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1, 2, 3, 4! — The Roura quadruplets agreed to pose last week for their first group picture to the delight of press photographers and television cameramen. The photo was taken the day before the strongest baby, Carolina, was transferred to Cape Fear Valley Hospital in Fayetteville. The smallest, Lolita, still needs machine assistance to breathe. The quads were born March 25 to

Rebecca and Duilio Roura of Fayetteville. From left: RN Linda Parker with Lolita, RN Brenda Jeffries with Rebecca, RN Kathleen Gillis with Diana and RN Sharon Ferrell with Carolina. Doctors said Carolina's three sisters will probably remain at Duke for two more weeks. (Photo by Parker Herring)

Receive \$214,383 grant

Scientists developing method for diagnosing lung failure

By David Williamson

Put a damp sponge in a paper bag, throw it against a wall and you'll get an idea of what can happen to a driver's lungs during an automobile accident.

Just as water from the sponge begins to soak the bag, the abrupt deceleration of blood in the lungs injures delicate lung tissue which then allows fluids to leak out between tiny blood vessels and alveoli, the microscopic air sacs through which oxygen passes into the blood stream.

Even after several days in a hospital, respiratory failure can result from the accumulation of fluids, according to a medical center scientist who has received a \$214,383 grant from the National Institute of General Medical Science to study the problem.

Safe, economical technique

Dr. John N. Miller, an assistant professor of anesthesiology, said he and his colleagues, Drs. Enrico Camporesi and Lennart Fagreau, will use the grant to work on a safe and economical new technique for predicting and preventing respiratory failure among accident victims.

The technique involves measuring the amount of water that has gathered in the lungs and determining whether it is likely to increase to a point where breathing becomes affected.

If the research is successful, Miller said the method probably can be applied to a variety of patients with acute lung failure, including those who have inhaled

toxic fumes, because "fluid accumulation appears to be common to different forms of lung injury."

Knowledge doesn't come soon enough

At present, physicians can detect when the lung fails only by measuring the amount of oxygen present in blood samples. But the knowledge, Miller explained, does not come soon enough.

"Normally, the lung has an abundant reserve of functioning gas exchange units (alveoli) enabling it to withstand a considerable degree of abuse," he said. "As a result, a significant proportion of the alveolar volume is lost before a

measurable impairment of gas exchange is detected.

"If we can anticipate that something is about to go wrong, then we can begin appropriate treatment before it does."

As one might imagine, measuring subtle changes in lung water volume is a lot more complicated than turning a patient upside down and letting fluid drain into a graduated flask.

Bag of mixed air

The Duke researchers are employing a technique in which experimental subjects breathe air in and out of a bag containing very low concentrations of helium, acetylene and a stable, non-radioactive

isotope of carbon monoxide.

Miller said that during the process, some of the acetylene and carbon monoxide disappear from the lung into the blood and tissue.

By measuring differences in the rates at which they disappear from the system—both combine with blood, but only the former dissolves in water—the scientists hope to show how much water has built up in the lungs at any given moment.

The helium, which does not react with nor dissolve in water, allows the gas volume in the lung to be measured, Miller

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Guatemala calls, so Tim Heflin to head south

By John Becton

Tim Heflin says that Guatemala is "like a magnet" to him.

So he will resign as supervisor of the Division of Biomedical Electronics after today, and prepare for a 10-day drive to the small Central American country which lies just south of Mexico.

Heflin is being sent by Project HOPE (Health Opportunities for People Everywhere) to implement a plan for electronic equipment maintenance in Project HOPE's program in Quezaltenango.

The plan was developed by Heflin on his most recent trip to Guatemala last August during a leave of absence from Duke.

Perhaps his most noted trip to Guatemala was two years ago just after an earthquake devastated the country, killing more than 20,000 people and leaving 20 per cent of the population homeless.

Heflin flew down one week later to set up a donated emergency radio station and to determine the best use of the 19 tons of non-perishable food and \$30,000 which had been donated locally through Grey Stone Baptist Church, of which Heflin is a member.

(Intercom carried stories 2/13/76 and 3/5/76.)

But Heflin's encounters with the magnetism of the small nation began

years earlier.

He came to Duke in 1966 to work in the Analogue to Digital Conversion Laboratory under Dr. E. Croft Long, who was then professor of community health sciences and an assistant dean of the medical school.

Two years later, when Long established Project Med-Aid (Medical Assistance for Isolated Doctors), he appointed Heflin as manager.

As a ham operator relaying medical information, Heflin had "a lot of contact with Guatemala," he said.

"We think we also were the first to

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