10–13. Conference on Embryology and Experimental Morphology, Cambridge, England. (D. R. Newth, Dept. of Zoology, University College London, Gower St., London W.C. 1.)

11–13. American Assoc. of Pathologists and Bacteriologists, annual, Washington D.C. (E. A. Gall, Cincinnati General Hospital, Cincinnati 29, Ohio.)

11–13. Southwestern Inst. of Radio Engineers Conf. and Electronics Show, 9th annual, with 2nd National Simulation Conf., Houston, Tex. (F. C. Smith, Jr., Box 13058, Houston 19.)

12–13. Colorado–Wyoming Acad. of Science, annual, Fort Collins, Colo. (O. W. Olsen, Colorado A.&M. College, Fort Collins.)

12–13. Eastern Psychological Assoc., annual, New York, N.Y. (G. G. Lane, Dept. of Psychology, Univ. of Delaware, Newark.)

12–13. New Orleans Acad. of Sciences, New Orleans, La. (A. Welden, Dept. of Biology, Newcomb College, New Orleans.)

12–14. American Assoc. for Cancer Research, Chicago, Ill. (H. J. Creech, Inst. for Cancer Research, Fox Chase, Philadelphia 11, Pa.)

12–14. American Assoc. of Physical Anthropologists, annual, Ann Arbor, Mich. (J. H. Spuhler, Dept. of Human Genetics, Univ. of Michigan Medical School, Ann Arbor.)

12–14. American Soc. of Human Genetics, annual, Ann Arbor, Mich. (E. J. Gardner, Dept. of Zoology, Utah State College, Logan.)

12–14. National Speleological Soc., Natural Bridge, Va. (Mrs. M. McKenzie, 1407 Hickory Ct., Broyhill Park, Falls Church, Va.)

13. Society for the Scientific Study of Religion, spring, New York, N.Y. (W. C. Clark, Hartford School of Religious Education, Hartford 5, Conn.)

13. South Carolina Academy of Science, annual, Columbia (Miss M. Hess, Box 114, Winthrop College, Rock Hill, S.C.)

14–16. Telemetering Symposium, natl., Philadelphia, Pa. (A. S. Westneat, Jr., Applied Science Corp., Box 44, Princeton, N.J.)

14–20. American Physiological Soc., Chicago, Ill. (M. O. Lee, APS, 9650 Wisconsin Ave., NW, Washington 14.)

15–17. American Soc. of Lubrication Engineers, annual, Detroit, Mich. (W. P. Youngclaus, Jr., ASLE, 84 E. Randolph St., Chicago 1, Ill.)

15–17. Molecular Mechanism of Rate Processes in Solids, Faraday Soc. discussion, Amsterdam, Netherlands. (Faraday Soc., 6 Gray's Inn Sq., London, W.C.1.)

15–17. Systems for Information Retrieval, symp., Cleveland, Ohio. (J. H. Shera, School of Library Science, Western Reserve Univ., Cleveland 6.)

15–18. American Personnel and Guidance Assoc. and constituent divisions: American College Personnel Assoc., American School Counselor Assoc., National Assoc. of Guidance Supervisors and Counselor Trainers, National Vocational Guidance Assoc., Student Personnel Assoc. for Teacher Education; Detroit, Mich. (A. A. Hitchcock, APGA, 1534 O St., NW, Washington 5.)

15–18. Host-Specificity and Parallel Evolution among Parasitic Insects and Worms, symp., Neuchatel, Switzerland. (J. G. Baer, C.P. 2, Neuchatel 7.)

15–18. International Inst. of Differing Civilizations, 30th session, Lisbon, Portugal. (11, Blvd. de Waterloo, Brussels, Belgium.)

15–19. American Assoc. of Immunologists, annual, Chicago, Ill. (F. S. Cheever, Graduate School of Public Health, Univ. of Pittsburgh, Pittsburgh 13, Pa.)

15–19. American Soc. for Experimental Pathology, annual, Chicago, Ill. (C. C. Erickson, Inst. of Pathology, Univ. of Tennessee, 858 Madison Ave., Memphis.)

15–19. American Soc. for Pharmacology and Experimental Therapeutics, Chicago, Ill. (H. Hodge, Dept. of Pharmacology, Univ. of Rochester, Rochester, N.Y.)

15–19. Federation of American Societies for Experimental Biology, annual, Chicago, Ill. (M. O. Lee, FASEB, 9650 Wisconsin Ave., Washington 14.)

15–19. High Energy Nuclear Physics Conf., 7th annual, Rochester, N.Y. (R., Marshak, Univ. of Rochester, Rochester.)

15–20. American Inst. of Nutrition, annual, Chicago, Ill. (R. W. Engel, Dept. of Biochemistry and Nutrition, Virginia Polytechnic Inst., Blacksburg 13, Va.)

16–18. Nuclear Tests for Nondestructive Testing Applications, symp., Chicago, Ill. (American Soc. for Testing Materials, 1916 Race St., Philadelphia 3, Pa.)

17–19. American Assoc. of Anatomists, annual, Baltimore, Md. (L. B. Flexner, School of Medicine, Univ. of Pennsylvania, Philadelphia 4.)

18–20. Assoc. of Southeastern Biologists, annual, Athens, Ga. (J. C. Dickinson, Jr., Univ. of Florida, Gainesville.)

18–20. Ohio Acad. of Science, annual, Bowling Green. (R. W. Dexter, Dept. of Biology, Kent State Univ., Kent, Ohio.)

18–20. Southern Soc. for Philosophy and Psychology, annual, Gatlinburg, Tenn. (W. B. Webb, U.S. Navy School of Aviation Medicine, Pensacola, Fla.)

18–20. Venereal Disease Postgrad. Conf., 26th, Memphis, Tenn. (H. Packer, Dept. of Preventive Medicine, Univ. of Tennessee College of Medicine, Memphis 3.)

18–21. American Soc. of Ichthyologists and Herpetologists, 37th annual, New Orleans, La. (F. R. Cagle, Dept. of Zoology, Tulane Univ., New Orleans 18.)

19–20. Arkansas Acad. of Science, annual, Fayetteville. (L. F. Bailey, University of Arkansas, Fayetteville.)

19–20. Seismological Soc. of America, annual, Los Angeles, Calif. (P. Byerly, Bacon Hall, Univ. of California, Berkeley 4.)

20–26. Industrial Health Conf., 12th natl., St. Louis, Mo. (E. C. Holmblad, Industrial Medical Assoc., 28 E. Jackson Blvd., Chicago 4, Ill.)

22–24. National Acad. of Sciences, annual, Washington, D.C. (H. L. Dryden, NAS, 2101 Constitution Ave., NW, Washington 25.)

(See issue of 15 February for comprehensive list)

LETTERS

The editors take no responsibility for the content of the letters published in this section. Anonymous letters will not be considered. Letters intended for publication should be typewritten double-spaced and submitted in duplicate. A letter writer should indicate clearly whether or not his letter is submitted for publication. For additional information, see Science **124**, *249 (1956) and* **125**, *16 (4 Jan. 1957).*

Diffraction Patterns

A recent news note in *Science* [**125**, 109 (18 Jan. 1957)] reported a new method of investigating diffraction patterns as a function of time. The method had been described in an article by R. Thun [*Umschau* **56**, 660 (1 Nov. 1956); **56**, 688 (15 Nov. 1956)]. It may be of interest that just recently a still better method serving a similar purpose has been disclosed.

H. Nielsen, in *Photographie und Wissenschaft* **5**, 3 (1956), shows x-ray diffraction patterns taken continuously from tantalite crystals when subjected to heat. Different photographs are printed separately, using colored light and color-sensitive photographic paper, in a manner similar to Land's color-translation process [*Science* **109**, 371 (15 Apr. 1949)]. On the final x-ray diffraction photographs, it can easily be seen that changes occurring during the photographic exposure yield different colors Unlike the results with Boettcher and Thun's method, these x-ray diffraction patterns retain a three-dimensional shape.

J. B. MEYER-ARENDT
Ohio State University, Columbus

Biology of Schizophrenia

M. K. Horwitt [Science **124**, 429 (1956)] apparently finds little fact and much artifact in many current reports concerning differences between schizophrenic and nonschizophrenic individuals. Certainly uncontrolled studies that neglect the variables cited shed little light on the problem.

However, some of the remedies suggested for converting artifact to fact appear to be of doubtful significance. This arises mainly from a common misinterpretation or delusion shared by many psychiatrists which may have induced in the author a bit of *folie à deux*. He states: "Much of this conflict is due to a lack of understanding by some workers that the term *schizophrenia* is a general classification with many subdivisions, which are often only slightly related, and that the manner in which the patient chooses to

...the authors

Most of the books written by Laboratories authors are published by D. Van Nostrand Company. Other publishers include John Wiley & Sons and McGraw-Hill. Subjects include speech and hearing, mathematics, transmission and switching circuits, networks and wave filters, quality control, transducers, servomechanisms, quartz crystals, capacitors, visible speech, earth conduction, radar, electron beams, microwaves, waveguides, antennas, traveling-wave tubes, semiconductors, ferromagnetism.

Harold S. Black, B.S. in E.E., Worcester Polytechnic Inst., author of "Modulation Theory."

John R. Pierce, Ph.D., California Inst. of Tech., author of "Traveling-Wave Tubes."

Richard M. Bozorth, Ph.D., California Inst. of Tech., author of "Ferromagnetism."

W. Thornton Read, M.S., Brown University, author of "Dislocations in Crystals."

Hendrik W. Bode, Ph.D., Columbia University, author of "Network Analysis and Feedback Amplifier Design."

Walter A. Shewhart, Ph.D., University of California, author of "Economic Control of Quality of Manufactured Product."

manifest his difficulties may not be a function of his physiological status." Certainly in psychiatry there is a wide divergence of opinion whether schizophrenia is a single entity or whether it is a disease characterized by the uniqueness of the individual or a reaction formation. To the psychiatrist, each patient is unique. But this has little bearing on the problem whether a single biochemical factor is present.

Horwitt has recognized this by his statement that it "may not" be a function of his physiological status—conversely it "may." In medicine, it is not at all unusual to find that diseases with fairly simple biochemical defects express themselves in terms of personality in unique ways. I am convinced that, if the factors of hyperthyroidism were unknown today, we would argue about it in the same way. During the latter part of the last century, there were many passionate arguments regarding the causes of paresis.

I am disturbed at the expression "the patient chooses to manifest." This implies again the entire concept of reaction formation with subconscious selection of the type of reaction. Apparently, Horwitt uses psychiatric hypothesis as fact when it may in fact be artifact [P. Bailey, *Am. J. Psychiat.* **113**, 387 (1956)].

The first recommendation that estimation of tension and anxiety be made would be useful if this were possible. I have searched in vain for a test that will reliably measure this variable. One can often decide whether a person is anxious or not. To quantify this will be a major achievement. To ask one to measure a variable without telling him which measure to use is the counsel of futility. The second recommendation, that no research be done until patients have balanced at least 3 months, removes pretty effectively from biochemistry the vast majority of acute schizophrenics, leaving a residue of chronic hospitalized patients. Perhaps this is desirable, but one should know clearly the result of one's recommendation.

Finally, regarding urine collections, overnight samples from patients and controls may lead to erroneous conclusions. I fear that 24-hour samples will do the same. One ought to combine the best of both methods and make measurements on urine collected at given intervals over the 24-hour period.

Finally, in contrast to Horwitt's, it is my belief that psychiatrists use too freely the concept of cause and effect and that biochemists usually are not preoccupied with these matters. This falls within the realm of philosophy. Writing about Galileo, Newman states: "As we read his writings we instinctively feel at home: we know that we have reached the method of physical science which is still in use. Galileo's primary interest was to discover 'how' rather than 'why' things work" [J. R. Newman, *The World of Mathematics* (Simon and Schuster, New York, 1956), vol. 2, p. 726]. Science deals with the rational explanation of observable phenomena. In the area of schizophrenia, it is of no utility to discover what may be the cause—there are undoubtedly many "causes." We are concerned with the factors that transform a set of causes into a set of clinical symptoms and signs. In medicine, we do not treat causes—we treat those variables most easily modified, and these may be physiological, psychological, electric, or combinations of these.

The paper by Horwitt will make many biochemists aware of controllable factors which they should have learned in college. But the biochemist must not be seduced by analytic dogma that depends solely on the word of the master. In psychiatry today we need more of the cold breath of reason.

A. HOFFER
University Hospital, Saskatoon, Saskatchewan

I am pleased by A. Hoffer's reaction to my article "Fact and artifact in the biology of schizophrenia"; after 20 years of close association with psychiatrists and their patients, one learns to recognize defensive reactions.

As for the particulars with which Hoffer chose to disagree, I am sure that they are less important than the generalization that too many papers are published in this field which do not meet the accepted standards of the scientific method. It is time that some biologists (including psychiatrists attempting to be biochemists and biochemists attempting to be psychiatrists) stop beclouding the literature with reports of poorly controlled experiments that often catalyze extensive and expensive reinvestigations, because the factors of stress, nutritional state, relative physical activity, and of liver function are not controlled. Some day it will be possible to differentiate with greater accuracy the stresses of schizophrenia from those of other diseases by means of biochemistry. This day will come sooner if we improve our methods of controlling the variables under discussion.

M. K. HORWITT
Elgin State Hospital, Elgin, Illinois

No Visa Difficulties

In confirmation of Walter M. Rudolph's letter to Thomas J. Killian, quoted in the editorial "Scotching a damaging rumor" [*Science* **125**, 7 (4 Jan. 1957)], I should like to report that at least six (Western) European scientists who had made one or more visits to Rus-