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## Finding an Expert Witness in the Sciences

Ralph K. Davies\*

**J**UST AS THE GENERAL PRACTITIONER has almost disappeared from medicine, to be replaced by specialists, so has the general chemist been replaced by colloidal chemists or instrumental analytical chemists. The same thing has happened in the other branches of science.

To the uninitiated a classification of diversified sciences upsets the notion that science is one field of knowledge. There are times when even a scientist in one area has difficulty in locating an expert in another area. How then does one find a scientific expert?

The Librarian already has made an attack on the classification of scientific endeavors which will aid the search. The Dewey decimal system distinguishes between Pure Science and Technology, assigning 500 numbers to the former and 600 to the latter.

The classifications of science and technology are given here, with a few of the subdivisions.

- |  |  |
|--|--|
| I. Pure Science                        | B. Sound                                     |
| A. Philosophy and Theory               | C. Modern Physics (nuclear)                  |
| B. Periodicals                         | V. Chemistry                                 |
| C. Organizations and Societies         | A. Physical and Theoretical                  |
| II. Mathematics                        | B. Analytical (Quantitative and Qualitative) |
| A. Arithmetic                          | C. Inorganic                                 |
| B. Algebra                             | D. Organic                                   |
| C. Geometries                          | VI. Crystallography                          |
| III. Astronomy and allied sciences     | VII. Mineralogy                              |
| A. Earth (astronomical geography)      | VIII. Earth Sciences                         |
| B. Celestial Navigation                | IX. Paleontology                             |
| C. Chronology                          | X. Anthropology & Biology                    |
| IV. Physics                            | A. Bio-chemistry                             |
| A. Mechanics of solids, liquids, gases | XI. Botanical Science                        |
|  | XII. Zoological Sciences                     |

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Technology has the following divisions:

- |                                   |  |
|-----------------------------------|--|
| I. Technology                     | B. Home planning                                 |
| A. Philosophy, Theory             | C. Household management (sanitation, child care) |
| B. Organizations and Societies    |  |
| II. Medical Sciences              | VI. Business                                     |
| III. Engineering                  | VII. Chemical Technology                         |
| A. Sanitary and municipal         | A. Industrial chemicals                          |
| IV. Agriculture                   | B. Explosives and fuels                          |
| A. Useful invertebrates           | C. Food Technology                               |
| B. Hunting and fishing industries | VIII. Metallurgy                                 |
| V. Home Economics                 | IX. Manufacturers                                |
| A. Food                           | X. Others  |
|                                   | XI. Building Construction                        |

A more detailed division and subdivision of the above areas may be found by (1) enlisting the aid of the Librarian and (2) utilizing the Table of Contents of abstracts of each category. The abstracts contain a useful summary of all articles published in one field for a specific time period, *e.g.*, "Chemical Abstracts." This specific abstract, organized under thirty-one special branches of chemistry, contains indexes of subject, author and formulae. Therefore, an inspection of it will quickly define and narrow the area under investigation.

Once the specific area is designated, the next problem is how to find someone proficient in it.

Professional scientists may be found in groups organized for three fundamental reasons: (1) specific interests, (2) professional interests, (3) educational or scholarly interests.

Specific interest groups are those in which the specialized talents of the scientist are used to control the quality of a product and to develop new ones, *i.e.*, industrial groups. For a question on paints, for example, seek the aid of the technical personnel of a paint company. Government agencies, set up for advancement and utilization of scientific knowledge, may be contacted at the national, state, and county levels, *e.g.*, the Public Health Service and the National Institute of Health. Also, some Research Institutes and Foundations are organized for the utilization of special scientific talents. Contacting any one of these groups is a matter either of using a local directory or writing to the Department of Health, Education, and Welfare, Washington, D. C.

Professional groups, organized for helping the specialist to keep abreast of developments in his and related fields, are known as Societies, examples of which are listed below:

- Alpha Chi Sigma  
 American Assoc. of Cost Engineers  
 American Ceramic Society  
 American Chemical Society  
 American Electro-Platers Society  
 American Foundrymen's Society  
 American Inst. of Architects  
 American Inst. of Aeronautics and Astronautics  
 American Inst. of Chemical Engineers  
 American Institute of Chemists  
 American Inst. of Industrial Engineers  
 American Inst. of Mining, Metallurgical & Petr. Engineers  
 American Inst. of Plant Engineers  
 American Material Handling Society  
 American Society of Civil Engineers  
 American Society of Heat., Refrig. & Air Cond. Engineers  
 American Society of Lubrication Engineers  
 American Society of Mech. Engineers  
 American Society for Metals  
 American Society for Quality Control  
 American Society of Safety Engineers  
 American Society for Testing Materials  
 American Society of Tool & Mfg. Engin.  
 American Welding Society  
 Armed Forces Chem. Association  
 Association for Computing Machinery  
 Association of Iron & Steel Engineers  
 Cleveland Engineering Society  
 Cleveland Physics Society  
 Cleveland Regional Council of Science Teachers  
 Cleveland Society of Medical Technologists  
 Cleveland Society of Professional Engineers  
 Cleveland Society for Paint Tech.  
 Construction Specifications Inst.  
 Elec. Maintenance Engineers Assn.  
 Electrochemical Society  
 Gas Appliance Engineers Society  
 Illuminating Engineering Society  
 Institute of Electrical Engineers  
 Instrument Society of America  
 Manufacturing Engineering Society  
 National Assoc. of Corrosion Engrs.  
 Northern Ohio Geological Society  
 Naval Reserve Research Company  
 Society for Advancement of Management  
 Society for Applied Spectroscopy  
 Society of American Military Engrs.  
 Society of Automotive Engineers  
 Society for Experimental Stress Analysis  
 Society of Packaging & Handling Engrs.  
 Society of Photographic Scientists & Engineers  
 Society of Plastic Engineers  
 Society of Women Engineers  
 Special Libraries Association  
 Standards Engineers Society  
 Tech. Association of Paper & Pulp

Most of these organizations publish journals listing the names of scientists as well as the addresses of various headquarters. The Science and Technology division of large libraries will be helpful as a source for such journals. A rather recent development in some industrial areas has been the growth of Technical Centers. They will represent fifty or more specialized fields, and maintain a directory of local scientists. It should be noted that these Centers will not support or help any commercial enterprises. They are purely scientific in nature.

The third group which may be used as a source of information is the nearest college or university. Frequently faculty members are quite willing to offer their services, or direct the investigator to a particular expert.

At this point our man in search of an expert has found (1) the specialized area of the science related to his problem, and (2) the groups or societies to which the scientist belongs. The next problem is to utilize the witness' expert knowledge.

This may be made easier by understanding of some of the common characteristics inherent in his training. The outstanding trait of such a person is that he is not afraid to say that he does not know the answer. Nor is he reluctant to admit that data may not be conclusive, for these people are dedicated to the search for truth, not the quick answer. Because the training of a scientist requires that he question the procedure, materials and conclusions of every project, it is easy for him to think that all evidence is inconclusive. This would appear to be a barrier to the search for truth. But the probable effects of this trait can be measured by his work and his professional reputation, *i.e.*, membership in professional organizations, number of publications in the field, recommendations from his colleagues, etc. An exceptionally good measure of ability is the amount of time he has devoted to the study of his specialty, and his own contributions to the field.

The nature of scientific work encourages individual performance while discouraging public demonstrations of ability. Therefore a scientist must be prevailed upon to appear in public chiefly on the ground that he is serving truth and justice. Although his work tends towards slow, methodical and deliberate thinking, making him unprepared for rapid exchanges of ideas, a brief preliminary discussion with him can prepare him sufficiently without inferring that he is being coached or fettered.