Are We Really Telling the People about Science?

Science reporters are not doing well enough—scientists and science agencies often fail to help.

Victor Cohn

We are in an Age of Science, and the people shall know.

The people must know, and it has fallen to a small group of us to do a large part of the job of telling them. We often fail, and scientists often fail to help us. This is my theme.

Science, to the science reporter, is the man working in his laboratory. It is the search for truth—about people, about microbes, about atoms, about man. It is a beautiful and inspiring sight and a joy to write about.

But science is more. If it were only a search for truth, there probably would not be many of us writing about it. It is also the search to know for man's use. It is the applied scientist and technologist, the engineer, the doctor, seeking to know to achieve practical goals: man's welfare, better crops, health, and long life. This is exciting too, and important to write about—more important every day, for we are living in a time unlike any other man has known.

My grandfather, for his first 20 years at least, lived a life almost identical with his grandfather's; his grandfather lived a life almost identical with his grandfather's, and so on back for many generations. My life is completely different from theirs, and our children's lives, when they grow up, will be nothing like ours. Our lives are different, in fact, every few years. "No mariner," observes Walter Lippmann, "ever entered upon a more uncharted sea than does the average human being born in the 20th century. Our ancestors knew their way from birth to eternity. We are troubled about the day after tomorrow."

Our time is not only newer and newer, it is more and more complex. Lewis Carroll wrote:

> He had 42 boxes, all carefully packed,
> With his name printed plainly on each;
> But, since he neglected to mention the fact,
> They were all left behind on the beach.

The boxes, to us science reporters, are labeled psychology, sociology, medicine, agriculture, physics, chemistry, biology, oceanography, engineering, electronics, automation, space, astronomy, and the universe. It is our job to put this knowledge together, plainly, coherently, and effectively, so that the people can understand what is happening in science and technology and respond to preserve our democratic governments, our society, our jobs, our families, and our lives.

"Government, politics, economics," states Turner Catledge, executive editor of the New York *Times*, "these are still and will always continue in organized society to be the major assignments in journalism. But today the major assignment above all others is science. . . ." An exaggeration? Perhaps. Perhaps not, for politics today is mainly a response to the pressing and bewildering advances of science and technology and the social changes they work.

The job of covering science as of today is mainly the job of the newspapers, plus the news magazines and a small number of general magazines that have shown enough interest. Television sometimes sheds light on science, sometimes lovely light. But TV is still mainly an entertainment medium. In the United States it is becoming more instead of less so, and even its news programs, with few exceptions, slight science. Educational TV, which has great possibilities, is starved for funds. It takes large sums of money to produce interesting television programs; therefore most educational TV is dull and little watched. I think we ought to begin exploring the possibility of having one nationwide, public channel that has educating and reporting—intelligently and excitingly—as its only jobs, but I have little hope of seeing this come to pass.

So we old-style newsmen do the bulk of the reporting. There have been three main waves of science reporting in the United States and Canada, resulting in the present crop of about 300 full-time writers for newspapers, magazines, broadcasting, and books. The first wave came in the 1920's, starting with about a dozen perceptive men, including William L. Laurence of the New York *Times*, Watson Davis of Science Service, David Dietz of Scripps-Howard, and others. In 1934 these 12 formed the National Association of Science Writers, which has been a force since.

The second wave, to which I belong, was jolted into an awareness of science by the atomic bomb. We came into the field on the heels of World War II. I said to my editors in January 1946—it didn't take much perception—"I think science is going to rule our lives, and somebody ought to be writing about it."

The third wave, a younger group with better training by and large than most of us old improvisers, came in after the Russians sent up Sputnik in 1957, and it is still coming. In 1960 a large share of American newspaper editors told interviewers that since Sputnik they had at least doubled the space given science. I think this trend is continuing. It has become almost unusual, and plainly second-class, for a major metropolitan daily not to have at least one full-time science writer, and a growing number of small papers (though not enough) have at least a part-time man, and a sprinkling have full-timers.

How well are we doing, we science writers? The answer is, obviously, not well enough, in the face of the world's lagging response to nuclear dangers, to overpopulation, and to change itself; in the face of wide failure to use research in anthropology and the other social sciences as bases for improving

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the lot of backward peoples; and in the face of many other problems resulting from public failure to assimilate science. Among these other problems are the pesticide uncertainties, the fluoridation battles, the Krebiozen scandal, and the current resurgence of the antivivisectionists, who now seek new, restrictive legislation in the name of "humane" laws.

We science writers talk about covering science, but most of us are still spending the greater part of our time covering medicine. This is fine up to a point: medicine *should* be covered, and those who spend all or some of their time covering it are doing an important and necessary job. But the general-science press corps has not yet caught up with our medical press corps in excellence or numbers or hours. And even our medical press corps—again note the many failures in communication—needs strengthening.

We science writers, except for an exceptional few, fail to pay enough attention to basic research, and we too often fire out news of new discoveries, or what we call discoveries, without connecting them with the main body of knowledge and the basic work that has gone before.

We over-use a bagful of clichés, like "major breakthrough" and "giant step forward." I quote Turner Catledge again: "We have worn out our superlatives; we have spent our emotions; we have exhausted our imagination in the search for the exciting." He quotes Dr. Polykarp Kusch: "The reader is bombarded by news of the new triumphs of science but fails to understand that even science has its limitations." Science is not just a series of breakthroughs but a long, hard, and, today, expensive search.

We especially over-enthuse on medical "discoveries." "My concern," says Arthur J. Snider of the Chicago *Daily News*, "is that the record would show that 90 percent of the stories we have written about new drugs have gone down the drain as failures." I think we all know this. We know that false hopes fill doctors' offices with sufferers who must be disappointed. We must report the truly important, but we need to show more discrimination and moderation, and to include qualifications early in the story. We need to know more about interpreting, and sometimes questioning, statistics. So do doctors—and scientists. They give us the news in the first place.

We are not well enough educated. We need mainly generalists, people with both a liberal education *and* science, to report science. But more of us could spend far more time learning more. The National Association of Science Writers created, to this end, the Council for the Advancement of Science Writing, and the council has been taking some good steps in this direction. So have others. We need to take more; I think our present brief seminars need to grow into bona fide postgraduate courses which writers take periodically in the same way that conscientious doctors continue to study. Most of us don't find enough time in the midst of the daily struggle for true, deep study.

For all these reasons we are not truly *covering* science and technology and their huge, terrifying, and inspiring impact. We are missing too many of the big stories of our time through daily preoccupation with trivia. We are ignoring the social and behavioral sciences almost completely.

We need help. We need a society which gives every educated man, and especially every journalist, a groundwork in science along with other basic learning. There is more material in science than science reporters alone can cover; it impinges on too many other areas. We need the help of every reporter who pretends to write about our time. We need editors and deskmen who know something about science; they, like the bulk of the public, are now scientifically innocent, and this must degrade our product.

On the practical side, in an age when the number of scientists and the output of science are doubling every 10 or 15 years, we need science staffs. On a major metropolitan daily, a single reporter of science and medicine is no longer adequate. A number of newspapers do have two or more persons on these beats now, and the list is growing, but it is still too short. "The average American newspaper," reports William P. Steven, executive editor of the Houston *Chronicle*, "relies pretty largely on the Associated Press and United Press International to cover science. The staffs of these services have not expanded as rapidly as science has expanded. . . . The response from newspapers is not yet in ratio with the increase in scientific knowledge."

We still jam most of our daily papers with sports, entertainment, and salacious crimes. We do pretty well, it is true, at reporting national and local politics and foreign troubles. We have been improving our coverage of business, economics, education, religion, science, and other "special fields." But science and technology and their lessons and uses are not mere special fields; they affect every field, and reliable, meaningful facts about them must be woven into many kinds of writing, so they may become part of public thinking.

We *are* trying. We are groping, we science writers, for a common language with the reader who has little or no education in science. We—at least I—boil when I hear some educators complain that our schools are "going overboard" on science. Anyone who addresses newspaper readers knows that the general public, even the college-trained public, is still not equipped to cope with the facts of a scientific age.

This is just one of the science writer's problems. Another is that you scientists too often fail to help us, and sometimes, mainly inadvertently, hinder us. You, like us, are doing better. But neither of us is doing well enough for our precarious world.

To be specific, some of you still scoff at communicating with the public and deride colleagues who cooperate in doing so. Even those of you who believe in public communication fail to take steps to further it—for example, by supplying advance copies of papers to press rooms when possible, and by writing abstracts that say something instead of the banal "such-and-such will be discussed." Too many of you refuse to appear at press conferences to explain what you're doing, yet grumble, "Those reporters never get it right" (*1*).

You are guilty of worse sins—against each other primarily, and against science writers incidentally. You publish, publish, publish some of the most unimportant stuff that has ever been published in the history of science; it is almost as bad as some of our stories. There are too many papers being written for too many journals that are proliferating mainly to make somebody a profit or lend a society "prestige." *You* keep these journals filled. I get enough of them in my mail every week to make a pile 1 to 2 feet high when they are opened and stacked flat. I'm lucky; the New York *Times* science department

gets between 1 and 3 feet of journals and press releases *every day*. Who can read it all? No one. We could find and report the important things much better if there were not so much static.

Many of you fail, when you do write important things, to write in modern English. There is nothing as effective, or indeed as lovely, as a simple, clear sentence unhampered by a thousand clauses. Why shun it? In obfuscating you fail to make yourself understood by your fellow scientists, let alone the fringe reader. How often have I heard scientists say of a colleague, "He may be a good man, but I can't understand his papers."

Speaking of that daily flood, I should blame the mailers as well as the authors; the guilty mad mimeographers of science and technology are the press officers of over-eager companies, government agencies, and universities. Many do an excellent and restrained job, and I try to read them; others swamp me, and I must ignore them.

Too many writers of science news releases—there are noteworthy exceptions—tend to overstate extravagantly. "Our institution" did such-and-such; there is no hint that the same thing may be going on in other places. Science reporters often catch this; others do not. Scientists, I know, usually screen these releases; I am surprised at some of the things they permit—and sometimes urge—some press officials to say. I said this to one academic friend. "Huckstering isn't limited to Madison Avenue," he reminded me.

The scientist-huckster is not far removed from those who "expertize" wildly in fields far removed from their area of competence and command our notice because of their names or positions. I say this not to discourage the scientist who feels compelled to speak as a citizen in any field, his own or another. He *should* speak, but he can try to make it clear that only in some cases is he stating established facts; that in others he is stating theory or a range of probabilities, and in others, opinion.

There is another trend that seriously worries me—a growing series of attempts to put various middlemen between the reporter and the scientist. To be specific, there has been a positive choking off of access to original news sources in some government agencies. Some government-employed scientists and technical men are afraid to say "hello" on the telephone without asking you to "go through" information-officer go-betweens. Many men of spirit and independence still say what they please when they please, but many of the timid do not. Their guidelines become, "protect yourself by saying nothing," "always protect the agency," "limit the responsibility [and glory] of statement-making to the high-ups" and "say nothing unless it's cleared," rather than the simple rule, tell the public all the facts.

Classification is often abused. On one manned space shot at Cape Kennedy there was trouble with the Atlas rocket. It led to a long delay. The trouble, newsmen were told, was "classified," because the Atlas was a military rocket. During the delay the space agency fired a Ranger shot at the moon with an identical Atlas. This, too, ran into trouble, but now spokesmen explained it in detail as "the same trouble we had last week with the [manned shot] Atlas. It's a problem with all of these Atlases."

There is sometimes outright censorship. Warren Burkett, science reporter for the Houston *Chronicle*, wrote me recently: "We're having quite a time here with NASA. The management people have discovered the internal document as a handy gadget to get out of releasing information. I think in effect it's a new kind of classification to evade the rather clear rules defining classified information." He went on: "Among documents classed in this manner, for a ridiculous example, is the paper called 'Functions of the Public Affairs Office'. . . . Also classed as 'for internal use only' is a directive by the center security office that the division chief drew up to stress how the press is to be regarded by the security officers at Manned Spacecraft Center. We requested some sort of delineation after one of the security men at Astronaut Freeman's funeral kept deliberately stepping in front of AP and Houston *Post* photographers' cameras while they were taking photographs outside the church."

I have cited two examples involving the National Aeronautics and Space Administration. I know it has a number of dedicated information men determined to open doors for reporters. I know there are men like these at the Manned Spacecraft Center and other NASA units. They do not always prevail, however, for this important agency has still to convince reporters in general that all doors are really open and all facts available to everyone.

Universities are not above news-managing. At three major ones in the past few years I have run into rules saying that no professor can speak to a reporter without administrative clearance. I believe this erodes freedom of speech, freedom of the press, academic freedom, and freedom of scientific communication. All these hard-won rights say to me: "reporter should be free to talk to scientist; scientist should be free to talk to reporter." I merely want to be able to phone a scientist, government or academic, and ask, "May I see you?" And I want him to be able to say yes if he so desires.

Recently two physics journals threatened to refuse publication to authors who reveal their work previously to reporters. One justification given for this threat, not yet carried out, is that it is designed to curb the "operator," the man who uses publicity to glorify himself and get grants. Yes, this is sometimes a problem. We too want to curb phoneys and operators; we sometimes get taken in. But to try to curb them by ukase is to pay too great a price.

Science is often news—spot news—of high importance and excitement. The IGY starts. A balloon or rocket goes up. The public deserves to be in on the fun of some of the discoveries *as* they are made. Neither journalist nor scientist owns science; it is in the public domain.

This is not to say that most scientific publication should not be made first to fellow scientists, in speech or in print. We know the good reasons for this. I merely say that we newsmen have learned that what starts as "ethics" can soon become gag rule. Too many local medical societies still make "ethics," much of which has nothing to do with truly ethical behavior, a fetish, and the result in every case is unnecessary bitterness between doctors and the press.

We newsmen have other problems, most of them inherent in the mechanisms of our media. There are reasons for some of our sins. We very often have an hour or two, sometimes less, to write a coherent account of some complicated work. We have copy maximums—around 500 words on my

newspaper for most stories. We go beyond this of course when we must. The Associated Press limits itself to 300 to 500 words, as a general rule (300 words is one page of double-spaced, typewritten copy). This is because newspaper space and news-wire time are seriously limited. Jenkin Lloyd Jones, editor of the Tulsa *Tribune*, says, "We are drowned in news. We must channel a Niagara into an irrigation ditch." We science reporters may think we should occupy more of the ditch, but we must work within the system if we would report in public channels.

Science writing is often hard. Nate Haseltine of the Washington *Post* writes: "Some scientific stories defy telling in newspaper parlance. Like the DNA story . . . I have been trying for years to write it so my readers will understand it. I have yet to do it."

Much of science is in the language of mathematics, impossible to translate in a mass medium. But we try. And we *can* do many effective things, if we're skillful. We can heed Dr. Kusch: "I do urge that the panorama of scientific advance be presented, rather than only a few mountainous peaks separated by fog-shrouded valleys, to give a picture of science as a rational effort of human minds and not as a modern-day black magic." Impossible in 500 words? Not at all. We can capture and convey the spirit and flavor of science—the meaning of the discovery of a new particle, the background, the context—in a few telling phrases or sentences if necessary. We can more often write longer, more complete stories for weekly or other sections—the development of science staffs can give us the time. We can solve our problems in many ways, if we admit that they exist.

One thing we will continue to do is write for the public and not for the scientist. We must. Scientists sometimes say to us, "Don't make this sensational." Well, some news *is* sensational. Some news *is* exciting. We hope not to overdo this; perhaps we do overdo it in our daily frenzy, but better even this than dullness. Science is not dull; it is often dramatic, and this is part of the flavor we must convey.

There is a final, crucial point. We have barely scratched the surface so far in reporting the effect of science in our times. These days it is not enough for us to report the new discoveries and gadgetries; we must delve deeper into their effects on people and public policy.

For one thing, this means poking our noses into more government agencies. The science reporter, like the scientist, should be a public watchdog. I can think of a number of instances where science reporters have so served. When President Eisenhower had his stroke, White House news sources at first shunned that word and in fact said it did not apply. At least two science reporters promptly reported that it did, and flushed out a more honest statement.

In the early days of space rocketry, over-eager Pentagonites—embarrassed by Russia's success at weight-lifting—claimed on one occasion that we had just sent up the "heaviest satellite." By way of justifying this claim they blithely included the weight of the empty last-stage rocket, which remained attached to the payload. The claim got wide page-1 circulation until some reporters who knew better straightened things out.

Science reporting revealed as far back as 1951 that we were dangerously underrating Soviet science and technology. It disclosed that our July 1962 high-altitude H-bomb test had put up a new, unwelcome belt of radiation around the earth, jamming scientific satellites then in orbit. Science, medical, and welfare reporters have repeatedly investigated and cast light on substandard mental hospitals and nursing homes, to help trigger reforms.

The Washington press corps, naturally, must take the lead in scrutinizing federal science agencies. But the same challenges face science and medical writers in every city and state. Our local agencies and local medical societies (which often act, in effect, as quasigovernment agencies) are far too little watched.

The conscientious modern science reporter who tries to keep his eye on government, politics, business, industry, schools, and broad social trends—and, of course, science—will probably go crazy. But he will help keep the voting citizen informed, and thus play his finest role.

And now I must close. I may be missing three or four major breakthroughs.

Note

1. A helpful *Handbook for Press Arrangements at Scientific Meetings*, with much information for any scientist who meets the press, is available for $1 (less for bulk orders) from the National Association of Science Writers, 75 Bayview Ave., Port Washington, N.Y. 11050.