shortening of the time of training for a specific skill and a hitherto unattainable degree of precision.

It enables us to record, preserve and interpret music in all forms of historical interest.

The musical anthropologist now faces unlimited facilities for accumulating a wealth of historical material in music. The phonograph recordings are now good, and the acoustic recordings with moving pictures now have sufficient fidelity for scientific purposes. Portable moving picture machines are now available in all parts of the world and the producers and news-gathering interests are glad to cooperate with scientists. The Hollywood producers have under consideration a plan for sending musical and linguistic anthropologists into primitive fields a year or two in advance of their proposed filming. Such an expert could thus make a preliminary scientific survey of the prevailing types of music and the performers which would be available for the filming industry and for purely scientific purposes. The industries will be repaid by the spirit of cooperation from the natives which can be cultivated. The field camera will be at the free disposal of the musical anthropologist for the recording of such scientific and artistic features as he may have found significant for the science of music. The sound tracks may be accompanied by significant moving pictures of dance and other forms of dramatic action which are essential to vitalize the music. In short, the problem of how to record primitive music is solved. The problem now before us is to find workers who can analyze and utilize that material for the history, science and art of music. The phonographic and film recording of the best music of to-day is of such high quality that any artist will be glad to be immortalized by the faithful preservation of his music through recordings. Here, again, we already have unlimited source material for scientific analysis, a gold mine for musicologists. One who was at work on the collection and preservation of music three or four decades ago is in a position to appreciate the fabulous advantages the collector of to-day has over the collector of twenty years ago.

It furnishes the groundwork for a future science and philosophy of musical esthetics.

Musical esthetics of the past has been largely a speculative armchair product. With the coming in of facilities for measurement of musical values which should constitute the groundwork of esthetics, we enter upon a radically new era in this field. Armchair theories can now be put to experiment to be verified and discarded, modified or simplified. This applies particularly to all aspects of the nature and significance of scales and every other aspect of intervals, to all studies of the evolution of musical feeling, to all aspects of the evolution of musical values, to the fundamental concepts of the power of music and to theories of goals to be attained. The study of such total problems can now be fractionated in the scientific attitude of dealing with one specific element at a time; such as some particular phase of harmony, balance, symmetry, resolution or musical license. For this purpose, a radical revision of terminology for the scientific and philosophical discussion of musical esthetics must be introduced.

The scientific procedure in a new and unlimited field of this kind is a slow and arduous process and in any generation, mere beginnings can be made. But, as in the introduction of scientific methods in the classification of plants and animals and the interpretation of their complete life histories, once the scientific attitude is made possible the purely speculative will gradually become less and less acceptable as a final solution. More progress toward a scientific approach to musical esthetics has been made in the last twenty years than in all preceding history.

Coda. There is, of course, a very large body of scientific principles and means of progress developed by musicians themselves in creative experimentation and thinking within the art. That is taken for granted. The features here discussed are drawn from contributions in current science which have a bearing on music. For the purpose of concrete illustrations, it is limited to features with which the author has had first-hand acquaintance; many other scientific approaches deserve mention. The aim has been to present a point of view and a comparatively new frame of reference for scientific thinking in music.

What is here indicated for music applies in principle to all the other fine arts, especially those of language, drama, poetry and dance. The more we rise into a consideration of the common elements of all artistic creative power and the assimilation of art in daily life and philosophical thought, the more we become aware of a common ground of interest, appreciation and cultivation of the scientific spirit in all arts, both pure and applied.

THE TASKS BEFORE US[1]

By Dr. WORTLEY F. RUDD

MEDICAL COLLEGE OF VIRGINIA, RICHMOND; PRESIDENT OF THE SOUTHERN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

MAY I say in the beginning that this is going to be no after-dinner speech, except that we have just eaten a good meal. No stories will be told, and no attempt at humor. A deadly seriousness of purpose that is

[1] Remarks of the president at the Atlanta meeting of the Southern Association of Science and Industry.

eating at my heart and at yours as, across the years, you and I have appraised the South as it is and then inventoried the region and made up from these findings a blue print of what the South can and should be, prompts me to speak briefly but very earnestly at this time.

That others are deeply concerned with these same general problems about the South at the present time is indicated by the fact that for the Memphis meeting of the American Chemical Society, to be held later this month, there has been set up a symposium on "Chemistry in the South." I have the assignment "Chemistry in Virginia" in connection with that symposium. Naturally, these two assignments in the same field have urged me to a more than casual study of these problems.

At the inauguration of Dr. Oliver C. Carmichael as chancellor of Vanderbilt University in 1938, an excellent symposium on "Graduate and Research Programs in the South" had a conspicuous place in the exercises. In a paper by Dr. Charles W. Pipkin, dean of the Graduate School of Louisiana State University, presented on that occasion, we find an excellent study of this subject so vital to our region. A single phrase from Dr. Pipkin's paper may be quoted here as setting forth a sort of ideal toward which our hopes and dreams for the South may be directed as we work together. He says, "An empire awaits a philosophy generous enough to shape a great destiny." Although taken out of its context, the phrase epitomizes so admirably both the tasks before us and the possibilities of their ultimate accomplishment that I have felt impelled to quote it here.

Were I permitted to appear before some all-powerful tribunal and given the privilege to choose the things I most desire to have, or given the ability to accomplish the things I most desire to accomplish, certainly high up in the choices I would make would come the ability to arouse the people of our region—able but smug people, thousands upon thousands of them in these southern states—to a full realization of the potentialities—the almost unlimited potentialities—that lie all around us here in this favored region.

May I also be permitted to say that were another gentleman, who is with us to-night, given the same privilege of choice, I am constrained to believe he would give this choice first place also, and, if granted his request, his enthusiasm would be so overwhelming he would forget to make any further requests of any kind. You recognize, of course, that I refer to our secretary, Dr. George D. Palmer. Seldom have I ever known such boundless enthusiasm for a cause, and such tireless energy as Dr. Palmer puts into the task of getting started among us here in the South some workable methods for studying Southern problems intelligently, and then doing something about these same problems.

Despite an all-out war effort such as none of us dreamed could ever come to this country, and which is making it impractical for many scientific societies to hold their 1942 meetings at all, our organization is celebrating its first birthday here in the very heart of the South as guests of the Georgia Academy of Science. The movement which resulted in the formation of the Southern Association for the Advancement of Science was born of a long existing and profound conviction among many leading southerners that the time was ripe for a representative cross section of the people of the region—scientists, industrialists, business men and women—to pool their knowledge and interests and talents in a common effort to do certain things for the South which must be done by some group before it, as a region, can even reasonably well take the place in the nation which, by location, climate, natural resources and native intelligence, it is richly entitled to take.

Naturally, I am aware that this sounds somewhat fantastic, or at least too idealistic. Maybe it is; time alone will determine this. However, that the movement gained sufficient momentum to bring to bear upon the problems involved at least the wishful thinking of such a representative group as we now have, is much more—I am inclined to think—than a promising gesture.

An unfortunate habit that I early developed may be illustrated as follows: In bird hunting, all too frequently, I could not resist the temptation to shoot at the covey; therefore, few bird suppers. My hunting companion always picked his bird deliberately—one or two on the rise—and usually he got them. Although I killed few birds, I did gradually learn the fallacy of this method of hunting. As I have grown older, to steer clear of "covey shooting" has become almost an obsession with me. As you know, what the Southern Association for the Advancement of Science is trying to do is to pick from the covey of problems that sorely afflict the South one or two at a time and, over the years, to study those selected with as fine persistency and efficiency, and open-mindedness, and intelligence, as there is in our region.

It would seem hardly necessary for your president to present at this time to the group already in a general way committed to the above policy, the objectives of this organization. However, as a matter of record, and also with the hope that we make every possible effort to follow this general method of attack—or some better one through the years—it may not be unwise to name a few problems any one of which probably merits all the effort we can put into it even for a decade or two.

As president of the Virginia Academy of Science a year ago, I was confronted with a similar dilemma. What could the academy do for our state? Did a group of some 800 or 900 men and women, the very cream of scientifically minded folk in Virginia including a fair number from industry and business, have any right to meet from year to year with no objective other than the reading of papers on past accomplishments and the transaction of business necessary for the well-being of the organization? Having no answer of my own, I addressed this inquiry to every academy member. Also, leading scientists throughout the country were asked the same question. The replies—and an unusually large number came in—indicated that overwhelmingly men and women believed that the academy should undertake problems of state-wide interest in which many individuals, representing all groups in the academy, might have a part. Their suggestions of practical projects opened our eyes to possibilities of such a program, if properly prosecuted. Under the guidance of what we called a long range planning committee, although less than a year has passed, one project of major interest has already been completely set up and fine progress is being made on it. The General Assembly of Virginia has just appropriated $5,000 for the publication of the first report of this work. This has been given in some detail simply to indicate how far-reaching projects may become if undertaken as a sort of composite of ideas and talents and enthusiasm and efficient leadership, intelligently directed toward specific, practical objectives.

In the light of this experience in academy work we have, during the past year, sent similar requests to a great many leaders throughout the South. Many practical suggestions about what we should do have come in as a result of this inquiry. To name just a few of these: Closer cooperation between science and industry; new and better uses for our raw materials; conservation of our forest resources; after cotton, what? The post-war South; vocational education for the South; more and better fundamental research; cooperative research; control of industry in the South by the South; decreasing the handicaps of southern industry; and literally dozens of others equally as important and applicable to our problems. The panels that are being held at this meeting illustrate well how already some of these projects are being studied.

To avoid wasting our energy in our attempts to decide upon which individual problem to place the emphasis in the beginning, may I suggest that perhaps one of the first and most important tasks of our organization is authorization of the appointment by the incoming president and secretary, acting jointly, of a committee of probably one member from each southern state whose chief duty it shall be to lay out for the years ahead a few distinctive problems which lie well within our field of endeavor. The tenure of such committee members should be reasonably long, as much time will be required for it to set up in workable form projects of major importance to the region, and then see that they are followed through. In the hands of a carefully selected group of this kind, the possibilities of our organization for effective and intelligent service for the South are limited only by the willingness of our men and women to work everlastingly at tasks that challenge the best that there is in them.

What we most need, it seems to me, is a great resurgence of social, economic, political, cultural, industrial and educational leadership in our region. Across the years, perhaps the lusty infant born at Mobile a year ago will really grow up to occupy a commanding position in bringing about fundamental changes in our way of thinking and working and living, to the end that southern science, and southern business and the southern press and southern capital and southern brains and southern raw materials and southern culture and southern research may all be so effectively meshed that our sons and daughters may stay in the South and be adequately trained for all the demands that the development of our natural resources may make upon them. That the capital required to finance a growing industry shall be southern capital; that our research—pure, industrial, economic and social—shall be done at home, and much more largely by our own southern boys and girls.

For a mere pedagogue to present such a roseate picture of what the South may become under wise and patient and persistent planning and leadership is characteristic, perhaps, of our lack of practical experience in outside affairs. Frankly, however, I would have little faith in the ability of this organization to make any considerable contribution toward the sensible working out of the things we must do, were it not that before we organized at all it was wholeheartedly agreed among us that business men, industrialists and capitalists from all over the South should have a large share in planning and directing its policies. How much in earnest such men are in these plans is evidenced by the fact that in Alabama—the birthplace of the Southern Association for the Advancement of Science—there has already been set up by the State Chamber of Commerce, as a sort of outgrowth of this organization, the Alabama Research Institute. The importance of this as a prophecy of what may and should come in other states to give these practical-minded men opportunity to have their research problems of all kinds finally worked out at home, can hardly be estimated.

It has been said, and correctly we believe, that the

number of patents awarded in any state or region is at least one measure of the progress that is being made. Such a standard of measurement applied to the South now will indicate clearly how desperately we need research—pure research, which underlies all other types; industrial research, economic research, and relatively how little of these is being done among us.

Another evidence of the business man's interest is seen in the program that has been set up for this meeting. Please note the number of influential and successful non-pedagogues that are having a share in it. Personally, my own interest in the project would be greatly curtailed if this were not the case.

It is my profound hope that more and more of both groups—business men and professional men—will look to the Southern Association for the Advancement of Science to help in their problems, and more and more will the organization be able to help in their solution.

Finally, it is my considered judgment that if we do no "covey shooting" at southern problems, but rather pick them singly and do a good job in getting our composite aim right down the barrel at them, our outlook for service to the region is genuinely heartening.

Quoting Dr. Pipkin again: "An empire awaits the philosophy generous enough to shape a great destiny."

OBITUARY

HERBERT FOX

HERBERT FOX, son of Samuel Tucker Fox and Hannah Freas Fox, was born in Atlantic City on June 3, 1880. He received his A.B. from Central High School, Philadelphia, in 1897, his M.D. from the University of Pennsylvania in 1901. He served his interneship in the Philadelphia General Hospital and in the Presbyterian Hospital, Philadelphia. In 1903–04 he was a member of the Philadelphia Typhoid Commission; in 1904, pathologist to the Rush Hospital, Philadelphia; in 1905–06, second assistant in pathology under Heinrich Albrecht in Vienna.

In 1906 he became pathologist in comparative pathology for the Philadelphia Zoological Society, a position he held until his death. He at once took a leading part in the scientific studies emanating from the collection in their Zoological Gardens. He studied particularly the incidence and control of tuberculosis among the primates and in his last decade the pathology of arteriosclerosis in mammals and birds and of chronic arthritis. His large monograph on "Disease in Captive Wild Mammals and Birds" (1923) is based on the record of 6,000 autopsies performed under his supervision. It is a thorough and exhaustive treatise widely used as a reference work. Under his direction the Zoological Society's Penrose Research Laboratory, the pioneer institution of its kind, rose to its position of leadership. He became professor of comparative pathology, University of Pennsylvania, in 1927.

From 1906 to 1911 he was officer in charge of the laboratory of the Pennsylvania Department of Health.

In 1911 he succeeded Alfred Stengel as director of the William Pepper Laboratory of Clinical Medicine, University of Pennsylvania, which position also he held until his death. Here he guided the development of the laboratory facilities in the university's major teaching hospital through the period of rapid advance of the clinical laboratory. His own contributions were especially in relation to diseases of the lymphatic tissues.

He was co-author with Alfred Stengel of four editions of their "Textbook of Pathology."

In 1915 he was a member of the commission managing the outbreak of poliomyelitis at Erie, Pa. From 1915 to 1926 he was pathologist to the Children's Hospital, Philadelphia. In the World War he served from 1917 to 1919 as major, in charge of the cantonment laboratory at Camp Zachary Taylor, Louisville, Ky.

He was a fellow of the College of Physicians of Philadelphia and of the American Association for the Advancement of Science and a member of the American Philosophical Society, the Association of Pathologists and Bacteriologists, the American Society of Clinical Pathologists, the American Medical Association and the Academy of Natural Sciences of Philadelphia, as well as of several honorary fraternities.

He died on February 27, 1942, after several months of illness.

In 1904 he married Louise Carr Gaskell, who died in 1933. Of their three children, two survive, Margaret Fox Hentz and Samuel Tucker Fox, 3rd. In 1938 he married Mary Harlan Rhoads, who survives him.

In his work he was meticulous to secure perfection in the smallest details. An omnivorous reader, he was a connoisseur of many of the arts and a welcome companion at any gathering. His happiest hours were probably those in which he lightly dropped an almost invisible fly on the ripples of the streams in Pennsylvania or Nova Scotia.

J. HAROLD AUSTIN

RECENT DEATHS AND MEMORIALS

THE death at the age of sixty years is announced of Charles Francis Harding, professor of electrical engineering and director of the electrical laboratory at Purdue University.