them to this office with the necessary accompanying data. These are turned over by me directly to the Award Committees who make the choice. The Nominating Committees themselves have no power of choice, and indeed never in the remotest way indicate preference for one individual over another."

DISCUSSION

THE DECREASE IN VASCULARITY OF HUMAN HEARTS AND KIDNEYS BETWEEN THE THIRD AND SIXTH DECADES

FOR comparison with diseased organs the vascular beds of apparently normal hearts and kidneys were studied by perfusion. A striking finding was a decrease in flow per gram per minute in the organs of people aged 45 to 60 as compared with those 18 to 32. This amounted to 22 per cent. in the hearts, 32 per cent. in the kidneys, although there was no decrease in the average weights of the organs. Minimal changes were apparent in the arteries histologically, and the roentgenograms of the injected arterial beds appeared to be normal in the older group. Reports in the literature indicate a decline of 8 per cent. or less in basal metabolic rate, basal cardiac output and in the total number of renal glomeruli between the ages of 25 and 55. Individuals usually gain weight over this part of the life span, and the average weight of the kidneys actually was 5 per cent. greater in the older group, so that the real decrease in either cardiac work or basal metabolism probably was negligible.

Special precautions were used to remove and break up rigor of the vessels, and kerosene was used for the perfusions in order to avoid the edema of the vessel walls which sets in rapidly with saline perfusions. This method yields rates of flow, at 100 mm Hg, seven to nine times higher than those previously reported for the kidney, perfused with saline, although kerosene has twice the viscosity of saline. By correcting for the effects of differences in viscosity, in perfusion of organs, and for the observed mean blood pressures of the patients, one can derive a value for "possible blood flow" from the rate of perfusion. This averages 350 ccm per minute for the hearts of young adults, 2,080 ccm for their kidneys and 1,580 ccm for the kidneys and 280 for the hearts of the older group. A report on the blood flows through kidneys of living men, calculated from diotrast clearance, contains data on 13 men aged 45 to 56 and 14, aged 18 to 32. While the authors[1] make no reference to the effect of age, the average flow for the older group is 1,100 ccm per minute, 26 per cent. less than that of the younger men (1,400 ccm).

The biologist thinks of the vascular bed as almost as plastic and adaptable as the blood volume itself. New capillaries constantly form, and even in old age vessels grow or atrophy as the need for blood varies. The development of collateral about arteries blocked by injury, and the opening up of abundant vascular channels to supply tumors are familiar phenomena, even in the aged. It is therefore surprising to find a decrease in vascularity without a corresponding decrease in bulk of tissue or in basal metabolic need of the tissue. While the significance of these observations is not clear, they suggest the possibility that vascularity depends on the maximum stress to which the tissue is occasionally subjected rather than the basal or average metabolic needs, and that in most people advancing years bring fewer and less lofty peaks in metabolic activity. However, it is possible that the observed decrease in the vascular bed is due to loss of elasticity and to narrowing of vessels for which no compensation has been made. This would mean that by fifty-five the average man in good health has been robbed by age of over one fifth the original vascular bed in two of the vital organs.

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[1] W. Golding, H. Chasis, H. A. Ranges and H. W. Smith, *Jour. Clin. Invest.*, 19: 739, 1940.

VOLATILITY OF N^1-ACYLSULFANILAMIDES WITH STEAM

DURING an investigation of the pharmacology of N^1-dodecanoylsulfanilamide, difficulty was encountered in recovering the compound from the feces of dogs, by extraction with various solvents followed by evaporation. It was found that the compound was volatile with steam. Enough could be steam-distilled to permit identification by a determination of the melting point.

A number of compounds of this series were dissolved or suspended in water (0.5–1.0 g in 100–200 cc) and distilled in an all-glass apparatus, the vapors being passed through an Ace filter of porosity D (average pore diameter of 10–35 microns) to prevent entrainment. The compounds were then determined quantitatively in the distillates by the diazotization method of Bratton and Marshall.[1]

Sulfanilamide and its N^1-acetyl, butyryl (butanoyl), heptanoyl and octanoyl derivatives were not measurably volatile with steam. The approximate concentrations of other N^1-sulfanilamides (in mgm per 100 cc), obtained by slow and rapid distillations, respectively, were: decanoyl (0.0)(0.13), hendecanoyl (1.6)(7.7), dodecanoyl (0.55)(0.39). The distillates of the latter

[1] *Jour. Biol. Chem.*, 128: 537, 1939.