

sure (unpublished observations). In such cases the total "response time" from initiation of inspiration to machine response is much longer, further limiting the maximal assist rate or even making assistance impossible in the presence of an extreme phase difference.

With its extreme sensitivity and rapid response time, the Bourms ventilator is uniquely useful in assisting respiration in small infants at high rates. For the small child who can easily withdraw a few milliliters of air, the MA-1 is suitable if the tidal volume chosen is large enough to avoid the necessity for assistance at very high rates. The MA-1 is capable of delivering much higher flows and volumes than the Bourms, as is required in the larger child.

We have had no clinical experience using the Ohio 560 in a pressure-limited mode for the small child, but its performance suggests that it might have application at moderate rates. Although the Bennett PR-2 and the Bird Mark 8 have fairly good triggering characteristics for use in the small child, their poorer stability and their difficulties in deliver-

ing predictable, safe oxygen concentrations without additional accessories make them second choices. The Dräger Spiromat 661 is useless as a pediatric assistor because of its excessively long response time.

All of the ventilators except the Bourms model are available with accessories which make them suitable for ventilation of adults. Sensitivities and response times are not significantly different when these ventilators are equipped for adults (unpublished observation). Although in ventilation of adults sensitivity as defined in terms of volume withdrawn is of minor importance, response time still limits the maximum permissible rates of assistance. This limitation is not so serious when ventilating adults since low rates with concomitantly long inspiratory times generally are desired. Although the Bennett MA-1 is capable of the highest rates, all of the ventilators tested except the Dräger Spiromat 661 have response time adequate for moderate rates of assistance. The Dräger Spiromat must be considered primarily a controller, although occasional patient triggering may be allowed.

Drugs

ISOPROTERENOL TOXICITY Isoproterenol injected twice in 48 hours caused large intramural hematomas in the cardiac wall at the site of aneurysm formations in frogs kept at 25 to 29 C. (Poupa, O., and Carlsten, A.: *Isoproterenol-induced Cardiac Lesions in Frog Observed In Vivo*, *Canad. J. Physiol.* 48: 306 (May) 1970.)

DOPAMINE IN BURNS Three severely burned patients were infused with dopamine-2-¹⁴C, the immediate precursor in the biosynthesis of norepinephrine. Infusion was purposely delayed until three weeks after the burn, since depletion of catecholamines most commonly manifests itself at this time. There were marked decreases in the percentages of radioactivity recovered in the urine as norepinephrine in all collection periods, in contrast to results in normal subjects, from whom radioactive norepinephrine was recovered after 24 hours. Concomitantly, there was an increase in radioactivity recovered as metabolic products of norepinephrine, reflecting a compensatory shift toward norepinephrine synthesis and utilization at the expense of the dopamine metabolic products. In the burned patients, dopamine-2-¹⁴C was rapidly synthesized into epinephrine and then rapidly released and metabolized. These results suggest that dopamine might be a useful adjunct in the treatment of sympathico-adrenal medullary depletion following burns. (Goodall, McC., and Alton, H.: *Dopamine (3-Hydroxytyramine) Replacement and Metabolism in Sympathetic Nerve and Adrenal Medullary Depletions after Prolonged Thermal Injury*, *J. Clin. Invest.* 48: 1761 (Sept.) 1969.)