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FRANK P. SEBREE  
(1854-1940)

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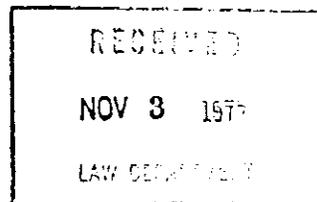
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(1894-1970)

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October 31, 1977

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Re: Suzanne B. Knoebel, M.D.

Gentlemen:

We have received a research proposal from Dr. Suzanne Knoebel, who is Professor of Medicine at the Indiana University School of Medicine and Director of Research at the Krannert Institute of Cardiology in Indianapolis. The proposed work is designed to establish the reliability of a non-invasive technique to measure changes in cardiac function if any during the inhalation of tobacco smoke. This technique might prove useful in responding to claims of Aronow and others that carbon monoxide in minute quantities can seriously affect the heart. A considerable amount of Aronow's data has been obtained exclusively from ill patients who have been catheterized. A non-invasive technique could be used for large scale studies of normal persons.

Dr. Knoebel has conducted a series of tests to determine the validity of the impedance cardiographic method as a non-invasive means of measuring stroke volume, cardiac output and heart rate. The results of these tests indicate that this method is reproducible under a variety of testing conditions and is accurate in comparison to other more complicated testing methods. She is also interested in determining whether the

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impedance method would be useful in measuring changes in myocardial function (indices of contractility).

Dr. Knoebel has proposed a feasibility study to test the viability of the impedance method in measuring myocardial function as well as stroke volume and cardiac output. In addition, she would stress research animals by inhalation of carbon monoxide and/or tobacco smoke to test for and quantitate changes in cardiac function.

The estimated budget for this project is \$23,825 and the work should be completed in one year.

Ed Jacob, who was initially sent this proposal and who has been in contact with Dr. Knoebel, believes the work is important. We, therefore, recommend approval of Dr. Knoebel's proposal as a CTR Special Project. Your early response would be greatly appreciated.

Sincerely,



Donald K. Hoel

DKH:sh

cc: DeBaun Bryant, Esq.  
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