have led Roger Bacon, Galileo and others to risk the ecclesiastical tortures of their times.

But times have changed, and it is now more respectable—nay, even laudable—to indulge one's curiosity. But with the increasing complexity of our modern conditions other motives become active, and even subtle compulsions invade the fields in which unfettered curiosity once foraged freely.

Not only have we seen a growing, and to a very large extent illogical, distinction between pure and applied science, but even so-called "pure" scientific research is becoming a recognized *business*. For a long time it has shown the competitive earmarks.

Well and good. All power to the world's progress! With all our wailing over "the good old days" we would not go back to the horse-car and the oil-lamp if we could. And suffice it to say, we can't, anyway. The world may move in cycles, as in Oriental cosmogony, but it certainly does not retrograde in straight lines.

But whatever embellishments may now adorn the armor of the scientific knight-errant in search of truth, let us not forget that his sword and primary resource is the keen desire to know—good old-fashioned curiosity.

Not for the first time have we heard complaint against the condition in our colleges and universities which makes it necessary for the young scientific aspirant to "grind the paper mill" in order to insure his continuance—to say nothing of advancement—in the academic-scientific field. This is certainly one of the reasons why young men yield to the persuasions of industry, where the desire to know is admittedly diluted to a high degree by the desire for pecuniary gain.

The publication of scientific papers is not only desirable but absolutely essential for the progress of science, and no one of us would wish to stem that stream of discovered knowledge which has in the past and is now helping to cultivate every field of the world's activity. "Keeping up with the literature," however, in the larger scientific fields is becoming a difficult problem, and the difficulty is increasing in geometrical progression. Nevertheless, the quantity is not a cause for concern; we will find some way of solving the difficulty when it becomes acute.

But many of us have had the experience of wading through tons of chaff in search of a few grains of wheat. One can not always avoid the suspicion that some—perhaps a goodly portion—of this material has been turned out for other reasons than those which have traditionally motivated true scientific inquiry.

And where, pray, should the bulwark of true scientific inquiry be found if not in our colleges and universities? Nor is the fundamental scientific spirit of our many independent research institutions to be impeached. We may confidently assume that in these the business of scientific investigation will successfully be combined with the amateur motive. At any rate, we are not now concerned with them.

But the college and the university have a deeper responsibility. It is theirs—among other functions—not only to perpetuate science itself but the *spirit* of science as well. And that spirit is incompatible with anything but an absolute freedom of intellectual interest and curiosity. The moment compulsions enter that spirit begins to fade. No professor of science will do justice to himself who is being urged to think of what is encumbent upon him, ex-officio, by virtue of his position. Nor can a professor who is "grinding the paper mill" be expected to pass on successfully to the next generation the scientific spirit which is being stultified in himself.

In the course of my own graduate work I was given the advice which has doubtless been given to many another young man: "The thing for you to do now is to turn out as much research as you can in the next couple of years. A university in considering you for a position will not ask what you *can* do but what you *have* done."

We face a situation to-day in which many young men are admittedly "turning out all the research they can," with the frank purpose of getting themselves ahead, only secondarily—if at all—for the pure love of science. It is not a situation which can be easily remedied. Our universities are apparently "sold" on the idea of mass-production, at once the boon and the curse of our modern times. "Production" is the slogan of to-day, but we are beginning to question whether production, when bought at the expense of the bodies and souls of the producers, may not after all be a shortsighted policy. What is quite probable in the field of industry is a thousand times more than certain in our educational institutions. To be of most value to the world—yea, even to maintain its maximum *productivity*—the scientific mind in our universities must be "amateur."

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DEAN INGE ON THE RELATION BETWEEN SCIENCE AND RELIGION TO-DAY

AMERICAN biologists have been none too active in resisting the attacks of the so-called "fundamentalists." The most that is usually claimed by them in their own defense is that there is no necessary hostility between science and religion. It is then all the

more refreshing to find no less a churchman than the Very Reverend W. R. Inge, Dean of St. Paul's, London, proclaiming his belief that "in science has come the chief revelation of the will and purposes of God that has been made to our generation." The following brief quotations will serve to indicate Dean Inge's position. They are taken from his article "The Social Message of the Modern Church" in the January *Yale Review*, in which article interested scientists will find much for reflection and inspiration.

I believe that in science has come the chief revelation of the will and purposes of God that has been made to our generation. I believe that it is more important for the Christian preacher to understand this new revelation, and to apply it to his ethical teaching, than to cultivate a sympathy with social revolution and the "demands" of manual labor. Perhaps the great struggle of the future will be between science and sentimentalism, and it is by no means certain that the right side will win. . . . There are many temptations to the churches to side with the anti-scientific forces. There has been and still is a conflict between traditional theology and natural science. . . . Science and philosophy (even religion) are willing to learn from each other, and a *rapprochement* is in sight. But the so-called fundamentalists, or traditionalists, still dream of routing the enemy, and are willing to use the most dubious allies for the purpose. It is, of course, they who are the real materialists, since they can not conceive of a religion which is not buttressed by miracle and special interventions. The more that our clergy can study the philosophy of religion, the better it will be for them and their hearers. We have to come to terms with the scientific view of the world. There is no reason why this old feud should be perpetual. Christ never wished to oblige us to outrage our scientific conscience as a condition of being His disciples. Our traditionalists bind heavy burdens, grievous to be borne, and lay them on men's shoulders, burdens which are no part of the burden of the Cross, no part of the light and easy yoke which Christ told us to take upon us, but which on the contrary are a terrible impediment to thousands who wish to be Christ's followers, but can not swear black to be white to please the authorities.

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I am afraid it is not so much any particular results as the whole scientific way of approaching questions, which is hateful to traditionalism. For this reason, I beg those of my readers who are religious teachers to try to keep an open mind, and at least to recognize that men of science are sincerely anxious to make their contribution to the problems of civilizations, that they have a strong case, and that their motives are as pure as your own.

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I believe therefore that in so far as we connect the kingdom of God with the progress of the human race, we who are Christian ministers ought to give much more attention than we have hitherto done to the discoveries of modern science, and to the scientific way of looking at things. . . . I also hold very strongly that a reconciliation between religion, science and humanism is overdue.

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SCIENTIFIC BOOKS

Climatic Laws: a summary of climate. By STEPHEN SARGENT VISHER, Ph.D., associate professor of geography, Indiana University. John Wiley & Sons, Inc., New York.

IT is a thankless, perhaps even an ungracious, task to discuss adversely a book upon which the author has, as the reviewer knows, labored long and painstakingly. The intention was to provide a series of concisely worded generalizations, each followed by brief amplifying comments, the whole to constitute a body of fact which would "make it somewhat less difficult for students of climate to obtain an understanding of this important subject."

We are introduced first to twenty-five meteorological laws grouped under temperature, winds and moisture. The climatic laws, ninety in number, then follow in four chapters: on heating and cooling of the earth (laws 1–26), winds (27–50), moisture (51–80), and miscellaneous (81–90)—truly a large structure to try to erect in eighty-one pages. To say that in building it the need above all else is for severely logical thinking as the only means to clearness and accuracy is to utter a truism.

One reads but a few of the meteorological laws, however, before beginning to wonder if such thinking laid the foundation stones of the structure under review. On page 9:

3. The lower atmosphere is warmed chiefly by the absorption of terrestrial radiation and to a minor degree by the absorption of solar radiation.

4. The lower air is cooled chiefly by convection, *i.e.*, the rising of warm air, and subsequent radiation to cooler air and into space. It is sometimes [!] cooled by radiation to cooler land or water.

There are no comments to amplify the meteorological laws; hence the difficulty obviously is that it is impossible to express in any such simple terms as these the complicated interrelations of the processes by which the lower atmosphere is warmed and cooled. The result is a statement of half-truth, imparting, however, to the uninitiated the delightful sensation as of a "fact" acquired.

In summarizing (p. 10) the "laws of heating," a cycle of daily changes is presented, ending with: "Then gravity pulls it [the air] down to the earth's