

# SCIENCE AND FAITH

## Contemporary Physics

SCIENCE AND HUMAN EXPERIENCE.  
HERBERT DINGLE. The Macmillan Company. \$1.75.

By F. S. C. NORTHROP.

RECENT developments in physics have presented difficulties for those who believe that the truth is revealed in common sense. The relativity of space and time, the extremely mathematical character of the foundations of physics, the breakdown even of the space-time concepts of the relativity theory when we consider atomic phenomena—these and many other factors make it hard to defend the thesis that he is most intelligent who keeps his feet on the ground. With both the feet and the ground conceived as world lines and groups of wave packets this dictum ceases to give much assurance to the man in the street.

It was natural that such a state of affairs should put a strain on British mentality. The Germans with their *Naturphilosophie* of Schelling and Hegel obviously possess a capacity for the unexpected and fantastic, and the French have always been famous for their rationalism, but with the British the case is different. In philosophy the word "British" and the word "empiricism" go together, and in popular psychology the avoidance of extremes and an instinct for compromise constitute the first principles of conduct. The Britisher, it is said, "muddles through."

This faith of the Englishman in common sense and the middle path is delightfully illustrated by a story of the eighteenth century. It seems that the proposal had been made to place lightning rods upon the Houses of Parliament. Whereupon an extreme nationalist arose and opposed the measure on the ground that lightning rods "were invented by that rebel Franklin." So heated did the debate become that the President of the Royal Society resigned his position in that learned body in order to defend the utility of these crude conductors of electricity. In the end, however, the Englishman is said to have shown his usual genius for compromise by erecting the lightning rods and placing knobs at their tips, thereby rendering them useless.

Obviously something interesting must happen when such a mentality is confronted by the theories of contemporary physics. There have been roughly three reactions. The first exhibited itself in the philosophy of Whitehead. Confronted by discoveries which had cut to the foundations of traditional scientific theory, and sufficiently aware of the philosophical traditional to sense the significance and seriousness of the issues raised he turned quickly from the technical concepts of physics to immediate sensation where he proceeded, following in the footsteps of Locke, Berkeley and Hume, to prosecute a new description of the deliverances of sense awareness. This return to immediate awareness is characteristically British in its philosophical emphasis and constitutes the most profound and critical English response to current physics.

The second reaction exhibits itself in the books of Eddington and Jeans. Primarily scientists, they have not subjected the findings of physics to a critical logical and philosophical analysis. Nothing remained, therefore, but for them to take current scientific concepts literally and more or less at their apparent value. Here reconciliation with common sense is difficult to achieve. Thus cut off from the instincts of their people, it is natural that Eddington and Jeans go to extremes. The usual British sense of balance is no longer present to soften or modify their doctrines. The result has been that interesting suggestions of current physical theory have been generalized into philosophical doctrines which are most stimulating to the imagination. The stolid Englishman thus broken from his mooring is seen soaring not merely in the thin air of distant space but in the unimaginable theological regions of worlds other than this one. The critical reader may say that Eddington and Jeans prove the invalidity

of our analysis of British mentality. I find my answer to this charge in the remarks of another Englishman, Mr. Keynes, concerning England and the gold standard. In the Spring number of the *Yale Review* he states in truly British fashion that it is not the pound which has gone off the gold standard, but gold, because of its crazy antics in comparison with stable British currency, which has gone off the pound sterling. Similarly it is not Mr. Jeans and Mr. Eddington who have failed to keep their feet on the ground, but the ground which has slipped away from them. In short, science has run away from common sense. Such at least is the way it must appear to one who knows his physics and proceeds to interpret it more or less at its face value without further logical and philosophical analysis.

But it is inevitable that there should be a reaction to Mr. Eddington and Mr. Jeans even within physics. Even contemporary physics cannot shatter the instinct for common sense of all British physicists. This brings us to Mr. Dingle and his book, "Science and Human Experience." The title suggests the emphasis. It is not in its relation to some other world but in its intimate connection with human beings that the meaning for science is to be found and appraised. But this is not all. The initial and fundamental theme of the book is its definition of science. Note the wording: "Science" is that among many intellectual attitudes toward "our experience taken as a whole," which "selects its field as that of the experiences which are common to all normal people." Similarly the book closes with a chapter on science and art and another on science and religion, and here again what distinguishes science from either art or religion is the distinction between experiences which are "common" and those which are "individual." But the climax is reached in the treatment of the scientific theories themselves. After four chapters in which most elementary accounts of the origin of physics with Copernicus, Galileo, and Newton, and the significance of relativity and quantum theory are given, Mr. Dingle comes to the main point. It appears in the title of Chapter V: "The Common Sense of It All." Here Mr. Jeans and Mr. Eddington are with propriety criticized and, more important, the English physicist gets his feet back on the ground.

All of which goes to show that Mr. Dingle's book is good British doctrine. The question arises, however, concerning whether it is good contemporary science. To leave the matter thus would be in a sense unfair to Mr. Dingle, for we have not considered the specific considerations which dictate his disagreement with Eddington and Jeans and his own positive conclusion. But in another and more fundamental sense it would be profoundly fair, for if common sense and the relation of science to human experience are to be the basis for determining the meaning of physics and its relation to art and religion, then nothing could be more just than to say that Mr. Dingle's thesis is a beautiful expression of British mentality, and a questionable theory of the meaning of contemporary physics, since judged by common sense and his own standards this, as we have indicated, is precisely what it appears to be. In this fashion the humanistic common sense philosophy of science condemns itself.

The inherent weakness of this doctrine exhibits itself in Mr. Dingle's definition of science as "the intellectual attitude" which "selects its field as that of the experiences which are common to all normal people." But who are the "normal people"? Here we either resort to a majority vote, in which case the experience of witches would have been science at one time in Western history, or we fall into the circular fallacy of regarding as normal those people who accept "accepted" scientific theory, or else we admit that science has no more connection with the "common experience of normal people" than the circumstance that the majority of people in a community eventually come to accept those doctrines which are established by their intellectual peers on quite other grounds. What Mr. Dingle overlooks

in his definition of science is that the "common" experience of "normal" people is as a rule not something immediately given, but is instead a function of those phases of possible human experience in a given age selected as important, and that this in turn is a function of the philosophy of the period, which varies with changes in the more technical scientific information. Thus it would be more correct to define the "common experience of normal people" in terms of the science of a previous decade or century, than to define science in terms of common experience.

If, as was the case in the Middle Ages, theological doctrines seem most firmly and universally grounded in experience, then the "common experience of normal people" is theological in its emphasis; if, as has tended to be the case since Galileo and Newton, physical and this-worldly categories dominate scientific and popular philosophical thought, then the world of physics tends to be regarded as the "common" part of human experience, and religion and theology and are considered, as Mr. Dingle tends to treat them, as individual idiosyncrasies.

If these considerations are too general, then consider technical physics itself. Take the notion of time. In immediate experience the temporal relations of two events far apart is one thing for one person in one position and another thing for another person at a different distance from them; it is one thing if the events are seen, a quite different experience if they are heard. For example, the blowing of two whistles may be simultaneous as seen and not simultaneous as heard, and if the events are seen simultaneously by a person equidistant from both, they will not be seen to be simultaneous by a person who is not equidistant. In short, in the field of immediate experience the notion of time is an individual and not a common experience. Yet time is treated in physics. If Mr. Dingle's definition of science is correct, this is difficult to understand. Moreover, physics has a common time for different persons and places providing the persons and places are at rest relatively to each other. The point is, however, that the time of physics which is a common time for normal human beings is not the time of immediate experience but the time of conceptual physical theory. As Einstein pointed out in explaining the special theory of relativity, we cannot get the public time of ordinary human intercourse or the time of either Newtonian or relativity physics without the notion of the simultaneity of events that are separated in space, and this notion is not given intuitively in experience but depends instead upon a definition in terms of light propagation which in turn involves the conception of immediately experienced events as physical happenings that are connected to the physical body of the observer by physical propagation which in turn is not immediately perceived. It becomes evident, therefore, if Mr. Dingle's definition of science is correct, that time should not be a concept in physics, since there is no immediately experienced simultaneity of spatially separated events which is the same for or "common" to all normal people. On the other hand, the presence in physics of a "common" time known by reason indicates that science defines the common portion of human thought concerning nature, and not that common human experience defines science. This being the case, an appeal to common sense or to the "common experience of normal individuals," as if it were something immediately given and prior to all theory, is not a sound basis for determining the philosophical meaning and significance of contemporary physics. Common sense in physics as elsewhere depends on what is initially uncommon sense.

So much for the intrinsic merits of Mr. Dingle's main contention. Nevertheless there can be little doubt that many of his criticisms of Eddington and Jeans are valid. It must be maintained, however, that when this is the case it is for reasons other than those arising out of the general definition of science which he gives. As an antidote to Eddington and Jeans, Din-

gle's "Science and Human Experience" is to be recommended, but for a more decisive determination of the meaning of contemporary scientific discoveries, a more logical and philosophical analysis of the scientific theories themselves is to be advised.

## Aggressive Religion

WINNING WAYS FOR WORKING CHURCHES. By ROY L. SMITH. New York: The Abingdon Press. 1932. \$2.  
CONFIDENT FAITH. By SAMUEL M. SHOEMAKER, JR. New York: Fleming Revell Company. 1932. \$1.50.

Reviewed by P. W. WILSON

IN these books, we have contrasting expressions of what has been called an aggressive Christianity. They lead us from the outer courts of the Temple where all is activity into the Holy of Holies where dwells the inner mystery.

Like the Catholics of the middle ages, the Moslems in Mecca, and the Hindus of Benares, Mr. Smith, who happens to be a Methodist, sees society as an organism in which the spiritual should pervade the secular. The Church of the twentieth century should be no less inclusive of citizens than the state. To subject the community to what in colleges is known as compulsory chapel, is no longer possible. There must be what Mr. Smith calls "salesmanship," and the value of this book lies in the truly amazing enumeration of all the ingenious artifices whereby churches maintain and increase membership and attendance at public worship.

We read of "telephone brigades" and "come-back campaigns." In Texas, there is "a hunting and fishing month," and elsewhere "the Lonely Ladies League reports some wonderfully good times." Nor must we overlook the Sunshine Circle, the Kandy Klub, or the horse show where colts are trained for competition. We note:

"George's Funeral" was the title of a service held by one group of young people. So many people said, "Let George do it," that the poor fellow died of overwork and his funeral was held. The reading of his will assigned his tasks to other people still living.

Such churches have little to learn from the advertiser nor are their methods to be dismissed with a smile. A Methodist superintendent of schools in Ohio recently declared that "the average intelligence" of the people is "that of a sixth grade child." It is to the average intelligence, whatever it be, that the average church, like the average movie house or the average politician, has to appeal.

Mr. Shoemaker stands within the sanctuary. What he faces is the actual congregation and he realizes that merely to fill a church is not enough. These sermons preached by Mr. Shoemaker in Calvary Church, New York, are an eloquent—some would add, a singularly persuasive appeal—for a personal faith. The appeal is intimate. It is addressed direct to the individual. But it is not merely an appeal to the emotion. It is a genuine endeavor to eliminate cynicism and discouragement.

For some years, there has been discussion of "the groups" or First Century Christian Fellowship associated with the name of Dr. Buchman. Of this latest Oxford Movement, Mr. Shoemaker is an outstanding leader, and this volume offers an excellent idea of what is implied in the restatement of an old evangel. There is little dependence on creed or form. The use of the Bible is expository, and little is said to which—let us say—Mahatma Gandhi would take exception. Mr. Shoemaker would explain his position by stating, simply, that he preaches Christ. "I have repeatedly seen," says he, "Jesus work in present day men and women as true miracles as ever He worked when water was turned to wine." Possibly, the message, with its insistence on the silent hour might be described as Quakerism within non-Quaker churches, with a confessional added. "I am an amazingly happy person," declares Mr. Shoemaker and this impression is conveyed in his preaching. For those who can use it, happiness in these days is a powerful argument for any point of view.



## Points of View

### A Regionalist

To the Editor of *The Saturday Review*:  
Sir:

I was interested in the *S. R.* editorial, April 16, with quotations from the writings of A. B. Meek, the Alabama amateur writer of pre-Civil War days. In spite, however, of the cited title, "Americanism in Literature," Meek was primarily interested in regionalism rather than nationalism in literature. If he wished American literature to be American, not European, he wished Southern literature to be Southern, not an imitation of New England. He believed strongly in the use of local themes and hoped that the different states, with their capitals, would furnish as many separate literary centers. The preface to his "Songs and Poems of the South" (Mobile, 1857) opens with these words:

The Poetry of a country should be a faithful expression of its physical and moral characteristics. The imagery, at least, should be drawn from the indigenous objects of the region, and the sentiments be such as naturally arise under the influence of its climate, its institutions, habits of life, and social condition. Verse, so fashioned and colored, is as much the genuine product and growth of a Land, as its trees or flowers. It partakes of the raciness of the soil. . . . The Scenery infuses itself into the Song. . . .

A lover of life and leisure, Meek found literature to be its own reward. Were he living today, he might be a member of the group of Southern traditionalists who wrote "I'll Take My Stand."

H. CLARENCE NIXON.

New Orleans.

### The Names of Rivers

To the Editor of *The Saturday Review*:  
Dear Sir:

On page 570 in your column of questions and answers you give the river of Browning's "Pied Piper of Hamelin" as "the Weser River." Ungrammatical; and misquotation of Browning, who wrote "the river Weser, deep and wide" when metrically he could have written "the Weser River" if he had had such criminal tendencies.

In the names of rivers known before Columbus, "river" precedes the name and takes small r, because "river" is not part of the name: the Tiber or the river Tiber, not the Tiber River; similarly the river Dee, the river Nile, etc. In the names of rivers discovered since Columbus, the general rule is that "River" follows the name and is capitalized, because in so many cases the name consists of the word "River" preceded by a modifier (the Red River, the James River, the Mohawk River, which is not the river named Mohawk but the river of the Mohawks). In the greatest of the newer rivers, and in such as have nothing English about their name or neighborhood, there is more or less option to treat them either way.

I have a high-grade British atlas which makes the grammar follow the flag, so that the same stream is "the river Yukon" in the Canadian part of its course and "the Yukon River" in the Alaskan part of the same map. This is an error: the principle, and the reason for it, are the same for Canada as for the United States.

American maps and schoolbooks are very incorrect in this matter.

STEVEN T. BYINGTON.

Ballard Vale, Mass.

### "Disciple" vs. "Pupil"

To the Editor of *The Saturday Review*:  
Dear Sir:

In Frank Lloyd Wright's review of my book "The Frozen Fountain" published in the May 21st number of your journal I received as favorable and as fair a treatment as I have a right to expect from his particular hands, but he has—carelessly, no doubt—put words into my mouth which I never said, and then reproached me for saying them. I never called him a "disciple" of Sullivan, but a "pupil" which is an entirely different matter. It is exactly what he has called himself, and what Sullivan himself called him. The book contains no reference to Wright as Sullivan's "disciple," as Wright asserts that it does.

My admiration of Wright both as a force in architecture and as an architect is great. Though we differ in our point of view I am proud to call him my friend.

No one understands better than I how mentally independent he was of Sullivan. It is therefore the more unpleasant and surprising to find myself blamed for something which I never said and know to be untrue.

Yours very truly,  
CLAUDE BRAGDON.

### Readers and Reviews

To the Editor of *The Saturday Review*:  
Dear Sir:

As a subscriber and reader of the *Saturday Review of Literature*, since its inception, I have noted with interest from time to time in your periodical, comments on the functions of literary criticism. Belonging to a large group of inarticulate readers, it has occurred to me not unadvisable to let you hear from this large audience to which the critic addresses his reviews.

In this period of greatly diminished income, we book-purchasers must scan our purchases more closely, and reviews are read and carefully considered before we determine on a book purchase. In the past, I have found the book reviews and articles appearing in the *Saturday Review*, generally of great value. Yet, possibly it might not be amiss to state a few of the points, that the ordinary reader expects. Reviews failing in general to conform to the following requirements are apt to mitigate against an understanding of the work under discussion, and discourage the reader.

1. Above all, the review should be lucid. There are a few critics, among whom I would number Christopher Morley, who are clever enough to deviate from a straightforward review of the work under discussion. Such critics, however, are rare, and frequently attempted cleverness consists merely of verbal gymnastics, which leave the reader more puzzled than ever and possibly only with the general impression that the book under discussion must be woven from the same tangled web as the review. A large section of the public that reads literary criticism is seeking information and information cannot be imparted to our average intelligence by tortured attempts at verbal cleverness.

2. In reviews of works of non-fiction, it is important that the viewpoint of the author be stated. If the book be along political or economic lines, we should be advised whether the author approaches the subject as a conservative, Tory, liberal, socialist, or communist. Unbiased writers in this field are all but unknown, and the author's predilections greatly color the entire work. While it may be desirable for the public to read all sides of a public question, yet, before we buy a book we should be informed of the author's viewpoint. This question of viewpoint is also important in other fields of literature—even fiction. We may be tired of reading thinly veiled communistic propaganda, agreeing with Elmer Davis's article in the April 16th, 1932 issue of the *Saturday Review of Literature*.

In selecting our fiction we wish to know the mood of the author, whether he be gay, gloomy, pessimistic, satiric, ironic, or what not. We desire different types of books for our own varying moods, and a word or two from a critic is of importance in this respect.

3. If the work reviewed is non-fiction, we wish to be informed as to its accuracy. We do not wish to be captious, yet naturally are interested in this most important question.

4. There are still a large number of readers, that are interested in style. Frequently, we may be induced to read a book written on an otherwise uninteresting subject, if the author knows how to write—and utilizes his knowledge. What a thrill we had reading "Green Mansions" and the "Orphan Angel" although the subject matter would not have appealed to us. And how we wondered that anyone could think it worth while to publish the tortuous sentences of "An American Tragedy," let alone recommend it, without at least advising us how poorly it is written.

5. And, of course, we wish to be informed of the subject matter. Each one has his own tastes and cannot take time to cover the entire field of literature, or even a small portion thereof. So one of the primary reasons for reading a book review is to determine the subject matter.

H. C. YOUNG.

Fargo, N. D.

### Cobblestone Style

To the Editor of *The Saturday Review*:  
Sir:

Some time since you said in a Sermon on Style in the *Review*, "Modern English is lacking in eloquence," and "Science, having come close to metaphysics, needs a new diction." How I pricked up my ears! For five or six years I have been noticing how poor was the prevalent quality of expository writing, and asking myself would nothing ever be done about it by the critics. At last you—and who better qualified—were speaking to this point of rhetoric. "The priests of the twentieth century babble in a jargon that has lost its vitality (Cheers!) and the prophets are tongue-tied (Hear, hear!) with a language that can say everything but what they most deeply feel and mean." You were too kind. Their "language of the machine" can say scarcely anything. Surely, surely, everyone sensitive to style feels as I do, that the jargon grows steadily worse, that one is bewildered, balked, estopped by the turgid rhetoric that prevails in current American writing.

Here are a few examples—I have been collecting them for two years, and my dossier bulges with choice specimens culled from perfectly reputable publications.

If there were a uniform condition with reference to the distribution of population it would be necessary to move forward to a recognition of the desirability of such a readjustment.

The book provides them with a background, and an account of existing reality such as exists nowhere else in readability, in authority of presentation, and in its underlying warning to civilization.

The spiritual or esthetic value of the new wants is thus made subordinate to the possibility of their being filled in quantity.

When style is as bad as that we may look for the remedy on an elementary level. Your sermon plead for "a style made eloquent by spiritual power." Amen and amen. But there again it seems to me you were too kind. You were considering bad writing from the point of view of mind and soul. Considering it from the point of view of grammar I have seen one important defect to be something as simple as rough roads, and the cure something as feasible as cement.

Almost everyone who writes to inform, whether on politics, science, sociology, philosophy, or education—almost everyone nowadays overworks the noun construction. Verbal nouns, abstract nouns, noun clauses introduced by "that" and "the fact that"—these substantives are crowded so closely together that thought cannot move ahead. Sentence after sentence presents such a jam of noun constructions that the ideas are bumped to a standstill or a breakdown. While nouns are overworked, verbs—active verbs with personal subjects—are few and far between. This is the sort of thing: The cause of the deterioration in the quality of the style of the writers of America is the prevalence of their employment of the substantive and their neglect of the use of the verb. Bump, bump, bump—one verb, is, and twelve nouns. Cobblestone rhetoric, I call it.

Why is there so much of it? The type-writer? German influence? The jungle of new facts in our modern world? Interesting speculations these, but I am concerned only to set forth one simple proposition—that too many substantives ruin style. Here are more examples, out of their context to be sure, but perfectly typical of what lies all about us.

The abundance of the next ten years already had its inception in the urgent need for replenishment of automobiles and in construction and equipment wherein necessitous cessation in favor of war works had built up a voluminous peace-time demand.

The whole question of Anglo-Egyptian relations is bound up in this difference of opinion, which may precipitate the long-expected liquidation of outstanding differences between the two governments.

Nothing could show more graphically the remarkable gulf of separation which has sprung up under the Soviet experiment between Russia and all the other nations of the world.  
*Can a gulf spring up? Or might there be a gulf of union, perhaps?*

Mistakes like that are appallingly common. These abstract nouns are dangerous cobblestones. The famous old mixed

metaphor of the Irish orator amused us in our school days,—*"I smelt a rat, I saw it floating in the air, and I nipped it in the bud,"* but one could easily get away with this translation of it: *"By my efforts I feel that fruition has been denied to the possibilities inherent in a situation whose imminence was perceptible by its suspicious redolence."* That sounds quite the usual thing. An eminent philosopher perpetrated this last March—"The introduction of the idea of mutation marks nothing less than a revolution in our entire scheme of interpretation. What also is the notion of emergent evolution save recognition of the novel, unexpected, unpredictable?" Why, oh why did he not make the last noun apparition? He must be completely deaf to the music of words.

Of course, egregious blunders, tautologies, verbiages, mistakes of all kinds have always been common and will always need to be fought. And editors and readers should wake up. Cobblestone rhetoric is far too common. Perhaps my dossier of specimens should be printed as an exercise book. Translating a few passages a day is excellent training. And by way of refreshment afterwards I recommend a page or two of William James. There is a style! Even when he is defining philosophical concepts and necessarily carries a boatload of abstractions his good verbs dip and push and swing like well-handled oars.

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I have been interested to note that English writing inflicts much less suffering of the sort we are considering than does American. We all know vaguely, uneasily, but very surely that English men and women use the English language a thousand times more skilfully than we do. (Some of us even know why.) Last fall, analyzing two utterances dealing with the present crisis, the one by Walter Lippmann, the other by Ramsay MacDonald, I found that the comparison squared nicely with my grammatical theory. In 500 lines the Englishman used 2 verbal nouns, 97 nouns, 5 substantive clauses, and 41 verbs; the American had 8 verbal nouns, 117 nouns, 10 substantive clauses, and 23 verbs. Mr. MacDonald said: "Fortunately, before the crisis came the new government had launched both an economy bill and a supplementary budget, so that every one knew that the British people were determined to reduce expenditures, stop borrowing, and balance their budget on sound financial principles. That gave confidence and enabled us to meet what was in store for us." Mr. Lippmann put it thus: "We may confidently assume that the specific measures agreed upon are fully adequate to the immediate emergency providing the country believes that unity of action—unity and action—are now agreed upon." Mr. Lippmann writes vigorously, ably, often beautifully, but even with him I swear I have my quarrel just on these four rhetorical points.

So, gentlemen of the pen and type-writer, critics, philosophers and thinkers, I adjure you, purge yourselves of this plague. Pull up the cobblestones, pour in hot tar or flowing cement. There is a royal road of rhetoric. Watch yourselves constantly, rewrite firmly every sentence if necessary. Note the substantive clauses, then cast them out. Excise "the fact that," "the question whether," "the problem of." Avoid those words that end in -tion, -ity, -ment, -ness, -ance. Cut out the noun constructions that are clogging and clotting and curdling your language. Use clauses that begin with *when*, *if*, *while*, *so that*. Use active verbs. Verbs, if they are active, will often be figurative. So much the better for you. Much that you have been saying will remain unsaid. So much the better for us. When you really have something to say, Style may descend upon you from above.

MARJORIE TRUE GREGG.

South Tamworth, N. H.

### Galsworthy's "Carmen"

To the Editor of *The Saturday Review*:  
Sir:

In your issue of May 14th, under the heading, "Foreign Notes," there was a small item about the translation of "Carmen" by Mr. and Mrs. Galsworthy. It declared that their translation would be published in limited edition in England. I wonder if your readers may not be glad to know that it will be published in America simultaneously? The limited edition is for both England and America, and will bear the imprints of both the English and the American publishers.

HENRY HART.

Charles Scribner's Sons.