

## THE HUMAN INTEGUMENT NORMAL AND ABNORMAL

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salaries for electronics personnel are set at the level of the local radio-TV repair man—usually less than a recent engineering graduate receives. If one wishes to attract a man with several years' experience who can bring valuable, up-to-date techniques into the hospital, one must offer a professional salary.

I feel that most engineers interested in a career as a specialist in medical instrumentation will be research-type men who will want to conduct their own research programs in addition to tackling measurement problems for physicians. Consequently, a second big question is raised: Is the engineer to be a professional staff or faculty member or just a technician? Few capable, experienced engineers will accept the latter position.

It is obvious that there are few engineers with the background to make medical judgments; however, a basic problem of instrumentation is that of finding how to obtain significant measurements. We already have too many gadgets produced by well-meaning engineers who don't know the medical problems, or by medical personnel who asked for a device but did not authorize an engineering study of the over-all measurement problem.

No real advances in medical instrumentation will be possible until both physicians and engineers consider each other specialists and are willing to work together on a professional level. It seems apparent that either of Holaday's solutions will require a re-education of both physicians and engineers.

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Sias is undoubtedly correct in his conclusion that both physicians and engineers will need training in the other's art before they are able to work together effectively.

Programs to indoctrinate engineers in biomedical areas are beginning to appear. It is true that the emphasis is toward research rather than applied instrumentation, and toward biophysics and bionics (the application of life processes to the solution of engineering problems) rather than medical engineering. Efforts in these areas should, nevertheless, generate mutual respect and, in the course of time, solutions to more immediately practical problems.

Those who have the greatest stake in medical instrumentation might give some thought to helping. Physicians

and hospital administrators could profitably make space for engineers to work in their laboratories. Instrument companies would be well advised to remove their development engineers from factory drafting boards, where the engineers continue to make conceptual mistakes in designing instruments for use in patient care, and accept opportunities to place these engineers in hospitals where the latter can witness the causes of earlier failures and participate in field trails of new attempts.

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### Selling Methods

Out of profound respect for *Science* and its readers, many of whom are also contributors and advisers to *Encyclopaedia Britannica*, I am compelled to comment on your editorial "The company they keep" [*Science* 134, 75 (1961)].

The editorial gives the strong—but erroneous—impression that a recent Federal Trade Commission order affecting *Encyclopaedia Britannica* deals with current selling methods. This is not true.

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HARRY E. HOUGHTON

*Encyclopaedia Britannica*,  
Chicago, Illinois

Here is the sequence of Federal Trade Commission documents on which my editorial on the *Encyclopaedia Britannica*, Inc., was based: (i) a "Complaint," filed 5 May 1958, serving notice to the Britannica company to appear at FTC hearings; (ii) an "Initial Decision," filed 30 August 1960, ordering the company to "cease and desist" from certain sales practices; and (iii) a "Final Order," filed 16 June 1961, ordering the company to "cease and desist" from certain sales practices, following the company's appeal of the initial decision.—J.T.