SELLING RESEARCH

(Continued from Page 3.)

has been a growing conviction, however, on the part of those responsible for our high-voltage apparatus, that greater amounts of power and better facilities for making such tests should be available. It may interest you to know that a group of our engineers worked for a year or more on the selling program necessary to finally bring about the construction of a million volt laboratory entirely adequate for the purpose. When the idea was sold it required the construction of an expensive building, the design and construction of transformers which would give 1,000,000 volts from one side to the ground, and the design and construction of all the necessary auxiliary apparatus for adequate control of the tests. This laboratory has now been available for some little time and we are in a position tc do research work in this extremely important field with an outfit capable of giving 1,000,000 volts to ground with 1000 kv-a. or more capacity, and backed by a power station which will give adequate power for short circuit testing, with necessary space for work on outdoor devices, etc. The initial cost of the laboratory was in the neighborhood of half a million dollars.

As another phase of the selling proposition let us consider the following: Let us assume that from theoretical considerations a brilliant research worker sees that he can utilize a new principle in the construction of a superior lightning arrestor. Does every one involved in the engineering, manufacture, marketing and use of the lightning arrestor enthuse over the new scheme when it is explained to them? The chances are one hundred to one that few, if any of them, do so. They may be sympathetic but they are not enthusiastic. They would like to see the scheme tried out, provided it does not involve them in any risk, but they may one and all be very backward in recommending the expenditure of money over the scheme. The research worker must then convince the authorities that investigation in the laboratory is worth while. He must convince the engineers that laboratory results correspond to theory and show them that a practical construction is possible. Practical designs must be made and field trials arranged for. Assuming these successful, manufacturing authorities must be shown that manufacture is feasible and profitable, and the sales force convinced that the new device is something the customer will buy and use. It is perhaps only a truism to say that a salesman can not sell goods in which he does not believe and it is certainly true of goods he does not know or understand. Finally the salesman must convince the customer that the new device is better than the old, and to do so he must go back to the principles underlying its operation which were those used by the research worker in effecting the first sales in this long series. It is, of course, not always necessary for the research worker to carry out all this sale of program, but I think you will recognize that a program such as that outlined is necessary in many cases.

As stated, one of the difficult sales to make by the research worker is that which involves factory processes. How often does one hear the complaint that those who are to use a new process or material spend their energies in showing why the new scheme will not work rather than trying to make it work. This attitude while still existing is, I think, far less prevalent, at least in our own organization, than formerly, due to a far more sympathetic attitude between the salesman and the customer; in other words, between the research worker and the factory man. There is a natural and perhaps not altogether unfounded suspicion on the parts of workers' executives and the workmen themselves that new ideas and new processes from the outside will get them into trouble, and a single failure on the part of those exploiting such matters will be remembered much longer than many successes.

It is always a question just how far the research laboratory should carry any particular research, and again here, the answer can be given only after consideration of the particular problem when a part of the research involves tests on a large scale, such as, for example, the application of a new principle of ventilation to a large turbo-generator: The fundamental research may be made in the laboratory, but final trial can be made only on a large and expensive machine. Where the research involves the development of a small new device, such as a radio receiving tube, the research may be completed even to the design and construction of the final device in the laboratory, but the final detailed plans will not be accepted by those who are to use them unless the research worker is entirely familiar with the commercial requirements and so shapes his work that it can be fitted in without change to the apparatus with which it is to be marketed. And even here there may be a great reluctance on the part of those who are to manufacture in quantity to accept the specific plans and designs worked out in the laboratory.

Examples almost without number could be cited to maintain my thesis, that selling research products is one of the very important phases of research work. But perhaps enough has been cited to illustrate the points in mind and to show that like research itself, no two selling propositions can be handled in identically the same way, and it is therefore necessary to consid er each scheme on its own merits. It may be pointed out, however, that in general, the best method of sale is for the research worker to take his customers into his confidence at as early a date as possible and keep them advised as to the progress of his results, and keep them in contact with his methods of work so that they will have confidence in the results which he produces. In other words, to sell research results to advantage, a sympathetic contact between the research worker, his work and his customer must be established and maintained until the scheme is fully commercialized.

SEVERAL INNOVATIONS FOR 1922 HANDBOOK

All Activities Requested to Submit Write-Ups Immediately

The contract for printing the 1922 handbook has been awarded to the Walker-Longfellow Co., and the book will go to press on June 15. Because of the short time now left before the book is printed, all activities are requested to hand in the write-ups that they wish to have inserted at the earliest possible moment.

There will be several innovations in this handbook. The cases will have pads of blank note-paper in the back, which will replace the memorandum sheets which have been used heretofore. It will be printed on thinner paper, thereby reducing the bulk of the book, and will contain 128 pages. This is eight pages less than last year, but the difference is caused by the replacement of the memorandum sheets by the note-pad. The constitution of the Institute Committee will be published in the book.

The cost of printing the 1922 handbook will be $1000. To date the value of the advertisements received is $892, an increase of a hundred dollars over the advertising received at this time last year. It will be delivered to the committee by the printers on September 1, at which time it will be mailed to every man who has registered at the Institute for his first year, or who is transferring from another college.

DAWSON '18—MILLIZEN

Mrs. Edson Millizen of 104 South Taylor Street, Chicago, recently announced the engagement of Miss Edna Varner Millizen, daughter of Mr. H. M. Millizen, to **Norman Dawson '18**, of Needham, Mass. Miss Millizen is a graduate of the University of Illinois. Mr. Dawson after graduation from Course XI took up advanced work at the Institute. He is at present in the employ of the Sanitary District of Chicago as a sanitary engineer. The wedding will take place in the early fall.

Dartmouth Has New Summer Course

Dartmouth College has endorsed and will allow college credit for a combination sight-seeing and study tour of France this summer. The plans embrace one month of academic work at the College of the Seine, and one month of travel under the guidance of a member of the Dartmouth Faculty.

New Requirements at Bowdoin

Beginning with the class of 1926, all men will be required to take, in addition to their majors and minors and the present required courses, one year in each of the following departments; history and philosophy; government and economics; science, including higher mathematics, chemistry, physics and biology; and two years in the field of literature. This step has been taken in order to be sure that every man is acquainted, to some extent, with each group of learning. Although practically all the men at Bowdoin fulfill these re quirements without such a rule, twenty to thirty per cent do go through college without becoming acquainted with the thought of these groups.

Seniors at the University of Michigan, who have passed a one year course in journalism with an average of B will receive a certificate introducing them to newspaper publishers.

Bobbed Hair Popular With Japs

"Bobbed hair is fast becoming popular among Japanese girls, along with the fox-trot and modern dancing," says S. Hiara, a Japanese student at New York University, "American and English girl tourists are responsible for the spread of the new style which has met with favor wherever it appears." Mr. Hiara, who keeps in close touch with affairs at home, believes the new movement, although partly due to modern dancing, is more largely an attempt at self-expression of the younger generation.

INSTRUCTING STAFF CHANGES ANNOUNCED

(Continued from Page 1.)

To the FACULTY:

The following instructors have been added to the Faculty:
H. E. Lobdell (Assistant Dean)
M. R. Copithorne
M. P. Horwood
W. A. Liddell
H. W. Underwood, Jr.

To the grade of INSTRUCTOR:

E. G. Bangratz to Instructor in Electrical Engineering
E. H. Ellms to Instructor in Chemistry
Miss Louisa L. Eyre to Instructor in Physics
Whitworth Ferguson to Instructor in Electrical Engineering
James Harrop to Instructor in Chemical Engineering
Ernest H. Huntress to Instructor in Chemistry
Joseph K. Pearson to Instructor in Mechanical Engineering
Miss Dorothy W. Weeks to Instructor in Physics
Louis F. Woodruff to Instructor in Electrical Engineering
I. N. Zavarine to Instructor in Mechanical Engineering

New Appointments

W. Spencer Hutchinson, Professor of Mining in charge of the Option in Mining
A. C. Hardy, Assistant Professor of Optics and Photography
Thomas Adams, Lecturer in Architecture
O. W. Haussermann, Lecturer in Business Law
J. S. Pray, Lecturer in Architecture
Eliot Putnam, Lecturer in Architecture
C. Howard Walker, Lecturer in Philosophy of Architecture and History of Medieval Architecture
L. L. Evans, Assistant Director School of Chemical Engineering Practice
R. H. Gerke, Instructor in Chemistry
R. E. Hodgdon, Instructor in Physics
E. C. Kirkland, Instructor in English and History
A. R. Knipp, Instructor in Physics
J. S. Larsen, Instructor in Architecture
J. G. Lee, Instructor in Aeronautics
C. F. Lyman, Instructor in English and History
L. F. Small, Instructor in Chemistry
S. J. Bates, Research Associate in Physical Chemistry
Norman Carter, Laboratory Assistant in Physical Chemistry
Miss Helen Gill, Research Assistant in Chemistry.

Resignations

Professor H. O. Hofman retires June 30, 1922
Dean A. E. Burton retired March 31, 1922
H. P. Talbot (as Head of the Department of Chemistry)
E. B. Wilson (as Head of the Department of Physics)
M. D. Hersey, Associate Professor of Properties of Matter
J. B. Baker, Instructor in Accounting and Business Management
L. W. Conant, Instructor in Business Management and Accounting
T. S. Derr, Instructor in Mechanical Engineering
G. M. Denkinger, Instructor in Physics
H. B. Gardner, Instructor in Electrical Engineering
A. Goldsmith, Instructor in Electrical Engineering
M. E. Hurst, Instructor in Geology
W. H. Ingram, Instructor in Mathematics and Physics
C. N. Jacobs, Instructor in Chemistry
P. H. Kelsey, Instructor in Modern Languages
R. B. Lindsay, Instructor in Physics
R. D. McIntire, Instructor in Chemistry
C. J. Muller, Instructor in Geology
C. R. Park, Instructor in Chemistry
C. W. Pipkin, Instructor in English and History
E. G. Plowman, Instructor in Economics
C. C. Stewart, Instructor in Chemistry
J. J. Sexton, Instructor in Modern Languages
J. A. Thaler, Instructor in Electrical Engineering
Roberts Tapley, Instructor in English and History
P. B. Taylor, Instructor in Physics
D. K. Worcester, Instructor in Physics
P. C. Benedict, Assistant in Mining
A. L. M. Dingee, Assistant in Chemistry
Thomas H. Frost, Assistant in Chemical Engineering
V. G. Gahnkin, Assistant in Mechanical Engineering
David H. Harris, Assistant in Physics
William A. Hoops, Assistant in Chemistry
W. S. Johnson, Assistant in Chemistry
G. W. Kenrick, Assistant in Physics
George B. Lamb, Assistant in Physics
Herbert N. Leisk, Assistant in Drawing
R. E. Manley, Assistant in Chemical Engineering
William H. Miller, Assistant in Aeronautics
John T. Nichols, Assistant in Physics
Spencer W. Prentiss, Assistant in Chemistry
George H Rhodes, Assistant in Chemistry
A. F. Spiehler, Assistant in Chemical Engineering
Harold V. Atwell, Research Associate in Applied Chemistry
Ernest C. Crocker, Research Associate in Applied Chemistry
W. R. Hainsworth, Research Associate in Chemistry
Verner V. Kendall, Research Associate in Applied Chemistry