capacity even further, which in turn increases the dyspnea, and a vicious cycle emerges.

Exercise training, says Dr. William Bass of Boston, Mass., can break this cycle so that the patient's ventilation improves. "Inspiratory capacity increases and the body more efficiently utilizes oxygen," he says.

Dr. Bass reports that an 18-week program of graded bicycle exercise both objectively and subjectively improved 11 of 12 patients with chronic obstructive lung disease who had been short of breath after walking or dressing. Daily activity increased two- to four-fold as the work load a patient could tolerate increased.

The amount of oxygen required for a certain workload decreased significantly, meaning the oxygen was being utilized more efficiently by the body, says Dr. Bass. Pulse rate at rest and during exercise decreased in all patients.

Up to now, although exercise training has subjectively improved patients, objective measurements have been inconclusive, Dr. Bass says.

## CANCER

### Roofers clear compound

Benzopyrene is often accused of being a cancer-causing agent because it has caused cancer in experimental animals when large amounts are injected or applied to the skin. Found in trace quantities in urban air and cigarette smoke, the chemical has been blamed for the association between lung cancer and both cigarette smoking and pollution.

This theory doesn't seem to hold water, says Dr. E. Cuyler Hammond of the American Cancer Society. He studied death rates from lung cancer and other disease among professional roofers who inhaled large quantities of benzopyrene from exposure to the fumes of coal-tar pitch when heated in a kettle or when sprayed from aerosol containers. All the men had had at least nine years employment.

"Any relationship is trivial," he said, "compared with lung cancer death rates associated with heavy cigarette smoking."

Of 758 roofers from whom death certificates were obtained, 155 died of cancer, 43 of whom died from lung cancer; about 37 lung cancer deaths might have been expected from the general population.

Dr. Hammond says a nonsmoking roofer in one day would inhale the amount of benzopyrene contained in 715 cigarettes. If this is true, "their death rate should have been three times as high as the lung-cancer death rate in U.S. men."

The six-year study included 7,943 men.

## THERAPY

### Cleaning both lungs

Pulmonary lavage, used to wash out tenacious secretion in lungs of patients with such diseases as asthma or cystic fibrosis, is usually accomplished with tubes supplying oxygen to one lung and saline solution to the other. This procedure can be fatal, however, if the solution leaks to the other side.

But bilateral lavage—cleaning both lungs at once—which would eliminate this risk—may be possible, Dr. Jerome H. Modell of the University of Florida College of Medicine, Gainesville, reports.

Fluorocarbons, he says, contain high concentrations of oxygen. Animal tests have shown that both lungs can extract enough oxygen to maintain normal oxygen levels in the blood. However, for man to survive, it would be necessary that the surface tension of the air cells, which is maintained by a lining, or surfactant, does not change, Dr. Modell explains.

He reports that in dogs the surfactant of the air cells was extracted after the animals had been immersed in oxygenated fluorocarbon. The surfactant, which keeps the air cells open, was not altered, nor was it washed out of the lung by the fluorocarbon. Because the air cells remain stable after ventilation with fluorocarbon liquids, the animals readapted to breathing gas and survived, Dr. Modell says.