

modern mind after the pattern of an age unlearned in the interpretation of nature."

The gradual diffusion in the American religious public of more enlightened views about the Bible and the course of history may be trusted, therefore, to make the present attitude a passing one. The very concentration of attention upon the subject must have this effect. By staking their whole position on the verbal inspiration and inerrancy of the Biblical canon, the Fundamentalists will very soon be found to have engineered their own defeat. . . .

It is no longer a struggle between men of science and theologians as such, for the foremost theological teachers of the day are as penetrated by the scientific and historic spirit as any man of science in the ordinary sense of that term. It is in reality a struggle in common against the miserably defective culture of great masses of our population (p. 222).

The Mississippian, March 12, 1926, contains a letter written by Chancellor Alfred Hume, of the University of Mississippi, to Governor Whitfield urging him to veto the anti-evolution bill. The letter is a dignified and able discussion of this anti-science legislation from the point of view of a man who is manifestly, in the highest sense, qualified to testify to the truth which is fundamental to science whether dealing with physical, ethical or religious questions. Following is a brief extract from the letter:

In case the measure to which I refer become a law, quite a number of our faculty will be confronted with a cruel ethical dilemma. Either they will have to evade, disregard, or openly violate the law, or, else, they will have to be guilty of intellectual dishonesty. To any one at all worthy of his position on our faculty both of these courses are unthinkable and intolerable.

It is not a promising outlook which is foreshadowed when the lawmakers of a state turn aside from the leadership of those who know to follow the will-o'-the-wisp of ignorance.

These 105 Mississippi lawgivers might profitably reflect on what a Georgia farmer remarked to a physician acquaintance of mine here in Augusta a few days ago: "Doe, what this country's a sufferin from is ignorance."

I shall close this communication with a bit of personal experience.

During the past four years my home has been in this beautiful southern city. Among my habits, commendable and otherwise, is that of going to church once on Sunday. Such has continued to be my practice here in Augusta. In all the sermons which I have heard since coming here there has been allusion to the present anti-science agitation in but one of them. That was before the Dayton trial took place. The clergyman characterized the then recently en-

acted anti-evolution legislation in Tennessee as the product of "an infantile view of science and a senile view of theology."

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THE MASTER'S DEGREE AND SCIENTIFIC RESEARCH

READERS of SCIENCE may be interested in observing the trend of the encouragement given research in so far as such is a requisite for the granting of the master's degree. The data given in this summary were obtained for the most part from questionnaires sent to all the state universities and other leading institutions and has been supplemented through the study of the catalogues of certain colleges.

Sixty-three institutions in all were considered. Of these, thirty definitely indicate that research is required for the master's thesis in science; two others insist upon it in certain departments only, while nine have no preference between research and other types of material submitted in theses. The remaining ones, while of course accepting research, do not feel it is necessary, and so do not insist upon it. As might be expected, the most extensive association of research with the degree is found in the universities, where twenty-nine institutions require it, as against seven which do not. The theses may or may not involve research at ten of the remaining universities, while eight give no information whatsoever as to the kind of work required in the thesis. Of the ten colleges considered, four favor research for the degree under certain conditions, five do not, while one does not state its attitude.

From the educational standpoint there lie at the bases of these preferences interestingly different conceptions of the significance of the master's degree. Twenty institutions regard it as specific preparation (in the sense of mastering the technique of investigation, etc.) for the Ph.D. degree, five others stating that they regard it as a "little doctorate." On the other hand four as expressly state that they do not regard it in the latter sense, while as many feel in addition that the required intellectual ability to be expressed in the thesis need only be that necessary for the interpretation of facts already known. In this sense, then, "original work" is differentiated from research. More or less allied with the feeling that research need not be allied with the master's degree are the following conceptions of it. Eight consider it a degree for teachers (presumably for secondary schools or smaller colleges); seven merely as an advancement of undergraduate scholarship, or as accomplishing a year of graduate study; four believe it to be the degree for those who can not

devote a greater period of time to the work, while three conservatives prefer to view it as the balm for the doctorate candidate who is to be discouraged. Some readers may feel that the master's degree at present, as well as in past years, is largely meaningless. To the writer, however, the intergrading viewpoints expressed above as to the functions and requirements of the degree are in part at least responses to the prevailing atmosphere of the institutions granting them, and the largely local demands they feel they must meet. This is especially true of the colleges which have the troublesome care of graduate assistants.

As regards the time required in residence for completion of the requirements of the degree, sixty-one institutions indicate one year as the minimum period of study, while but two require two years. Thirty-one believe that the period of study should be prolonged beyond the normal time and generally to a period of two years in the case of assistants in instruction. Three limit the amount of service to be engaged in (three to fifteen hours), if the candidate desires to complete his work in one year, while but eighteen state that special consideration will be given the exceptional student if he endeavors, despite assistant's duties, to complete the work in the minimum period.

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SAND FLOTATION

THE article on "Sand Flotation in Nature" given in SCIENCE for April 16, 1926, reminds me of certain observations I made on this phenomenon about twenty-five years ago. Surface tension is evidently the explanation of this flotation, but what especially interested me was the question how the sand, not necessarily in very fine grains, came to be deposited on the surface of the water so gently as to remain there. I found by observation that, in some cases at least, this occurs as follows: A gentle ripple, perhaps the last movement of a broken wave, runs up a beach, covering sand that has been dried and heated by the sun. As the water recedes, the very edge of it has a rolling motion, rolling toward the sea, and in this revolution it picks up some of the sand particles, probably by creating a partial vacuum over them for a moment, and then floats them off.

I have successfully imitated nature in this maneuver, using well-dried and perhaps slightly greasy sand in a domestic baking-pan. It is my impression that I published an account of all this in the *Youth's Companion*, probably about 1901.

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REQUEST FOR PUBLICATIONS IN THE FIELD OF ATMOSPHERIC ELECTRICITY

WE are planning to write an extensive treatise on atmospheric electricity and allied phenomena which will be published next year.

On account of the unfortunate shortage of funds of the libraries in the Austrian universities it is extremely difficult for us to obtain all journals and especially the bulletins and proceedings of the scientific institutions and societies in foreign countries.

It would be a great help to our work if the physicists and meteorologists in all English speaking countries would kindly send us reprints of their publications pertaining to atmospheric electricity including electric field of the earth and atmosphere, ionization of the atmosphere, thunderstorm electricity, electric properties of rain and snow, radioactivity of the earth and atmosphere, rays of cosmic origin, electric currents in the atmosphere, polar light, theories of the origin of the atmospheric-electric phenomena and propagation of electric waves around the earth.

All colleagues who are willing to assist us are asked to send reprints of their publications to the address given below.

H. BENNDORF

V. F. HESS

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SCIENTIFIC BOOKS

Researches on Fungi. Vol. III, The Production and Liberation of Spores in Hymenomycetes and Uredineae. By A. H. REGINALD BULLER. Longmans, Green and Co., 1924. pp. 611.

THIS is the third volume of Buller's "Researches on Fungi," and at least one more is promised. It takes an ambitious, resourceful and trained scientist to turn out, as a side issue to teaching, work of the character of these books. The latest volume contains 611 pages of descriptive matter, including the table of contents and general index, and is illustrated with two hundred and twenty-seven drawings and photographs about equally numerous. The text includes not only observations made by the writer and his pupils, but also reference to work of previous investigators.

The book is divided into two parts of which Part I is by far the larger. This deals in the first eleven chapters with a technical discussion of the production and liberation of the spores in the Hymenomycetes; chapter XII treats of luminescent fungi; chapter XIII, with parasitic agaries; chapter XIV, with nocturnal spore discharge. Part II is concerned with the production and liberation of basidiospores in