

theory of the fission process fails to represent correctly the results in so far as the splitting does not occur into two equal fragments but rather into fragments in which one is somewhat lighter and one is somewhat heavier. We have therefore to distinguish between a light and a heavy group of fragments. Presumably a fragment belonging to the light group and a fragment belonging to the heavy group are emitted in the same act. The problem arises now to determine what percentage of the fissions of uranium gives rise to the formation of a certain radioactive product or rather of a certain radioactive chain. Since it is expected that in every fission a chain belonging to the heavier group and a chain belonging to the lighter group are formed we would expect a total percentage of 100 per cent. for each of the two groups, except for the improbable direct formation of a stable fission fragment. Since very little quantitative information is available as to the relative intensities of the various fission products, Anderson, Grosse and I undertook last spring a systematic investigation of this problem. Our purpose was to make a preliminary survey, and the results obtained so far cover most of the known

radio-elements of the heavy group. The method used consisted in comparing the intensities of various radioactive products obtained by chemical separations from uranium samples irradiated under standard conditions and for a known length of time with the Columbia cyclotron. A known fraction of each radio-element was separated and brought near a counter; the activity was deduced from the number of counts, corrected in order to take into account the absorption by the counter walls and the various geometrical factors. We have thus been able to assign the percentage of fissions of most of the chains of reactions belonging to the heavy group. They vary from a minimum of about .1 per cent. to a maximum somewhat over 10 per cent. The percentages found so far for the heavy group do not add to a sum of 100 per cent. but rather to about one half of that. Apart from experimental errors, which can be quite considerable in measurements of this kind, this fact is probably due to the incomplete chemical investigation of this group. They indicate that probably some more radioactive elements of the heavy group, possibly belonging to the rare earths, have yet to be discovered and analyzed.

## MENTAL HEALTH<sup>1</sup>

By Dr. ADOLF MEYER

THE JOHNS HOPKINS HOSPITAL

THE symposium on Mental Health before the American Association for the Advancement of Science, December, 1938, is a document of considerable interest and importance to a wide range of students, workers and organizers.

It is brought before us by the original organizer of the program, Walter L. Treadway, assistant surgeon-general in the Department of Public Health, assisted by Nolan D. C. Lewis, director of the New York Psychiatric Institute—connected with the Columbia University Medical Center; Abraham Myerson, the head of a research group in the Boston State Hospital; a statistician in this domain in the person of Joseph Zubin, of the New York Psychiatric Institute; Harry Stack Sullivan, for years active in bringing anthropology and the study of personality together under a lead of psychiatry; Clarence M. Hincks, then the head of both the United States and the Canadian National Committees for Mental Hygiene, and Franklin G. Ebaugh, who has done so much for the organization of psychiatric education, in charge of the pertinent division of the National Committee, and head of the

psychiatric department of the Colorado University Medical School and Hospital.

The chairman, Dr. Treadway, had devoted several months almost exclusively to preparation for this contribution to a great public health problem in order to make the undertaking a model of its kind. The result presents mental health—as a major public health problem, as a major issue for American scientists, as a vital concern of society—in a symposium as carrier of a broad orientation properly belonging before the forum of all the sciences.

The symposium is presented in eight main chapters, but actually in six special sessions of Section N of the congress, the last chapter, under the title of "Human Needs and Social Resources," being presented to the whole congress as the final address by a leading psychiatrist, Dr. C. Macfie Campbell, of Harvard.

The first chapter, to judge by its title, was no doubt intended, and was certainly wanted, as a preliminary orientation and perspective as regards facts and terms. Evidently, through an act of courtesy and conformity with the organization of the association, the year's chairman of the Section of Medical Sciences was invited to offer this orientation, and he offered a brief introduction, in the form of "remarks . . . not entirely my own, because the phraseology as well as the ideas

<sup>1</sup> Publication of the American Association for the Advancement of Science, No. 9. Edited by Forest Ray Moulton and Paul O. Komora. 470 pp. Lancaster, Pa.: The Science Press. 1939. \$3.00.

have resulted from discussion with a number of people." He does not tell us who these co-responsible people are. Instead of offering a much-needed practical as well as theoretical orientation which would have had to bring together the "natural" and all the other (humanistic and formal linguistic-semantic and historical) sciences which belong in the American Association to be addressed, and which also deal with the topic of man and his health, the "remarks on the aims and purpose of the Symposium" hardly touch the content of the book, but merely reiterate the still widely prevailing old complaints of "isolation of psychiatry," which should cease being "an island lying off the mainland of medicine," and become part of the medicine he knows. In the place of a mere "inundation of words," still (?) obscured by such traditional abstractions as "mind and body," and the inveterate tendency to think that to be scientific one has to reduce specific sets of facts into "something else" before they are first made clear enough among themselves, psychiatry should yield "dry ground of observation, hypothesis and verifiable experiment" so as to connect the traditionally "isolated facts of mental function and mental disease with the more continental accumulations of physics, chemistry, physiology and pathology"—apparently questioning any necessary recognition of a specific status and role and methods of the mentally integrated data. ". . . the general tenets of science and the common rigors of scientific thought must be asked of the psychiatrist as well as of other clinicians." The advice that the topic should no longer be allowed to be treated "in an illogical or arbitrary manner" might have been reciprocal and properly addressed to both "the mainland" and "the island," when the introducer presented the praiseworthy injunction that we should from time to time re-examine the realities "with freshness, humility and understanding"—only to do glaringly otherwise. He does not seem to realize that in his simile of "mainland" and "island" it may be his "mainland of medicine" in general that is at least as responsible for the *mutual* "isolation" as the too often neglected "island" itself. If he does not see this, he gives a most deplorable example of blind-spot. Instead of bringing the "natural" and the "humanistic" sciences together into one common formulation of life and dynamics and motivation, with room for the settings also for the mentally integrated and differentiated parts or factors in the events, he speaks in terms of "psychological concomitants" and psychosomatics, harking back to parallelism. And while he urges the acceptance of the "patient that is," he leaves the real task in the hands of the "internist," experienced in nervous and mental disease and willing to consult also the psychiatrist. For his missionary spirit of exhortation he marks as his target the "timid incompetent physician" and "the bold incompetents" in the asylums. The best

he can do or cares to do with his exhortation is to select the internist instead of the "psychiatrist" as the basic and sole director of the field—leaving one wondering whether he confuses the psychiatrist, who certainly has to be a well-trained physician, with a psychoanalyst, who might indeed keep aloof but to-day is increasingly less inclined to do so. The reader looks in vain for an orientation of the present-day status of a science of man-function and of mental health or ill health with a real understanding of psychiatry and of psychology. What he finds quoted as samples is a caricature, and the warning that the terms are often "misused" to mean a "working knowledge of human nature," fits together with the cryptic characterization in the reference to the "hundreds of thousands of patients whose physical preservation only emphasizes their mental deterioration." With a fair and constructive discussion of the facts and the situation, a great gain in factual and logical orientation might have come to both "mainland" and "island," through a sound and much-needed working together of all that is pertinent and also free of the obsession that understanding should be a reduction of everything to something different from what it is, and more like one's own beloved continent.

Instead of a friendly inquiring visit to the territories treated as an island, or perhaps rather as an archipelago—seeking out the places of work closest to what his ideal reached for—he gives us a nightmare and a certain lecture of largely non-pertinent reiterations of unfortunately still wide-spread complaints about mere inundations of words, impressions of private dialects and neologisms in a one sidedly dismal picture:

"Let us admit that state hospitals for mental diseases have harbored in service many a timid incompetent physician, but familiarity with bold incompetents elsewhere in the practice of medicine makes modesty rather more attractive than otherwise. To be just, however, we should recall that the field of psychiatry has also harbored physicians big enough to live their lives in frustration of their hope to find some way of easing the increasing load of mental disability or disease. It is such men who merit the interest, understanding, help and cooperation of the rest of the medical profession."

This is all very painful, and obviously largely quoted at a distance without any evidence of familiarity. Like so many specialists full of the universal dominance and ultimate explanatory power of the more and more about less and less, and missing their stand-bys of "gas exchange or water balance" in the attempts to relate such phenomena observed in the insane to known facts in other fields of medicine rather than other "personal terminologies," he wants to build out exclusively "from the mainland of medicine." Wherein does the speaker see not only the importance but the sense and nature

of psychology and psychiatry? He wants to bet on the salvation by the internist. He wants him to be "a highly trained internist, with interest and experience (where obtained?) in nervous and mental disease, not only permitted but urged, to elicit aid from as many sciences as appropriate: for example, physiology, chemistry, psychology, and psychiatry." Again I ask: Where obtained or found and cultivated, and how? The introducer displays a vicious circle of distrust derived from unfamiliarity and lack of curiosity as to what is actually being done—a sorry exhibition of the neighbors considering themselves the mainland. All he finally sees is that "it may be the great contribution of psychiatry in the future to describe and define the 'art' of medicine in more precise and useful terms by insisting upon the comprehension of the physician as one of the factors in the prevention and cure of disease." And what is the "comprehension"? What is to him the field and work of psychiatry and psychology if he does not allow it to aim for "a better working knowledge of human nature"? One might wish that one might at least and at last get closer to that; we might not have to run into the cryptic pessimism of this picture of the present "hospital beds filled to overflowing with hundreds of thousands of patients whose physical preservation only emphasizes their mental deterioration" and into "it is high time that the psychiatric problems such persons present be attacked in a fundamental manner with all our faculties for observation and facilities for investigation." He fails to say to what extent and how his internist will include and integrate the "mentally integrated facts" in his "internal medicine."

In the absence of a positive and real orientation on factual responsibilities and activities in the special field expected from the temporary chairman of Section N (Medical Sciences), the planned symposium begins abruptly with Chapter II, as "Orientation and Methods in Psychiatric Research" (pp. 9-66): Epidemiology, facilities for research in state hospitals, the structural and physico-chemical alterations of the central nervous system, convulsive disorders as a field of research, the field of clinical research on abnormal behavior in infancy, childhood delinquency, biometric methodology, the clinician's summary, the psychologist's view of fundamental and applied research, and the need of integrating the research forces of the country to secure support—each of these topics is treated by a competent special worker, and the group reviewed by prepared discussions and discussions from the floor.

The second session or section (Chapter III) deals with "Sources of Mental Diseases and Their Amelioration and Prevention" (pp. 71-145), but is limited to genetics, syphilis, alcohol, vitamins, fatigue, birth control, child caring, immigration—with noticeable omis-

sion of the "mentally integrated" or psychogenic dynamics and processes.

There follows "The Economic Aspects of Mental Health" (pp. 149-234): magnitude of the problem, economic loss, cost, family care, social security, the bearing of the emotional factors and economic disability and an especially replete review which contains much new material. The fourth session, on "Physical and Cultural Environment in Relation to the Conservation of Mental Health," deals with psychiatric and cultural pitfalls as seen by the anthropologist, and some comparative ethnological data on culture and personality, community differences, selective internal migration, segregated communities, integrative politics and communication of ideas (pp. 237-287)—actually contributions largely from non-medical collaborators, bringing in problems and view-points showing clearly the need of reciprocity between the specialized collateral disciplines of the science of man rather than what the worker in practical psychiatry comes to focus on. The next chapter, again from a very different angle, *viz.*, that of "Mental Health Administration," presents centralized state organization, state supervision of the feeble-minded, qualification of personnel, the practices dealing with admission to hospitals, psychiatric expert testimony, *bona-fide* residence and fiscal responsibility, meeting the needs of the patient during the first year of residence in a mental hospital, role of the mental hospital and provisions in a community, local health departments and statistics, the sociological aspect of mental health administration and the function of government (pp. 291-370). There follows as the last section an extensive detailed consideration of "Professional and Technical Education (of personnel) in Relation to Mental Health" (the specialists, undergraduate training, administrators, psychologists and specialists, nursing and the public health nurse, occupational therapy and social workers, relation to internal medicine, role of the clergy and choosing the medical student (437-454). Each of these items or topics is presented by a leading worker. The conclusion of the whole symposium consists, as stated above, in a public address to the whole congress, giving a comprehensive picture—from the life of a worker who has to face a very wide range of psychiatric problems and teaching and investigation—of "Human Needs and Social Resources," by C. Macfie Campbell (pp. 454-470).

It is an immense program of discussions of activity and organization, but relatively little about the specific and particular relation of the sciences among themselves and to the patient and his problems, and to the scientists and the public and the kind of facts to be met. One might have asked: To what extent are the American Association for the Advancement of Science as a group and the special medical section so oriented

as to meet man as a person for a basis of discussion of mental health? What is the status of science to meet this task? What do we mean by "mental" and how is it "worked"? What does the psychiatrically intelligent worker and public see in the field and in the concepts and methods? If it were not for the fact that there is much unnecessary but disturbing misconception concerning the problem, the "search" and the "research" might be much more effectively presented and pursued.

An attempt to characterize, and even more an attempt to summarize, the amount of material brought together in the forty-nine basic contributions and twenty-eight prepared and free discussions goes beyond the possibilities of a review. It is not so much any amazing amount of information that makes up the value of this symposium, nor largely the startling vision or glimpse into the monetary estimate of nearly a billion dollars loss in the United States of America per year through disorder of mental health, but it is rather the solid, descriptive and dependable factual material of the health problem that counts. A number of the basic papers, such as those on alcohol, child behavior and care, the summary of methods, the genetic discussion, and especially the economic studies, are quite outstanding; so are the discussions on administration and training of personnel and the relation among the specialties—never before brought together in such interrelation. The actual question of how one might get next to the crises and needs of the *patient* and the avenues of understanding and treatment and prevention—although perhaps not so clearly or specifically "public health and care issues," as public health is defined to-day—should nevertheless be vital also for any administration of the actual campaigns for progress. The division on "environment" is widening the horizon far beyond "public health" in the limited technical sense of the word; as such it proves probably more helpful to the studies in ethnology and population and sociological considerations than to those of the *strictly* medical sphere of modification of the costly results of the accumulation of invalids, and the studies of the elements and factors that contribute to the instability and unsettling of the equilibrium between the senseless and intemperate utilization of ever new implements and inventions, and on the other hand the lag of corresponding brain and character and intelligence development or even the simpler and more accessible possibility of making the public and the non-specialistic professions (including the rank and file of physicians) "psychiatrically and humanly more intelligent" and informed and the schools and universities more adequately attentive to the features of culture that should make for mental health and man's nature and self-regulation, and capacity to develop sound leadership.

The actual symposium appears to turn much more

on the management of the various functions around psychiatry than on the specific material and the concepts and methods of mental health—good, bad and indifferent—but at least open to a more positive sense and direction. What will give us the sense and respect for the cultivation of psychiatric intelligence and a cultivation and sharing and application of psychiatric experience?

The first group of presentations offered is not an orientation on common ground, but starts at once with research, perhaps too much with the glamor of desired progress rather than a substantial presentation of the actual work and the types of familiarity and preparedness required to meet the actual problems with a balanced division of labor and a well-grounded reaching out in the field of mental health. One comes to feel that "research" is too much discussed as a matter of mobilization of the time and money of special types of workers and privilege free of the responsibilities of the work with the necessities rather than as a basic organization of the actual search and work and spending, and a selection of workers from the ranks and consultants familiar with special needs and settings that will give validity to and respect for the real work and material, made fit also for the elaboration and promotion of opportunities for the solution of problems. This is too often expected from the hands of persons unfamiliar with the burdens of direct responsibility and routine, but largely longing for special privilege in the use of time and apparatus and investigative machinery and techniques oftener borrowed than invested by and from direct experience. Without a group of presentations of the actually prevailing "too much or too little" of divisions of labor and fields of operation, one gets an impression of "approaches from the outside" in the different chapters and an under-rating of the basic tasks and services actually practiced and the conditions to be met. Besides adventure we have to look to the cultivation of, and the rising from, the ranks and a correspondingly intelligent drawing in of the special talents and cultivation of tasks and centers and ramifications that bring up the centralization as well as decentralization, and intimacy as well as formal management and orientation of the work. Do theory and practice recruit themselves out of the actual work or out of more or less artificial implantations with a sound field also for hunches? We want basic training but not an uncritical spirit of introduction by one in no special way familiar with the problem and showing in himself the deliberate "continental" isolation of many leaders of medicine charging psychiatry with isolation. In the form taken by the chapter on the "Sources of Mental Disease and Their Amelioration and Prevention," one misses the core from which one might expect the warmth of contact and the bearing of all the qualities of the factors.

This holds also very largely for the fourth section in the quantification problem of statistics occupied largely with the demonstration of the immensity and distribution of the problem with too great a distance between the statistician and the worker furnishing his experience in fragmented data. The "physical" and "cultural" environment in relation to the conservation of mental health proves itself to have been treated almost exclusively by non-medical specialists—except in the discussion—with interesting perspectives but rather lacking in that immediacy of contact with the workers and the issues of the actual field of work dealing with our own particular civilization and organization. The existing desire for international and interracial and ethnological statistics does not go with commensurate similarity or consistency of workmanship. The mental health administration comes closer to the actual issues but is rather too separately towering over the workers; and the professional and technical education in relation to mental health deals more with new and often better divisions of labor than the conditions for better actual centers and better distribution of work and the personnel.

The upshot of the "symposium" might well be judged in the light of its contribution to "person-function" or ergasia, and the corresponding energizing and orientation on the part of the workers, producers and consumers, and the general picture of the living and working together of the concerns of this domain of "mental health." The best way to honor and use the volume of "Mental Health" will be that of frequent reference to the groups of papers pertaining to emergencies of practice and research; and the utilization also of the literature references. It would, however, mean a great deal to have an *index* of topics and workers and places worked in, perhaps in connection with a follow-up every three or five years giving the accessible summaries and perspectives and evaluations to many of the special statements.

When we make the public and the scientists mind-conscious, we also have to furnish better knowledge of where "mind-work" is found in specific forms in operation, open to constructive inquiry and participation—no doubt including a psychology and psychiatry based on a solid and comprehensive science of man as person and groups of persons, as well as of parts, in the successive phases of development and the origins and goals in settings in contact with life. Next would come the question of ways and means, and practical management and the organization of the workers and the work, and a knowledge of where to go to find the information and help actually at work in demonstrative samples of performance.

What strikes me in so many of the discussions is the strange or foreign remoteness of the considerations

from where and in whom and wherein the actual problems take place. Where and when do the things happen that call for attention? Where does one go to meet the facts as they are? Because of the lack of an introduction written by a competent psychiatrist instead of a rehearser of anachronistic tradition, one has a feeling as if most of the matters discussed were mainly concerns of the administrator, the investigator and experimenter and as if the patient were largely "the victim" and a kind of host of the trouble, and not a *participant* and center of the difficulty itself and the live entity to be guided as well as helped and searched and researched and sampled and regulated—expected finally to regulate itself. This is where the concepts of what is called psychology and person-function show their fullest colors and specific modes of dynamics on which the amelioration and prevention in the end turn and depend and where the ergasiologist has to prove himself as not merely a good internist and sociologist, but really an expert in biotechnics and in biography in the making and in action. This is where the introducer would probably point his finger at special "words," forgetting that they are essentially signs pointing to one's having to turn to the facts and, even further, to what they stand for. It is perfectly true that we must expect of the psychiatrist sound medical training along all the specifically medicinal lines, but with just as much of a sound grasp on the "person and setting," situational and personal, psychological, physiological and sociological and biographic. For a great deal of "person-function" (*i.e.*, psychology as psychobiology, or, more modestly and objectively, "ergasiology," mentally integrated functioning, occupied with the working rather than with the substantialized soul or with mere physiology) the experience and use of sound critical common-sense counts for more than either the chemical or genetic or physiological detail or detachable exogenic factors such as alcohol and spirochaetes, or metabolism.

One has a right to say that any one not able to include in the physician's work and responsibility what one can learn from novels and life records should not be a physician,<sup>2</sup> but also that any one devoid of physiological and anatomical "at-homeness" should not pose as one with a well-rounded general education, or as a safe sample of general leadership.

The evolution of a disorder may have its soil in heredity and its immediate difficulties in the "daily" diet or regular régime in care of self, and the functioning and involvements of personality life. That is what the ergasiologist has to learn to command as his special concern: the description and singling out

<sup>2</sup> See the conclusions from the "Symposium on Materials and Methods of Human Nature and Culture," *Am. Jour. Psychiatry*, 92: 355, 1935.

of specific findings and their correction and operation. But of all of it, relatively little is said and sought. We have our own specific concepts for the aggregate of events, and "psychology" includes the science of the way in which the functioning also deals with itself, as our mentation with its wealth of sign-function that works not only as a tool, but rises from our dialects or intimate and local means of interchange to our more widely comprehensive and intelligible conceptions in which we can transact our business and finally evolve the very science and critical thought and planning on which our conduct of life feeds and prospers. This part is essentially that of the representation of the sharable preparedness to muster what as individuals and groups we include in our nature in behalf of the regulations of "history in statu nascendi," the shaping of human fate.

To do justice to the remarkable assemblage of the free expression of sixty-eight contributors would mean a huge task and deserve something more like a book than a review, but even better, a succession of reviews or symposia on the symposium.

The problem is of such vital and far-reaching importance that the American Association for the Ad-

vancement of Science would render a real service by appointing for a time a representative committee that would give a follow-up report from time to time aiming at digestion and the further development of appetite and orientation in the field: a committee on man's health as person and group—with a promotion of a psychology and a psychiatry and their foundations and bearings worth cultivating and consulting in behalf of the health of man and his civilization, not only as techniques and means of formal management but also its intrinsic logic and meaning. Out of that may arise a more widely permeating understanding of the interrelations in behalf of man of the sciences which the association brings together in its annual meetings. It would cultivate opportunities for the collateral sciences to help in the orientation among the actual workers rather than reiterations of the old prejudices used for false and ineffective self-excuse and perpetuation of reciprocal isolation.

The symposium deserves wide-spread attention and our gratitude to the organizers and contributors, and perhaps fully as much to those who challenge critical thought, as to those who give us the already available perspectives and the positive lifts and techniques.

## OBITUARY

### HANS ZINSSER

**Bacteriologist, teacher, philosopher, author, poet, soldier**

**November 17, 1878—September 4, 1940**

He who is plentifully provided for from within needs but little from without.—*Goethe*.

HANS ZINSSER, Charles Wilder professor of bacteriology and immunology at the Harvard Medical School, died of lymphatic leukemia on September 4, 1940, at the Memorial Hospital for the Treatment of Cancer and Allied Diseases in New York City, where he had been a patient for the previous two weeks. During the summer he continued at work in his laboratories at the Harvard Medical School up to August 16, about the time of his departure for the hospital in New York.

By his death, the medical profession has lost one of its most brilliant and versatile personalities. It is difficult in a brief obituary notice fully to analyze and estimate his accomplishments, as he achieved success in many fields. He was internationally recognized as one of the most distinguished bacteriologists and scientific investigators of his age; he was acknowledged as an authority on medical education; he was an inspiring and dynamic teacher; he was generally conceded a leader in preventive medicine and in the direction of medical research. As an author, his great literary ability and originality have been universally recognized, and his last work, his autobiography, was selected as the "Book of the Month" for July.

Dr. Zinsser was born in New York on November 17, 1878, the son of August and Marie Theresia (Schmidt) Zinsser. In June, 1905, he married Ruby Handforth Kunz of New York. He is survived by his widow, a son and a daughter. The son, Hans H. Zinsser, is a second-year student at the Harvard Medical School and was married in June of this year to Anne Drinker, daughter of Dean Cecil Kent Drinker, of the Harvard School of Public Health. His daughter is the wife of Vernon Munroe, Jr., of New York City.

Dr. Zinsser was graduated from Columbia University with the degree of A.B. in 1899. He received the degree of M.A. from this university the same year that he received his M.D. from the College of Physicians and Surgeons (Columbia). After an internship at Roosevelt Hospital, N. Y. (1903–1905), he held bacteriological positions in New York at the Roosevelt Hospital (1905–1906); assistant pathologist, St. Luke's Hospital (1909–1910); and Columbia University (1905–1906, 1908–1910). In 1910 he went to California to become professor of bacteriology at Leland Stanford University, returning to Columbia in 1913 as professor of bacteriology and immunology, until 1923. He became professor of bacteriology and immunology at Harvard Medical School, Boston, in 1923, and Charles Wilder professor of bacteriology and immunology in 1935.

He received the honorary degree of doctor of science from Columbia University in 1929, Western Reserve