

## THIS YEAR AT DALHOUSIE

In this issue we present two very interesting abstracts from the Department of Pediatrics. Both summer research projects, they represent significant contribution to the broad scope research in which this department is actively engaged.

Working with Dr. C. T. Gillespie of the Children's Hospital, Alexander Steeves and William Snow (second year) conducted a mass screening project for cystic fibrosis. Their survey was done on Prince Edward Island.

"Cystic fibrosis is the most common, lethal, inherited disease of childhood. If detected early, aggressive therapy can be instituted and irreversible damage to involved organs - especially the lungs - prevented. With early detection and obtaining a more accurate estimate of the true incidence as two of its main goals, a mass screening project was conducted on Prince Edward Island between May 29th and June 22nd, 1967.

"Because children with cystic fibrosis have markedly elevated sweat electrolytes, the most valuable diagnostic tool has been the determination of sweat chloride values. The standard method employed in hospitals for this is the pilocarpine iontophoresis sweat test - a very accurate but also time-consuming, involved and expensive procedure. This method requires approximately two hours for a complete test and so is not applicable to mass screening situations. Thus, another test, almost as accurate but much quicker, simpler and less costly, was selected for our project. This was the thermal stimulus-silver electrode sweat test developed by Dr. Warren J. Warwick in Minnesota.

"A project of this kind had never before been done and so another of our purposes was to field-test equipment. We used two chloride ion specific electrodes and two types of pH meters, which measured the chloride ion concentration of sweat. In the procedure, sweat was produced by applying a heated, four by four inch square, gel pack to a cleansed area of the forearm. After five minutes of thermal stimulation, the pack was removed and the tip of the electrode was instantly placed in the sweat obtained. Within fifteen seconds chang-

es in electrical current were produced by the sweat and were indicated on the pH meter. The meter was previously calibrated to read milliequivalents of chloride per liter. In this way, we were able to test approximately 200 children per hour. A follow-up study was carried out on those children having questionable values. The standard pilocarpine iontophoresis sweat test technique was used.

"From the 35,446 children tested, one child with previously undiagnosed cystic fibrosis was picked up and is now receiving treatment. The expense of this child's prophylactic therapy as compared to the inevitable and eventual cost of drugs and repeated hospitalizations were therapy not instituted early, will more than recover the cost of the mass screening program. Even more important is the fact that this child now has an excellent chance of benefiting from her therapy, enjoying a happy and healthy childhood, and looking forward, perhaps, to a normal life span.

"Our part in this project was to act as one of the four teams conducting the screening clinics. Following the four weeks of actual mass testing, we organized and conducted the follow-up testing.

"This project and our experiences on the hospital wards and in the clinics provided us with an interesting introduction to pediatrics and an insight into current concepts regarding cystic fibrosis and its management."

Under the direction of Dr. K. Scott, David F. Large (fourth year) studied the neonatal response to thermal stress.

"During the forty weeks in utero, the fetus is exposed to only slight fluctuation of a relatively stable environmental temperature. At the moment of birth, depending on case room temperature, the infant will have a skin-to-air temperature gradient from 15°F. to 30°F. Heat loss, initially due to evaporation of amniotic fluid, may be quite alarming if this gradient is not eliminated. Prematures with wide skin-to-air gradients will have high metabolic rates and increased oxygen consumption in a reflex effort to produce heat. This situation favors energy store depletion and an increase in the existing metabolic acidosis.

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"In a short study at the Grace Maternity Hospital, seven normal infants were monitored for skin and rectal temperatures, five minutes post-delivery to age three hours. During the initial sixty minute course of case room and nursery care, seven brief procedures, from weighing to physical examination, subject the newborn to environmental cold stress. Each exposure was reflected by a drop in temperature. Total time exposed ranged from ten to nineteen minutes in the first hour of life. Insulation in the case room consisted of warm towels draped over each infant. Fol-

lowing admission to the nursery, heated blankets were used to completely wrap the infant. Under these conditions, rectal temperature at birth averaging 99.7°F. fell 2.7° to 97°F., and stabilized at age three hours at 98.5°F. Skin temperature dropped to 93.8°F. and levelled at 97°F. in three hours.

"These findings confirm the dependence of the neonate on extrinsic measures to maintain body temperature, and suggest that if they are not provided, the result will be a cold, acidotic baby."

## EXCERPTS FROM THE PAST\*

### NONSONTZ

*We were told when we came into Medicine that we would change - our observations lend support to this hypothesis. For example, that we change some of our pronunciation. In high school, pre-medicine, and even in the pre-clinical years when we said centimeters, we said "sentimeters". It wasn't until we got out of the hands of these afore-mentioned academic sticks-in-the-mud and into the hands of the clinicians that we learned how wrong we had been all those years.*

*We took little comfort from the knowledge that when we said "sentimeters" we were agreeing with all dictionaries - both lay and medical. The clinicians say "sontimeters" so we now say "sontimeters". We were told we would change whilst at Medical School. How many sents in a dollar?*

*Summary: The truth - the hypothesis - that medical students change whilst at Medical School is demonstrated with an example.*

*References: Gould's Medical Dictionary  
11th Edition, 1950.*

*The concise Oxford Dictionary  
of Current English, 3rd  
Edition, 1934.*

*- Jack L. Fairweather*

\*Reprinted from the Dalhousie Medical Journal, March, 1954.