in a hospital. Medical science has done much for humanity, but not in the area of verbal communication. It should undergo a prefectomy, and have some of its prefixes taken out. I should like to see the "semi" removed from "semi-private," a dispiriting word that originated in hospitals; there must be a less depressing way of describing a room with two or more beds. I am also for taking the "sub" out of "sub-clinical," and starting all over again with the idea in mind of making the word mean something. Incidentally, I discovered at the hospital the difference between "to be hospitalized" and "to become hospitalized." The first means to be placed in a hospital, and the second has two meanings: to get so that you can't stand it in the hospital any longer, and to like it so much there you don't want to leave.

Lying in bed brooding over these matters, I turned on the radio and heard an American describe another American as "an old-time A.D.A. type of anti-Jeffersonian radical"—a beautiful specimen of bumblery. Sir Winston Churchill in the exhilarating years of his public life, turned out many phrases as sharp as stilettos—for one example, "squalid gamin." But you can count on your fingers the Americans, since the Thomas Paine of "the summer soldier and the sunshine patriot," who have added bright, clear phrases to our language. If you can bumble an opponent to death why stab him seems to be the general feeling among our politicians, some of whom have got through the ten years since the war ended with only five adjectives of derogation: naïve, hostile, unrealistic, complacent, and irresponsible. All these slither easily, if boggily, into bumblery, and the bumbler is spared the tedious exercising of his mental faculties.

The day I got dressed and was about to leave the hospital, I heard a nurse and an interne discussing a patient who had got something in his eye. "It's a bad city to get something in your eye in," the nurse said. "Yes," the interne agreed, "but there isn't a better place to get something in your eye out in." I rushed past them with my hair in my wild eyes, and left the hospital. It was high time, too.

When and if I find a reputable psychosemanticist, I want to take up with him something that happened to me one night more than two years ago. It may be the basis of my etymological or philological problems, if that's what they are —words, especially big ones, are beginning to lose their meaning for me. Anyway, I woke up one summer night, from a deep dream of peacelessness, only to realize that I had been startled by nothing whatever into a false sense of insecurity. I had a desperate feeling that I was being closed in on, that there was a menace in the woods behind my house or on the road in front of it, watchful, waiting, biding its time. A few weeks later I bought a .38-calibre Smith & Wesson police revolver, which startled my wife into a genuine sense of insecurity. She hid the gun somewhere, and the cartridges somewhere else, and I still don't know where they are. I have often thought of telling my psychosemanticist about it, and I sometimes have the feeling that I did call on him and that the interview went like this:

"Doesn't your wife's hiding the gun worry you?" he asked.

"No," I said.

"It would me," he confessed.

"It would *what* you?" I demanded.

It seemed to disturb him. "*What* would what me?" he asked cautiously.

I suddenly couldn't think of a thing. I didn't even know what what was, but I had to say something, so I said something: "Ill fares the land, to galloping fears a prey, where gobbledygook accumulates, and words decay."

I had just reached that Goldsmith paraphrase when a sub-researcher brought me the news from Washington that a movement is afoot in the nation's capital to cut down on bumblery, clarify officialese, and discourage certain platitudes (but not enough), in the wistful hope of bringing grace and meaning to the writing of English by government employees. I was glad to discover "finalize" among the banned gargoyles, but I don't see how the lawyers in Washington are going to get along without "predecease." The reformers, by the way, don't seem to know that this monster spawned an equally clumsy offspring, "survivorship." The main reason for this reform is to save filing space and money, but the economic aspect of the project does not depress me too much. It is a hopeful step in the direction of sense and sanity.

Come on, let's go out and get a breath of fresh air.

What's RIGHT with Science News Reporting?

Hillier Krieghbaum

When scientists gather at conventions, conferences, and informal "bull sessions," one recurring topic for discussion (and frequently, denunciation) is the role of the science news reporter of papers and magazines. Comments range from a plaintive, "Why did they phrase it that way?" to a vigorous, "Who wrote those damned headlines?"

At the outset of this discussion, let me admit that some reporting of science news (especially that by so-called "humorous" feature writers on metropolitan papers or the scientifically illiterate, small-town reporters) will get no defense at all from the skilled, professional science writers. Although it is no ground for justification or smugness, I might point out that the conduct of *all* lawyers, *all* physicians, or, for that matter, *all* research workers cannot be defended by their colleagues.

Most present-day science reporting rests on the premise that the people have a right to know what is going on. A part of the democratic creed is that an informed public is vital to sound public opinion and valid decisions. This is true in science, just as it is in politics, labor relations, business affairs, and other similar fields. Most scientists, I think, will agree with journalists on this.

More than 4 years ago, the AAAS Executive Committee said: "In our modern society it is absolutely essential that science—the results of science, the nature and importance of basic research, the methods of science, the spirit of science—be better understood by government officials, by businessmen, and indeed by all the people."

Beyond the supporting of democratic

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philosophy, there is another basis for reporting to the general public. Increasingly in recent decades, the public has directly supported science. Federal Government expenditures, raised by taxes on all the people, have zoomed to gigantic proportions. Direct contributions to many research organizations, particularly those concerned with medicine, have made possible multimillion-dollar expenditures. Most industrial grants have been made from profits piled up from popular acceptance of products or services.

Survey of Science News Reading Habits

Not only is there the people's right to know about scientific advances, but there is a craving on the part of large sections of the public for this information. Thanks to a pilot study of 200 persons recently completed by the Survey Research Center, University of Michigan, for the National Association of Science Writers and New York University, we now have some sound ground for estimating this interest in science news. The survey, made possible by a grant from the Rockefeller Foundation, showed the following.

1) More than three-quarters of the 200 persons interviewed—one-third of whom had attended college or far more than would be found in a typical United States cross section—read science news. The college group was expanded so that rough statistics could be obtained in the limited pilot study.

2) One-quarter of those interviewed read all the science items published in their local papers.

3) More than a third of the 200 persons wanted more science news printed. This point was further emphasized when those in this third of the sample were asked to name what types of news they were willing to curtail to make room for more science reporting. Some mentioned sports news; others cited society news; still others were willing to give up comics. The survey showed that a "sizable proportion" of even the occasional science news readers wanted expanded coverage. The SRC findings indicated "a potential for growth of the science audience at all levels of readership."

The pilot study for the NASW and New York University, limited as it was to only 200 individuals, still gave us a profile of those persons who are the most ardent readers of science news. For instance, the relationship between education and science reading was direct: the more education, the more science reading. Those who had taken either physical or biological science courses in high school or college, as a group, tended to read more science news than those who had taken no course or only general science.

Since educational background tied in roughly with probable occupation and income, it was not unexpected that these factors, too, correlated with science reading. Thus white collar workers and higher income groups were more interested in science news reports.

While he did not ignore the more practical applications of science in his choice of reading, a typical individual who read about science extensively and regularly tended to prefer stories concerning more abstract subjects. His interest, for example, was high in items about molecular theory, archeology, and space travel when he was given a list of possible news stories and asked to tell those that would interest him.

This group of high science readers, according to the pilot study, hold personal beliefs and values in accord with those of scientists, generally. They believe that the universe is orderly and understandable through scientific study. They evaluate science as a beneficial force and feel that it contains little threat to their well-being.

Scientists versus News Reporters

With this background about the most interested members of the public that science writers are serving, let us turn to some problems that arise when correspondents seek to report for this general audience.

Differences between scientists and news reporters arise, in a large degree, from differing points of view, differing philosophies toward the world in which they live. To the scientist, the new is something untried, a challenge, a matter on which one should be skeptical until it has been proved in the laboratory or field experiments. To the reporter, the new is news, something to be rushed into print—before a competitor gets it. If fuller explanations are needed, they may be told tomorrow.

The business of newspaper and magazine deadlines causes some ill will, at times with complete justification on the part of the scientists. A publication must be printed on an exacting time schedule, so that copies may be put on trains, buses, and trucks for delivery. These demands may be almost split second for the newspaperman, with 5 or 10 minutes making the difference between getting credit for a story or being "scooped." While scientists want to establish prior publication dates when there is rivalry, nothing in their activities compares with the reporters' battle against the clock. One news agency had a slogan, "Get it first but first get it right." To meet competition, some writers fail to carry out the second part of this instruction. Despairing of changing journalistic traditions, some reporters have speculated, in private, whether slower paced magazines may not be a more adequate medium for reporting contemporary science developments than the rapid fire of newspaper coverage. Personally, I feel that the professional science writer with broad background and many contacts still can do a satisfactory job. But he has eternally to keep in mind the caution, ". . . but first get it right."

The science news reporter thinks of himself as a representative of the public and, as such, the better ones seek to find out the facts and to present them in their proper perspective. In this process, these correspondents may step on protruding toes and the anguished scientists may blame not their own deficiencies but the inquisitiveness of the writers. In these cases, both newsmen and scientists are interested parties and may fail to maintain the objectivity that is a hallmark of true scientific research.

The most common charge against the contemporary science reporter is that he sensationalizes. This complaint headed the list in the recent 200-person survey, as it did an earlier NASW–New York University attitude study of a random sample of scientists listed in *American Men of Science*.

This charge of sensationalism arises because the science news reporter must translate from the technical language of the laboratory report or theory into the colloquialisms of the man in the street. If a writer follows too exactly the technical or complex descriptions of the scientist, he fails to communicate to the typical reader who may never have taken high-school physics or chemistry courses. If he popularizes too extensively, he fails to retain the full flavor of the research, presenting only a distortion of the real results after the manner of amusement park mirrors.

Help from the Scientists

Many scientists recognize the difficulties of the reporters' translating job. For instance, Fritz Lipmann in his speech at the dinner for distribution of the 1953 Nobel prizes in Stockholm referred to those workers whose "findings mostly have to be expressed in a scientific language which is understood by only few."

Austin H. Clark, who went out of his way to work with reporters during his long career with the U.S. National Museum, once illustrated how translating into popular language could be done without mangling science. He confided to science writers that he thought a scientific paper in which he said, "Most cuckoos, the honey-guides of Africa, the

weaver finches, some hang-nests, our cow birds, the rice-grackle, a South American duck, and, according to recent information, one of the paradise birds, lay their eggs in nests of other birds which hatch these eggs and raise their young," could be translated without valid objection into this lead paragraph: "Those unfeeling mothers who leave their babies on the doorsteps of prosperous people's houses have their counterparts among the birds."

Commenting on this topic, one man, a college graduate, interviewed in the 200-person sample of the recent survey, said: "Consider us all pretty ignorant and give us ABC's. Then give us a little more at a time—groundwork first, with subsequent enlarging on fundamentals."

Of course, there is no defense for falsification by a science writer, but there might be more sympathetic understanding of the reporters' demanding assignments. Scientists may help in this translating job if they will work with reporters when time permits.

Back in the 1930's when I was writing science news for the United Press, I was fortunate enough to attend a press conference arranged before Robert A. Millikan presented a highly technical paper to the National Academy of Sciences. Millikan took more than an hour to explain in simple language what he was going to say the next day and to answer writers' questions. One reporter asked the Nobel prize winner if his work could be described in a particular way—translating the complex findings into terms of space travel. Millikan said the work could be so described. The following day that reporter's lead or first paragraph was a paraphrase of the version accepted by Millikan. This was science reporting of high caliber.

Sometimes reporters do not have time before their deadlines to check with scientists. Other times the scientists are unavailable or unable to translate adequately, even when they are asked to do it. Human weaknesses may contribute to a sad performance, and it may be due to either writer or scientist.

Is Science News Reporting Adequate?

In the recent survey of 200 representatives of the general reading public, more than half were satisfied with the present-day presentation of science news. Of those who offered suggestions for improvements, 30 percent wanted simpler language and more lucid explanations; 20 percent desired more details and greater completeness.

In an earlier study by NASW and New York University of a random sampling of persons listed in *American Men of Science,* approximately a third of the 113 who replied thought that contemporary science reporting was adequate, and nearly a third more found it reasonably good with specific exceptions, such as small-town home newspapers and occasional inaccurate news articles.

If these two surveys are correct, then the oft-flaunted charge of sensationalism on the part of science writers seems to break down for the professionals now covering the field. Infrequently slips do occur, but apparently they are not common.

Headlines are another sore point in scientists' discussions of press coverage of their activities. Two technical points should be understood by these critics. First, in all but the smallest newspaper offices, the reporter does not write the headlines for his stories. A specialist does this. The headline writer or copyreader, as he is called, composes the headline upon what the reporter has written in his story. If vagueness and ambiguities are included, the copyreader may misinterpret facts when he writes a heading. This system may be a weakness, but it is the way contemporary publications are put together. Second, a headline is an exceedingly complicated device; there can be only so many letters to a line of type. If the news concerned, for instance, sulfanilamide and para-aminobenzoic acid, the headline writer obviously would be unable to use these terms in a two-part heading, each line of which could total no more than 18 letters.

Some scientists express disappointment with newspaper and magazine articles that do not permit them to reproduce the experiments being described in popular publications. Such news articles do not seek to give full details. It is unfair, I believe, to criticize the mass circulation journals for not providing what only the specialists want. Let the scientists turn to their own publications for this information. And when public interest is so great that a popular version is flashed to all sections of the country, let electronics and other media of mid-20th century speed the details to the specialized audience.

Is part of the difficulty here caused by a conflict between scientific accuracy and newspaper accuracy? I think so. To me, scientific accuracy supplies all the details necessary to explain the project or to reproduce the experiment. Journalistic accuracy, on the other hand, is simply an attempt to convey an accurate impression or a correct picture of what this scientific development means to the general public.

When Albert Einstein propounded his theory of relativity, it was frequently said that only a few hundred persons in the world really comprehended his work. But the correspondents did give the public a generally accurate picture of the implications of this theory. Thus Einstein's philosophic contribution to modern thinking became a part of the contemporary scene while his abstractions still elude most people. If present-day science reporters are doing equally well for advances of science today, then I think they are discharging their basic responsibilities in a democratic society.

*Our debt to tradition through reading and conversation is so massive, our protest or private addition so rare and insignificant—**and this commonly on the ground of other** reading or hearing—that in a large sense, one would say there is no **pure originality. All** minds quote.*—RALPH WALDO EMERSON.