Jones, Birmingham-Southern College, continues for another year as editor of the *Journal;* and Winnie McGlamery, Alabama Geological Survey, as secretary, for two more years. R. M. Harper, Alabama Geological Survey, continues in office as academy statistician. The three new committees for promoting the interests of the academy appointed the previous year have the following officers: Committee on Promoting Membership and Activities, E. D. Emigh, *chairman,* Weather Bureau, Montgomery; Committee on Research, S. J. Lloyd, *chairman,* Dean School of Chemistry, University; Committee on Publication, E. B. Carmichael, *chairman,* Medical School, University, with the editor as an *ex-officio* member.

WINNIE MCGLAMERY,
Secretary

THE MARYLAND ACADEMY OF SCIENCES

THAT the advancement in the social control and the direction of man's affairs has not kept pace with the conquest of natural phenomena and the application of scientific knowledge to the improvement of the physical conditions of living is an old story.

In this regard many scientists and scientific institutions are becoming conscious that science has a responsibility that extends beyond the production of new knowledge. This responsibility involves the interpretation of science to the citizen not alone for the sake of science, but more to widen mental horizons of the citizen and to develop to some extent an acceptance and willingness to control judgments and actions by scientific criteria. The ideals of scientific inquiry such as tolerance toward the opinion of others, dependence upon verifiable facts, suspended judgment in the face of insufficient evidence, etc., are closely akin to the ideals of a democratic society.

It is rather usual for scientific societies and academies of science to honor individuals for their research contributions in the advancement of science. It is somewhat less usual, if not unique, to pay tribute to scientists for their contribution to the extension of human enlightenment in the field of general education of the lay public.

Such tribute was paid at the annual meeting of the Maryland Academy of Sciences in Baltimore when, for the first time, Professional Fellowships were awarded to the following persons: Louise Kelley, Ph.D., professor of chemistry, Goucher College; Carroll F. Merriam, engineer, Pennsylvania Water and Power Company; Reginald V. Truitt, Ph.D., professor of zoology, University of Maryland; Robert W. Wood, Ph.D., professor of experimental physics, The Johns Hopkins University.

The citation states that honor was conferred "in recognition of participation in a program dedicated to the extension of human enlightenment through general understanding of the facts and methods of science. This participation is evidence that the recipient accepts the responsibility of applying the values of science to widening the horizon of human understanding." Specifically, this award was extended to Mr. Merriam for his creation and preparation for the last three years of the Maryland Academy of Sciences' Graphic Time Table of the Heavens which has received extensive distribution through the Academy in Baltimore and The Franklin Institute in Philadelphia; and which was published this year as a feature of the astronomical magazine, *The Sky.* The other three scientists mentioned were honored because of their service weekly for twenty-nine weeks on the radio program, "Quiz the Scientist," sponsored by the Maryland Academy of Sciences This program answered some 150 of the 1,000 questions sent in by people of the radio public in all walks of life.

In addition to Drs. Kelley, Truitt, Wood and Page of the regular quiz board, each week a guest scientist from education or industry was invited to join the board in order to answer questions along the line of his specialty. Our list of guests is much too extensive to be repeated here, but it is very significant that leaders in science, medicine and industrial research were sufficiently convinced of the value of the program to contribute their time.

The final broadcast of "Quiz the Scientist" for this season from the Belvedere Hotel was made the central feature of the annual meeting of the Academy for 1941 and about 500 interested persons attended. "Quiz the Scientist" will be resumed in the fall.

J. WALLACE PAGE, JR.,
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SPECIAL ARTICLES

THE FALL IN BLOOD PRESSURE ASSOCIATED WITH INTRAVENOUS INJECTION OF TISSUE EXTRACTS[1]

INTEREST in the long-known but still inadequately understood vaso-depressor effects of tissue extracts has been augmented with the increasing use of such preparations. Many theories concerning this vaso-depressor phenomenon have been suggested and different methods of removing such activity from ex-

[1] This work was aided by a grant from the Commonwealth Fund.

tracts of organs are well known. That these extracts exert a profound effect upon the coagulation of the blood also is well known; this is manifested first by a short positive phase, when the clotting time is markedly and acutely decreased, followed by a prolonged negative phase when the coagulation time is lengthened greatly. The relation of these two phenomena, the vaso-depressor effects and the influence on the coagulation of the blood, is the subject of the following report.

The thromboplastic substance in the organ extract is responsible for the clotting of the blood and the associated positive and negative phases.[2] The positive phase expresses the increased facility for clotting, the negative phase results from agglutination of platelets, reduction of available fibrinogen and increase in circulating heparin.[3] Symptoms associated with the injection of a tissue extract relate themselves in part to the content of thromboplastic substance and its influence on blood coagulation. Crude kidney extract, rich in such thromboplastic substance, produces intravascular clotting, excitement, nystagmus, loss of sphincteric control and even loss of consciousness. This is true for the crude extract of the majority of organs. It should be recorded that intra-vascular clotting so produced is accompanied by an initial and marked drop in pressure of the blood in the anesthetized (Nembutal) dog.

Variations in the symptom complex, including the drop in blood pressure, are dependent upon several factors, including the initial clotting time of the animal's blood, the speed and the amount of the organ extract injected and its content in thromboplastic substance. Many conflicting observations concerning the presence of both vaso-depressor and pressor effects of kidney extracts may be correlated readily on the basis of these facts.

Further evidence of the importance of the thromboplastic substance in association with the vaso-depressor effect is readily available through the observation that a heparinized animal with a clotting time prolonged to 15 minutes or more reacts differently to a large and rapid injection of an organ extract rich in thromboplastic substance, be this crude kidney or testicle, with its much higher content of this material. The clinical symptoms associated with the injection in such a heparinized animal are lacking. A temporary and moderate drop in blood pressure due to non-specific vaso-depressor agents free in the extract and acting directly on the peripheral vessels, replaces the pronounced and protracted drop so characteristic in the non-heparinized animal. The heparinized blood following a temporary shortening of coagulation time again develops a pronounced negative phase.

When the blood is in the negative phase and its coagulation time may be prolonged to one hour or more, rapid re-injection with extract rich in thromboplastic substance does not result in a characteristic and marked drop in blood pressure. The coagulation time may be shortened and as long as it does not reach dangerous levels from the standpoint of clot formation, there are no symptoms and no shock-like drop in the blood pressure. The conclusion is evident that the drop in blood pressure is secondary to the change in the blood, certainly to the formation of clots and perhaps even to marked change in the physical chemical state of the blood.

It is demonstrable furthermore that the drop in blood pressure occurs through the intermediation of the central nervous system. After severing the spinal cord at the level of the first cervical segment, the injection of tissue extract rich in thromboplastic substance results as usual in intravascular clotting. However, the blood pressure curve is similar to that after preliminary heparinization or when the animal is injected in the negative coagulation phase. In spite of the formation of extensive intravascular clots the drop in blood pressure in the spinal animal is short and shallow and comparable to that caused by vaso-depressor substances that act directly on the peripheral vessels.

It should be stressed that a heparinized animal or one in the negative phase of blood coagulation after an injection of thromboplastic substance responds to a second injection of thromboplastic substance with a slight drop of blood pressure similar to that produced with 25–50 gamma of histamine. The histamine reaction and the short and shallow drop in blood pressure after injection of thromboplastic substance are manifest as well in the spinal animal. These observations are in accord with the known facts concerning the action of histamine on the peripheral vascular bed. It should be noted also that histamine is detectable in small amounts in all tissue extracts and together with other similarly acting, non-specific vaso-depressants, may account for the slight and very transient drop in blood pressure still evident after the shock-like drop elicited by its thromboplastic substance has been eliminated, whether by heparin, negative phase of clotting time or section of the cord.

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[2] M. C. Winternitz, E. Mylon and R. Katzenstein, *Yale Jour. Biol. and Med.*, 13: 585, 1941.
[3] Unpublished observations.