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Casualties Of The Workplace

By
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Part III

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"... respectability in the
field of occupational medicine."
p. 4

"... physicians that indicate
can rely on to deny valid
occupational disease claims."
p. 6

Division of epidemiology and
prevention

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ANNALS OF INDUSTRY

CASUALTIES OF THE WORKPLACE

III—SOME CONFLICTS OF INTEREST

WHEN the Pittsburgh Corning Corporation shut down its asbestos-insulation plant in Tyler, Texas, in February of 1972, it did so because of determined and courageous action taken by Dr. William M. Johnson and Dr. Joseph K. Wagoner, who had joined the Division of Field Studies and Clinical Investigations of the Department of Health, Education, and Welfare's National Institute for Occupational Safety and Health in the summer of 1971. Shortly after coming to the division as its chief medical officer, Dr. Johnson discovered data showing grossly excessive and dangerous levels of asbestos dust in the Tyler plant—data that had been buried in the files of Dr. Lewis J. Cralley, the former director of the division, for years. Dr. Johnson and Dr. Wagoner, the new director, set out to make sure that this information would be properly disseminated and used to benefit the workers, whose terrible jeopardy from asbestosis (pulmonary scarring resulting from the inhalation of asbestos fibres), lung cancer, mesothelioma, and other malignant tumors it described. By daring to release the government's dust counts at the Tyler factory to Anthony Mazzocchi and Steven Wodka, of the Oil, Chemical, and Atomic Workers International Union; by expressing their concern to Dr. Lee B. Grant, the medical consultant to Pittsburgh Corning, for the plight of the men who worked in the plant; by inspecting the factory and writing a report stating that a critical occupational-health situation existed there; and by insisting to their superiors in the National Institute for Occupational Safety and Health—or NIOSH—that action must be taken to remedy it, and that pressure be brought to bear upon Secretary of Labor James D. Hodgson to promulgate a safe standard for industrial exposure to asbestos, Dr. Johnson and Dr. Wagoner had done something almost unheard of in the annals of occupational medicine in the United States: They had taken steps to force the federal government from its position of self-imposed neutrality and had placed the well-being of workers before the self-interest of industry. In so doing, not only had they become apostates against the old policy of suppressing occupational-health data that were embarrassing to industry but they had also introduced a revolutionary new

concept at NIOSH by showing how the organization could actively carry out the primary mission assigned to it by Congress in the Occupational Safety and Health Act of 1970—that of preventing occupational disease. In addition, they had helped to crack the cornerstone of the medical-industrial complex of company doctors and industry consultants, whose triangular structure had come to rest largely upon an unspoken alliance with a number of key occupational-health officials at various levels of state and federal government.

For several years, Mazzocchi had been gathering evidence to show that industrial disease was rampant in the United States and that knowledge of it was being suppressed by the medical-industrial complex, and since the situation at the Tyler plant provided a quintessential example of the workings of this complex, he decided to draw public attention to it. In the meantime, he and Sheldon W. Samuels, who is the director of Health, Safety, and Environmental Affairs for the

A.F.L.-C.I.O.'s Industrial Union Department, had aroused the concern of other trade-union leaders over the asbestos hazard, and had been urging Secretary Hodgson to declare an emergency standard for occupational exposure to asbestos of two asbestos fibres per cubic centimetre of air, which would replace the totally inadequate twelve-fibre standard then in effect. The unions were strongly supported in this effort by Dr. Irving J. Selikoff, who is the director of the Mount Sinai School of Medicine's Environmental Sciences Laboratory and a pioneer in the field of modern asbestos epidemiology. However, in spite of the fact that Dr. Selikoff and Dr. E. Cuyler Hammond, vice-president for epidemiology and statistics of the American Cancer Society, had provided indisputable evidence that one out of five asbestos-insulation workers was dying of lung cancer and that almost half of these men were dying of some form of asbestos-related disease, Secretary Hodgson, apparently searching for some middle ground that might be satisfactory to

both industry and labor, declared a temporary emergency standard of five fibres per cubic centimetre. A further indication that the government was seeking a compromise between the well-being of the nation's asbestos workers and the interests of industry came late in November of 1971, when the Department of Labor's Occupational Safety and Health Administration, which has the responsibility of enforcing the provisions of the 1970 Act, inspected the Tyler plant as a result of Dr. Johnson's report that a critical occupational-health situation existed there. Although major deficiencies in the factory's ventilation system constituted serious violations of the Act—those likely to result in disability or death—the Administration chose to consider them nonserious and fined Pittsburgh Corning just two hundred and ten dollars. At the same time, it gave the company a deadline for making extensive improvements in the ventilation system—improvements that were considered too costly by Pittsburgh Corning's managers, who decided to shut the plant. All this provided a tense buildup for the public hearings that the Occupational Safety and Health Administration was required by law to hold as part of the process of replacing the temporary emergency standard for asbestos with a permanent standard. Since the permanent standard for asbestos was to be the Administration's first ruling under its mandate to redefine occupational-health regulations, industry and labor were prepared to look upon the ruling as an indication of whether the Administration would be determined or lenient in setting new standards for other hazardous substances. Thus, the public hearings on asbestos, which were scheduled for the middle of March, loomed as a crucial contest between the independent medical and scientific community, most of whose members were backing labor's demand for a two-fibre standard, and that part of the medical-industrial complex supported by the asbestos industry, whose members were preparing testimony to contend that a five-fibre standard was adequate to protect workers. In weighing the evidence and deciding upon a safe level of exposure, the Administration obviously needed to approach the problem impartially. The way things stood, however, the Administration's impartiality was open to question, because of its previous failure to enforce even the inadequate twelve-fibre standard at the Tyler plant and at hundreds of other factories across the land. Speaking at a press confer-

ence in Washington, D.C., on February 10, 1972, Mazzocchi condemned this failure as bitterly as he did the blatant disregard shown by the managers of Pittsburgh Corning and its medical consultant, Dr. Grant, who, he claimed, had for years known about and ignored the excessive dust in the Tyler plant and the awful peril it held for the workers.

During the first week in March, I spent several days in Tyler talking with men who had been employed at the plant and with other people who were involved in the situation that had developed there. Shortly after I returned to New York, I arranged to fly to Cincinnati and spend a day with Dr. Johnson and Dr. Wagoner. I also telephoned Dr. Grant, who, in addition to being the medical consultant to Pittsburgh Corning, is the medical director of PPG Industries (formerly known as the Pittsburgh Plate Glass Company), which, together with the Corning Glass Works, had established Pittsburgh Corning. When I reached him, at his office at PPG Industries, in Pittsburgh, I asked him if he could spare an hour or so to talk with me about the Tyler plant. Dr. Grant was extremely cordial, but he declined to give me an interview unless I first obtained the permission of James H. Bierer, the president of Pittsburgh Corning. I then called Bierer, and he, too, was very cordial, but was somewhat hesitant regarding my request. He said that he would have to look into the matter before giving me permission to talk with Dr. Grant. "I'll get back to you as soon as possible," he said.

On Monday, March 13th, I took a morning flight to Cincinnati, and arrived at the offices of the NIOSH Division of Field Studies and Clinical Investigations shortly before noon. Dr. Johnson turned out to be a tall, pale, bespectacled man of thirty-one, with a quiet way of speaking and a serious demeanor. His boss, Dr. Wagoner, was a boyish-looking blue-eyed man of thirty-six; like Johnson, he is extremely soft-spoken, but his manner is more intense. I had a lot of questions for them about the survey they had conducted at the Tyler plant, in October of 1971, and by the time we had finished with these we were in the middle of lunch at a nearby restaurant. At that point, I told them something about my recent trip to Tyler, and how I had met several men who had become ill and stopped working in the plant even before it was shut down. When I finished relating them my impressions of these

men, Dr. Johnson put down his fork and shook his head.

"As you know, Dr. Selikoff and Dr. Hammond have conducted a study of the mortality experience of nine hundred and thirty-three men who worked between 1941 and 1945 at the Union Asbestos & Rubber Company's plant in Paterson, New Jersey, which was the predecessor factory to the one in Tyler," he said. "Because of their findings, we're awfully depressed about the future of many of the eight hundred and ninety-five men who worked at the Tyler plant during the seventeen years it was in operation. And what is even more depressing is that the Paterson and Tyler tragedies are being repeated over and over, from one end of this country to the other. Last summer, as Joe and I were unearthing the environmental data on Tyler, we came across some mortality data on men who had worked in asbestos-textile plants throughout the United States. Like the Tyler data, this information had been accumulating willy-nilly in the division for years, and, incredible as it may sound, no one had seen fit to do anything about it. Just from the most cursory look at those data, almost anyone would know there had been a tragedy of immense proportions in many, if not all, of those factories. Why, the men working in them were dying of asbestosis and cor pulmonale—a form of heart failure that often accompanies the disease—right on the job! Men in their fifties! And some only in their forties! Recently, Joe and I pulled together the figures on just one of those plants and analyzed them. It manufactures asbestos-textile, friction, and packing products, predominantly from chrysotile asbestos, and that's interesting, because the segment of the asbestos industry that mines and uses this particular variety of asbestos has been trying to claim that chrysotile is not as biologically harmful as other types of asbestos, including amosite, which was the type the Tyler men worked with. Between January 1, 1940, and December 31, 1962, thirty-three hundred and sixty-seven men and women worked in the chrysotile-asbestos plant, and, using the data that we found in the files, and more that we developed, we made a followup study of them from the time their employment ceased until January of 1968. As of that date, twenty-four hundred and eighty-one of these workers were known to be alive, six hundred and fifty-five were known to have died, and two hundred and thirty-one could not be traced. Death certificates were obtained for six hundred and twenty-six of the

dead. According to the standard mortality tables, there should have been approximately five hundred and twenty-seven deaths among these thirty-three hundred and sixty-seven people instead of six hundred and fifty-five. Of the excess of a hundred and twenty-eight deaths, the vast majority—one hundred, to be exact—were caused by diseases of the cardiopulmonary system. Approximately nineteen deaths from lung cancer were to be expected, but there were actually forty-six. Seventy-two deaths occurred from chronic lung disease, mostly asbestosis, whereas there should have been only about thirty-five. Two hundred and thirty-nine of the workers died of heart disease—many with cor pulmonale and congestive heart failure—as opposed to two hundred and two expected deaths from these causes. Among the eighty-three other deaths whose causes were known, sixteen resulted from malignancies of the lymphatic and blood systems."

Dr. Wagoner told me that he and Dr. Johnson had also evaluated the distribution of the cardiopulmonary deaths according to the elapsed time since termination of employment. "We did this partly to shed light on the consequences of a common practice in the asbestos industry, as well as in many other industries, of using respirators in the absence of strict environmental controls," he said. "Our findings tell a depressing story. The majority of the lung-cancer and asbestosis deaths occurred within five years of termination of employment. In fact, fourteen of the forty-six lung-cancer deaths occurred within six months of termination of employment, and the average age of those fourteen people was only fifty-three and a half. And of the forty-one asbestosis deaths that occurred within five years after termination of employment, a majority took place within the first year, including seventeen deaths that happened within six months, at an average age of fifty-four."

Dr. Johnson broke in to say, "Which means that a lot, if not most, of these people had advanced lung disease, malignant or premalignant, even as they were working. Now, what kind of medical program did that factory have, to allow men to be dying of pulmonary disease right on the job?"

Dr. Wagoner then continued, "During our medical survey of the latter plant, we found that almost fifty per cent of the men with ten or more years of employment showed X-ray, pulmonary-function, and clinical findings consistent with asbestosis. The

routine use of respirators, which are often difficult to breathe through, in such a population of men is extremely hazardous, because it puts them at an excess risk of cardiopulmonary death. For that reason, the Secretary of Labor's Advisory Committee on the Asbestos Standard, of which I am a member, has recommended that the use of respirators during periods of excessive asbestos dust be preceded by strict medical evaluation."

I had heard previously of the existence of the Advisory Committee on the Asbestos Standard, and when we returned to the offices at NIOSH, I asked Dr. Wagoner to tell me about it. He explained that the committee was part of a long and complicated procedure by which criteria are developed for the recommendation of occupational-health standards. "The primary source of medical evidence and information about asbestos was provided in the NIOSH asbestos-criteria document, which I helped to write," Dr. Wagoner said. "This document included a critical evaluation of all known research on asbestos disease and a recommended standard based on this evaluation, and it was sent to Secretary Hodgson on February 1st. The document recommends that airborne asbestos dust be controlled so that no worker is exposed over an eight-hour working day to an average of more than two fibres greater than five microns in length per cubic centimetre of air. It proposes that the two-fibre standard become effective two years after its promulgation, in order to permit manufacturers of asbestos products to install the necessary engineering controls, and that in the meantime the temporary emergency standard of five fibres remain in effect. It urges that medical surveillance, including periodic pulmonary-function tests and X-rays, be required for all workers exposed to more than one asbestos fibre per cubic centimetre of air, and that these examinations be conducted at the employer's expense. It also recommends that warning labels be affixed to containers of raw asbestos and to finished asbestos products stating that asbestos is harmful, that it may cause delayed lung injury, including asbestosis and cancer, that its dust should not be inhaled, and that it should be used only with adequate ventilation and approved respiratory devices."

Dr. Wagoner went on to tell me that in proposing a permanent two-fibre standard for asbestos dust he and the other authors of the NIOSH document gave great weight to the fact that the standard had been recommended

in 1968 by the British Occupational Hygiene Society and had been adopted by Her Majesty's Inspectorate of Factories the same year. "However, we took care to point out that the British standard was designed only to reduce the early signs of asbestosis, and not to prevent asbestos-induced cancer, which may occur after exposure to levels of asbestos dust that are low enough to prevent lung scarring," he added.

Continuing, Dr. Wagoner said that the Advisory Committee on the Asbestos Standard had been set up by Secretary Hodgson two months before, in January, to provide additional evidence and information as to what the permanent standard should be. "The committee has five members, representing industry, labor, government, and the independent medical and scientific community," Dr. Wagoner said. "In addition to me, it includes Isaac H. Weaver, corporate director for environmental control of Raybestos-Manhattan, Inc.; Andrew Haas, the president of the International Association of Heat and Frost Insulators and Asbestos Workers; Jack Baliff, the chief engineer of the Division of Industrial Hygiene of the State of New York's Department of Labor; and Edwin Hyatt, of the University of California's Los Alamos Scientific Laboratory, who is the chairman. We held meetings in Washington for five days in February, and, by majority vote, we supported the two-fibre standard and all the recommendations of the NIOSH criteria document. In fact, in certain areas we made recommendations to the Secretary of Labor that were even stronger than those of the criteria document. For example as I said, we recommended that before respirators could be issued to workers for any reason, each worker must have a complete physical examination to determine whether he could wear a respirator without endangering his health. We took this action to avoid the recurrence of conditions like those at Tyler where respirators were slapped onto men who already had pulmonary problems as a result of exposure to asbestos."

That night, I had dinner with Dr. Johnson and his wife, who lived, with their two children, in an apartment in the suburbs of Cincinnati. I had been told that Dr. Johnson was fulfilling his military obligation by serving with NIOSH, and as he was driving me to my hotel later in the evening I asked him if he intended to remain there when his two-year tour of duty was over.

For a few moments, Dr. Johnson

was silent; then he shook his head and said he really didn't know. "I am gravely troubled by the question of respectability in the field of occupational medicine," he told me. "There's very little peer pressure among the doctors who are in it, either in industry or in government, and now that I find myself faced with the problem of defining myself professionally for the next thirty years or so, I'm afraid of becoming frustrated and fatigued in this field, and of becoming part of the fabric of how things are done in a huge bureaucracy. You see, the way things are set up in occupational health these days, it's all too easy for a man to look at the welter of problems awaiting solution, to realize the lack of any real intention on the part of many people in government and in industry to take any significant action to remedy them, and to say to himself, 'Well, I can't do anything on my own, so I might just as well sit back and fit into the mold.'"

"But you did do something about it," I said. "You and Dr. Wagoner did something that could be the beginning of turning the whole thing around."

"Yes, we did something," Dr. Johnson replied quietly. "But will they let us keep on doing it?"

EARLY the next morning, I flew to Washington to attend the opening session of the Department of Labor's public hearings on the proposed permanent standard for occupational exposure to asbestos. They were held in a large conference room in the Interdepartmental Auditorium, at Twelfth Street and Constitution Avenue, and when I arrived there, shortly after nine o'clock, the place was filling up with some hundred-odd representatives of industry, labor, government, and the independent medical and scientific community.

The morning was given over to scheduling and rescheduling appearances of people wishing to give testimony during the rest of the week, and this complicated business was accomplished with wit and dispatch by Arthur M. Goldberg, a diminutive, bearded man, who was a hearing examiner for the Department of Labor. After Goldberg had arranged the agenda for the four days of hearings, a tall man in his early forties, with dark hair and white sideburns, got to his feet, introduced himself as Bradley Walls, and said he represented the Asbestos Information Association of North America. "We have a number of questions asking for rulings from you, Mr. Goldberg," he said. "I preface them by saying that, in light of the number of witnesses, we concur with you that cross-exami-

nation might delay the hearings beyond our endurance and possibly yours, and that if clarifying questions be required they best come from you, sir. Secondly, we would like your ruling on your position with regard to physical evidence, either living or photographic. We would prefer that it not be presented, inasmuch as we do not think it would be helpful to this hearing."

With a puzzled frown, Goldberg inquired, "May I ask what you mean?"

"Either basket cases or X-rays," Walls said, with a grin. "We feel that their introduction would turn the hearings into a circus."

"The only thing I can say now is that evidence must be submitted in duplicate," Goldberg said dryly.

Walls grinned again. "Thank you, sir," he replied. "We will accept that."

When Mr. Walls sat down, a slight man in his early thirties rose at the rear of the room and, in a voice full of emotion, introduced himself as Colin D. Neal, the administrative assistant to the president of the United Papermakers and Paperworkers Union, which represents twenty-one hundred workers at the Johns-Manville Corporation's asbestos plant in Manville, New Jersey. "Sir, the United Papermakers and Paperworkers would like to express our indignation at Mr. Walls' characterization of those who may suffer the effects of asbestos-dust disease as 'basket cases,'" he said. "Using his terminology, however, we have a 'basket case' we would like to present to you sometime today."

Goldberg looked at Neal and nodded slightly. Then he said, in a quiet voice, "We will hear all witnesses who are presented, sir," and adjourned for lunch.

On my way out, I encountered Sheldon Samuels, of the A.F.L.-C.I.O.'s Industrial Union Department, whom I had previously met and talked with on several occasions. Samuels, a stocky man in his middle forties, is ordinarily mild-mannered, but he was now flushed with anger. When I asked him to explain what had happened between Walls and Neal, he shook his head grimly. "We're holding a press conference at the Hotel Washington in a few minutes," he said. "Come on over and you'll find out."

The press conference was conducted by the Industrial Union Department in conjunction with the United Papermakers and Paperworkers, and was attended by a dozen or so journalists from various newspapers and magazines and by a Metromedia television camera team. Seated from left to right behind a long table at the front of the room were Samuels; Dr. William J.

Nichols, assistant professor of community medicine at the Mount Sinai School of Medicine and a member of the Mount Sinai Environmental Sciences Laboratory; Dr. Maxwell Brown, a thoracic surgeon from Bound Brook, New Jersey, which is near Manville; Jacob Clayman, administrative director of the Industrial Union Department; Colin Neal; Joseph Mondrone, president of Local 800 of the Papermakers' union in Manville; Robert Klinger, Local 800's vice-president and the chairman of its Health and Safety Committee; Daniel Maciborski, a member of the local; and Marshall Smith, the local's international representative.

Samuels got the press conference under way by reminding his listeners that it had long been known that the inhalation of asbestos dust could scar and destroy the lungs. "For the past thirty years, asbestos has been a proven cause of cancer of the lungs, and of the stomach and intestines of the workers who breathe it," he went on. "Usually, exposure over a long period of time is necessary to produce asbestos-related disease, but there is now evidence that even a single day of breathing large amounts of asbestos dust will harm the lungs. Contamination in the community, especially in the homes of asbestos workers, has been shown to cause cancer in women and children who have never been in an asbestos factory. Indeed, no one who has been or who is being exposed is safe from the effects of asbestos, and tens of thousands of workers and their families may already have had their lives shortened by exposure to asbestos dust."

Samuels went on to say that the development of safe methods of working with asbestos had been hampered for years by the efforts of management to hide the facts about asbestos disease, to suppress government and private studies of the subject, and to prevent state job-safety agencies from taking effective action. He then declared the temporary emergency standard of five fibres per cubic centimetre of air to be totally inadequate. "The Industrial Union Department will recommend at the hearings this week that a standard of two asbestos fibres per cubic centimetre of air go into effect within six months, and that within two years the standard be lowered to one fibre per cubic centimetre," he said. "Moreover, since constant monitoring of fibre levels in hundreds of plants is obviously impossible, we are calling for the installation of engineering controls and work practices designed to bring asbestos exposures ultimately to a zero level."

Samuel then introduced Clayman, who has been with the Industrial Union Department since its formation, in 1956, and had been its administrative director since 1960. Clayman, a soft-spoken man in his middle sixties, spent a lifetime in the labor movement, first as a steelworker, then as a member of the Ohio state legislature fighting for improved workmen's compensation laws, and, just before joining the Industrial Union Department, as secretary-treasurer of the Congress of Industrial Organizations in Ohio. Speaking in measured tones, Clayman told his audience that the press conference had been called to bring to public attention what might well be the most devastating environmental disaster yet perpetrated by any industrial nation. "Today, millions of American workers, their families, and their neighbors may be exposed to toxic concentrations of asbestos," Clayman said. "God only knows how many thousands of workers have died; and how many will die or be terribly sick, because of the routine way this country has dealt with the problem of occupational exposure to asbestos for so many years. We cannot bring dead workers back to life or prevent pain long since experienced, but we can and must bring an end to this inexcusable environmental crime of huge proportions that afflicts workers and totally unaware victims in the plant community."

Dr. Borow was then introduced, and he described the cases of malignant mesothelioma that he and his associates at the Somerset Hospital, in Somerville, New Jersey, had begun to find in 1964, and said that he had witnessed a sharp rise in the incidence of the disease since then. He quoted from a letter he had written on October 12, 1967, to Marshall Smith, then president of the Papermakers' Local 800. The letter stated that Dr. Borow and his associates were planning an exhibit on the rising incidence of mesothelioma in the Manville area, which they had hoped to display in 1968 at four major medical conventions throughout the country and at various hospitals in New Jersey, but that, though they had applied to forty different sources for funding, they had been unable to obtain money for this purpose. "We were told frankly that local industry would support this project for fear of upsetting the Johns-Manville Corporation," the letter continued. "Johns-Manville themselves, after six weeks of deliberation, refused support, as they were not ready to acknowledge the association between asbestosis and meso-

thelioma." Dr. Borow's letter to Smith concluded by asking the union to provide the three thousand dollars that would be necessary to assemble and transport the exhibit, and after he had finished reading it Dr. Borow said that the union had supplied the money and the exhibit had been widely displayed.

Dr. Borow then introduced Daniel Maciborski, a patient in whom he had discovered an abdominal mesothelioma a few months earlier. Maciborski, a gaunt man in his middle fifties, told the audience with calm and dignity that he had contracted mesothelioma while working for Johns-Manville, and that he hoped his personal misfortune would encourage government officials to act promptly so that it would not be shared by other workers.

THE hearings had begun by the time I had had some lunch and returned to the conference room. As I took a seat, I saw that Maciborski and Dr. Borow had been giving testimony at a witness table at the front of the room—to the right of Goldberg, the hearing examiner, and directly opposite a cross-examination panel consisting of Nicholas DeGregorio, an attorney with the Department of Labor's Office of the Solicitor, and Gerald Scannell, acting director of the Occupational Safety and Health Administration's Office of Standards. Toward the end of his remarks, Dr. Borow said that he had now encountered fifty-two cases of mesothelioma in the Manville area, and that all the victims of the disease had worked for Johns-Manville with the exception of two, who had simply lived in the community.

Dr. Borow and Maciborski were followed at the witness table by Dr. Nicholson, of the Mount Sinai Environmental Sciences Laboratory, who began his testimony by stating that the health experience of American asbestos workers could be described only as a national tragedy. Referring to a mortality study Dr. Selikoff and Dr. Hammond had made of insulation workers in the Newark-New York area, Dr. Nicholson reminded his listeners that two in ten of those men had died of lung cancer, one in ten of gastro-intestinal cancer, nearly one in ten of mesothelioma, one in ten of other cancers, and almost one in ten of asbestosis. "Past standards are not an appropriate reference in setting a new permanent standard for occupational exposure to asbestos, simply because all past standards were conceived only for the purpose of preventing asbestosis," Dr. Nicholson continued. "But asbes-

tos is obviously not the major problem among asbestos workers. Cancer is the major problem. Cancer accounts for seventy-five per cent of the excess deaths among the asbestos-insulation workers studied by Dr. Selikoff and Dr. Hammond, and this asbestos-cancer hazard is not appropriately covered by the proposed asbestos standard." Dr. Nicholson went on to say that no knowledge now existed of a safe working level of exposure to asbestos which would prevent the occurrence of cancer, and he urged that asbestos not be used in the workplace except with approved techniques and methods designed to remove asbestos dust from the working environment. "There is evidence that a standard of two fibres per cubic centimetre of air will be inadequate for the prevention of asbestos disease," he said. "The recently measured long-term exposure of the asbestos-insulation workers, whose disastrous disease experience has been documented by Dr. Selikoff and Dr. Hammond, was approximately three fibres per cubic centimetre, even prior to the implementation of improved control measures."

Another of the afternoon's witnesses was Dr. Sidney Wolfe, who is the director of Ralph Nader's Health Research Group and a former medical researcher on the staff of the National Institutes of Health. Dr. Wolfe testified that "if workers were guinea pigs and asbestos were a food additive, the Delaney Clause of the Food and Drug Act [which prevents the introduction into the marketplace of any substance known to cause cancer in test animals] would have mandated the elimination of this carcinogenic dust from the environment long ago. However, in 1972, twelve years after the publication of data showing the relationship between asbestos exposure and mesothelioma in humans, and at a time when there are now hundreds of cases of this cancer in workers exposed to asbestos, the slaughter continues. Under these circumstances, regulations which do not ultimately reduce the fibre count to zero fail to comply with the Occupational Safety and Health Act of 1970, which clearly states that 'no employee will suffer diminished health, mental capacity, or life expectancy as a result of his work experience.'"

Dr. Wolfe was succeeded at the witness table by Anthony Mazzocchi, who was accompanied by his assistant, Steven Vodka, and who stated the position of the Oil, Chemical, and Atomic Workers International Union in blunt language. "The proposed Labor Depart-

ment standard for exposure to asbestos dust is a very sad document," he said. "It serves to confirm what many members of our international union already fear—that the [Occupational Safety and Health] Administration is frivolous in the health and rights of working people." Mazzocchi went on to say that there were far more people exposed to asbestos in the workplace than one was usually led to believe. "The often quoted Labor Department figure of two hundred thousand workers isn't conservative, it's ridiculous," he declared. "In our international union, which represents one hundred and eighty thousand workers in the oil, chemical, and atomic-energy industries alone, almost every shop and plant uses asbestos in one form or another. For example, in a major oil refinery on the East Coast—Mobil Oil in Paulsboro, New Jersey—asbestos has captured our concern as the single most serious industrial-health hazard in that facility. We had nineteen workers who handle asbestos-insulation materials in that refinery examined by Dr. Irving Selikoff, of the Mount Sinai School of Medicine. Dr. Selikoff's tests revealed a very serious occupational-health problem resulting from their exposure to asbestos. Now our concern is that two to three hundred other workers—pipefitters, boilermakers, welders, bricklayers, and others who work in and around this insulation—may also have been overexposed. Asbestos turns up in the most unexpected situations. Recently, I was touring a plant in northern New Jersey where Prestone antifreeze is made. At one point in the tour, I caught a completely unprotected worker dumping asbestos into a vat of antifreeze. He told me that asbestos is what gives Prestone its anti-leak quality. If that was an unexpected situation, then what has been our experience in a primary asbestos plant—for example, one that manufactures asbestos-insulation products? Up until recently, the O.C.A.W. [Oil, Chemical, and Atomic Workers International Union] represented workers at the Pittsburgh Corning Corporation's asbestos plant in Tyler, Texas. This plant was the sister to the Union Asbestos & Rubber Company's factory in Paterson, New Jersey, where Dr. Selikoff conducted his now famous mortality study of amosite-asbestos workers. At the Paterson plant, Dr. Selikoff found that total deaths were more than twice the number anticipated, and now at the Tyler plant the National Institute for Occupational Safety and Health has already found that seven out of eighteen workers with

ten or more years of employment meet at least three of four criteria for asbestosis. Worse yet, H.E.W. studies of the plant dating back to 1967 have found grossly excessive levels of asbestos dust throughout the plant. While this particular factory employed only sixty or so people at its peak, the turnover was such that nearly nine hundred men had worked there for varying periods of time from 1954 to 1972. The story of Tyler is sadly filled with episodes of corporate indifference and governmental secrecy."

Mazzocchi went on to say that, because even very small quantities of asbestos were known to cause cancer, the union was recommending that all exposure to asbestos ultimately be reduced to zero by the enforcement of strict equipment-performance standards. "All manufacturing, maintenance, and other industrial and construction processes using asbestos must be reengineered so that they perform at zero exposure," he declared. "We propose that industry be put on notice, as soon as possible, that within six months of the effective date of this standard, no worker shall be exposed to more than two fibres per cubic centimetre of air; that within two years this level shall be reduced to one fibre; and that within three years of June of 1972 zero exposure shall be the law. As for respirators, they should be authorized only when the employer has a definite abatement plan to reduce the exposure to asbestos through engineering means. The other situation in which respirators would be allowed is where there is no feasible technology for controlling asbestos dust." Mazzocchi added that the Occupational Safety and Health Administration's proposed standard on medical examinations of asbestos workers would truly allow the fox to guard the chickens. "The medical community, like many other professional groups in this country, has physicians that industry can rely on to deny valid occupational-disease claims of workers," he said. "Therefore, we recommend that workers be allowed to have annual physical examinations performed on them by doctors of their own choice, but at the employer's expense. Furthermore, the records of these examinations should not be sent to the employer but to a central record-keeping facility at NIOSH, where such records could be kept intact and confidential. NIOSH would then send each employer an annual statistical summary on the examinations of all his employees. It has been our sad experience, in case after case, that as soon as management finds out

how badly it has injured the health of a worker, management does its best to get rid of him. Thus these records need to be kept intact for at least forty years." Mazzocchi concluded by declaring that a deficient standard for protection from the hazards of asbestos would legislate sickness and an early death for thousands of people. "Faced with this prospect, I would seek no new rule at all, rather than be held responsible for the cases of asbestos disease that will surface thirty years from now," he said.

One of the final witnesses of the afternoon was Alex Kuzmuk, a governor of the Asbestos Textile Institute—which in 1964 had sent a letter to the New York Academy of Sciences urging caution in the public discussion of medical research into asbestos disease in order "to avoid providing the basis for possibly damaging and misleading news stories." Kuzmuk now testified that the Asbestos Textile Institute was opposed to the NIOSH criteria document and to the recommendations of the Secretary of Labor's Advisory Committee on the Asbestos Standard. "We find that even the five-fibre standard is not feasible for us," he said. "Indeed, it will price American-made asbestos-textile products right out of the world and domestic markets, with the result that imports from nations where workers are under no such protection will flood the country. We feel that the proposed standard is based upon incomplete studies and that new evaluations are needed. Pending more comprehensive studies, we respectfully urge the Secretary of Labor to reconsider the establishment of asbestos standards, to reinstate the threshold limit value for asbestos dust at twelve fibres per cubic centimetre, and to provide for representation of the Asbestos Textile Institute on future advisory and study committees."

WHEN Goldberg recessed the first day's session, I flew back to New York, where business kept me during the second day of the hearings. The day after that—Thursday, March 16th—I took an early plane to Washington to be present for what Goldberg had referred to previously in the proceedings as the Johns-Manville "scenario." The conference room of the Interdepartmental Auditorium was almost full when I arrived, just before 9 A.M., and the hearings got under way promptly, with John B. Jobe, Johns-Manville's executive vice-president for operations, sitting down at the witness table and stating that the asbestos industry had first supported research on asbestos disease during the nineteenth

twenties, at the Saranac Laboratory of the Trudeau Foundation, in Saranac Lake, New York, and was at present supporting such research at more than half a dozen medical schools in the United States and Canada. He went on to say that although the asbestos industry recognized its responsibility to support the intent of the Occupational Safety and Health Act, there was no credible evidence demonstrating the necessity for a standard lower than five fibres per cubic centimetre of air.

Jobe was followed by Dr. George W. Wright, a longtime paid medical consultant for Johns-Manville, who was also director of medical research of the Department of Medicine of St. Luke's Hospital in Cleveland. Dr. Wright began his testimony by saying that he had been conducting research on asbestosis since 1939, first as a member of the Saranac Laboratory of the Trudeau Foundation and then, since 1953, at St. Luke's Hospital. After reviewing the various standards for occupational exposure to asbestos that had been in effect over the years, Dr. Wright told the hearings that no evidence had been found to indicate that the present asbestos standard should be changed. "Moreover, since I believe that the five-fibre standard will certainly prevent asbestosis, I am in complete disagreement with the NIOSH criteria document with respect to its expressed opinion that the data relating asbestos exposure to biological reaction are inadequate to establish a meaningful standard at this time," he said. "While the evidence may not be as far-reaching as we would like, it is scientifically valid, and adequate to support as a first approximation the opinion that the present standard of five fibres per cubic centimetre should not be lowered, but left as it is."

According to Dr. Wright, a recent study conducted by Dr. John Corbett McDonald, of the Department of Epidemiology and Health of McGill University, in Montreal, furnished strong support for not lowering the asbestos standard below five fibres per cubic centimetre of air, and proof that mesothelioma was virtually absent in people who were exposed only to chrysotile asbestos—a type of the mineral that accounts for ninety-five per cent of the world's production, and the type that Johns-Manville mines, uses, and sells almost exclusively. "Mesothelioma appears to be predominantly linked with exposure to crocidolite or amosite," Dr. Wright declared. "Therefore, both of these types of asbestos should be controlled more strin-

then criticized certain aspects of Dr. Selikoff's and Dr. Hammond's mortality studies of the asbestos-insulation workers; the studies did not include adequate control populations, he said, and the incidence of mesothelioma among these workers was caused not by their exposure to chrysotile but by their dual exposure to chrysotile and amosite. He ended by reiterating his support of the five-fibre standard, because, as he put it, "this is a correct standard and constitutes a level of exposure that will protect against the development of asbestosis and bronchogenic cancer."

Thus far in the hearings, there had been very little cross-examination, but when Dr. Wright concluded his remarks a number of people made it known that they had questions to ask and points to make concerning his testimony. Among them was Nicholas DeGregorio, of the Department of Labor, who pointed out with some asperity that he had never heard the validity of Dr. Selikoff's and Dr. Hammond's study of the asbestos-insulation workers questioned by any of the leading epidemiologists in the field.

After a short recess, the Johns-Manville testimony continued with the appearance at the witness table of Dr. Thomas H. Davison, who introduced himself as the medical director of the corporation. Dr. Davison's testimony was very brief, and was chiefly concerned with his objections to the proposed frequency of medical examinations for asbestos workers. When he completed his remarks, he was succeeded at the witness table by Edmund M. Fenner, the corporation's director of environmental control. Fenner testified that Johns-Manville had worked diligently to lower dust levels in all its plants. He also criticized the two-fibre standard proposed in the document, on the ground that adequate monitoring and dust-sampling equipment was not available to measure such a level.

Then Dr. Fred L. Pundsack, Johns-Manville's vice-president for research and development, came to the witness table. "Perhaps nowhere else in the asbestos standards being considered today is the opportunity to bring about had changes so clearly evident as it is in some of the proposed label requirements," Dr. Pundsack said. "If these label requirements are adopted in their proposed form, they will in our opinion destroy large amounts of the industry and eliminate thousands of jobs." Dr. Pundsack went on to declare that warning labels need only indicate that precautionary steps should be taken

need not contain terrifying language, such as the word "cancer." He pointed out that asbestos is not an acutely toxic chemical or drug that reacts within minutes or hours, nor is it an explosive, nor can it be absorbed through the skin. "Therefore, the application of frightening labels to asbestos is inappropriate," he said. "Instead, we recommend that a caution or warning label with the following type of text be used on bags or containers of asbestos fibre: 'Caution—This bag contains chrysotile asbestos fibre. Inhalation of asbestos in excessive quantities over long periods of time may be harmful. If proper dust control cannot be provided, respirators approved by the United States Bureau of Mines for protection against pneumoconiosis-producing dusts should be worn.'"

When Dr. Pundsack finished his remarks, there was an hour's recess for lunch. The first afternoon witness was Henry B. Moreno, senior vice-president for the industrial and international divisions of Johns-Manville, who said that the company's dust-control programs had already cost twenty million dollars. "For us to achieve a standard of two fibres per cubic centimetre would require capital expenditures of twelve million dollars, and additional operating costs of five million dollars per year," Moreno declared. "It would simply not be economically feasible to operate at this level in five of our plants, which, if closed down, would put sixteen hundred employees out of work. This and similar closings across the country would have a substantial effect upon the nation's economy, and would result in higher costs reflected all across the board. In addition, Japan, Taiwan, India, other Asian countries and nations in South America would come on strong and flood the American market with asbestos products. For these reasons, we believe that it would be nothing less than complete social irresponsibility to adopt a two-fibre standard for occupational exposure to asbestos without stronger medical evidence than that which presently exists."

When questioned by Dr. Nicholson, Moreno, like Dr. Wright before him, sought to place chrysotile asbestos above suspicion as a cause of mesothelioma, and, like Dr. Wright, he implicated amosite. Moreno declared that from 1930 until 1960 all high-temperature-insulation materials contained amosite, that since 1960 there had been a trend away from amosite, and that for the past five years almost no amosite had been used.

Knowing that Johns-Manville had long been attempting to absolve chrys-

site asbestos for the occurrence of mesothelioma, and that most members of the independent medical and scientific community considered such efforts to be self-serving, I was not surprised to hear Dr. Nicholson strongly question Moreno's statement that amosite asbestos had been a major constituent of insulation materials between 1930 and 1960. Later, I learned that Dr. Nicholson reinforced this refutation by sending an addendum to Goldberg on March 24th for inclusion in the record of the hearings. Dr. Nicholson's accompanying letter referred Goldberg to two tables of information he had included in his addendum. The first table, which listed the quantity of asbestos used in the manufacture of insulation materials in the United States between 1920 and 1965, had been furnished by Dr. Pundsack himself to Dr. Selikoff for presentation at the Fourth International Pneumoconiosis Conference of the International Labor Office, held in Bucharest, on September 29, 1971. The second table, compiled from the *United States Minerals Yearbooks*, listed imports of amosite asbestos into the United States during those same years. Since a comparison of the two tables showed that only a few hundred tons of amosite was imported each year between 1920 and 1940, and that this amount was only a small fraction of the total amount of asbestos used in the manufacture of insulation materials during that period, Dr. Nicholson pointed out, "clearly, amosite could have been only a minor constituent of insulation material until World War II," and even through 1950 "it could only represent a small fraction of the asbestos used in non-marine commercial and industrial insulation, if one considers the extensive use in shipbuilding." Dr. Nicholson concluded his letter by calling Goldberg's attention to a table showing that the disease experience (including mesothelioma) of shipyard insulation workers was not significantly different from the disease experience of non-shipyard insulation workers. "It is not possible to assign an important role to amosite in the insulation workers' experience," he wrote.

AFTER Dr. Nicholson's cross-examination of Moreno, the seat at the witness table was taken by Dr. McDonald, who stated at the outset that he was a professor of epidemiology and the chairman of the Department of Epidemiology and Health of McGill University, and that he had specialized in epidemiology for twenty-four years. "I would now like to add one or two

points not in my written submission, in order to clarify my position here," Dr. McDonald continued. "The first point is that I am a full-time employee at McGill University, and an independent research worker. I do not work, nor am I associated, with any asbestos producer or manufacturer. The research I shall be describing is supported by grants, not to me but to McGill University, from a number of sources—the Institute of Occupational and Environmental Health, the Canadian government, the British Medical Research Council, and the United States Public Health Service. I am not here to support the testimony or position of Johns-Manville or any other body affected by the proposed regulations."

Dr. McDonald went on to quote at length from a report entitled "The Health of Chrysotile Asbestos Mine and Mill Workers of Quebec," which he and some colleagues were preparing for publication in the near future. Dr. McDonald said that he and his associates had begun an epidemiological study of miners and millers in 1966, using records of the Quebec asbestos-mining companies to identify all persons known to have worked in the industry since its inception, in 1878. He explained that the mortality aspect of the study was limited to those men who had worked for a month or more, and who were born between 1891 and 1920, adding that he and his colleagues had already published an initial analysis of the mortality experience of these workers. Dr. McDonald then said that about eighty-seven per cent of the 11,572 persons included in the mortality study had been traced by the end of December, 1969, and that 3,270 of them had died. "Cancer of the lung showed a rising death rate with increasing dust exposure, particularly in the two highest dust-exposure groups," he continued. "Of one hundred and thirty-four deaths from respiratory cancer, there were five from pleural mesothelioma. These cases, however, showed no clear relationship with dust exposure."

Later in his presentation, Dr. McDonald assessed the results of his mortality study by declaring that the number of excess deaths related to asbestos exposure among the workers he had investigated probably constituted no more than two per cent of the total of 3,270 deaths; that most of these deaths were caused by lung cancer and pneumoconiosis (by which he presumably meant asbestosis); and that almost all of these excess asbestos-related deaths occurred among workers employed in

the highest dust-exposure categories. After pointing out that the death rates from cancer and mesothelioma among the chrysotile-asbestos miners and millers he had studied were very low compared with the death rates from those diseases found among the insulation workers studied by Dr. Selikoff and Dr. Hammond, Dr. McDonald concluded that only high levels of exposure to chrysotile asbestos during mining and milling operations had an appreciable effect on mortality. Dr. McDonald ended his presentation by further concluding, from the findings of his study, that a reasonable standard for chrysotile mines and mills would be somewhere between five and nine fibres per cubic centimetre.

When Dr. McDonald finished his testimony, he was questioned at some length by Dr. Nicholson and by DeGregorio. Dr. Nicholson's questioning elicited a statement from Dr. McDonald that in a previously published report on mortality among the Quebec asbestos miners and millers, he had concluded that among those workers in his cohort who were exposed to the highest level of chrysotile dust the incidence of lung cancer was five times that of the workers exposed to the lowest level. He also obtained an admission from Dr. McDonald that his recommendation of a standard of between five and nine fibres was based upon a total of only thirty-two fibre counts made in mines and mills of Quebec in the summer of 1971. DeGregorio, too, asked Dr. McDonald a series of pointed questions about the scientific validity of his study. He expressed open skepticism of Dr. McDonald's ability to substantiate the accuracy of chrysotile-exposure levels that workers were exposed to during the nineteen-fifties and the nineteen-sixties. He also obtained an admission from him that not all the effects of whatever exposures there may have been were observed directly by Dr. McDonald and his associates—through, for example, the examination of autopsy material—but that they had been observed by other people and recorded by them in reports and death certificates, which he and his associates had then included in their study as valid.

I was not surprised to hear Dr. McDonald questioned in this manner, for several members of the independent medical and scientific community had previously expressed grave reservations to me about the accuracy of the conclusions he and his colleagues had drawn in a report of their study which had appeared in June of 1971, in Vol-

ume XXII of the *Archives of Environmental Health*, under the title "Mortality in the Chrysotile Asbestos Mines and Mills of Quebec." Some people had pointed out that many, if not most, of the workers studied by Dr. McDonald

had had little or no exposure to airborne asbestos fibres, because they had worked in open-air pits, extracting asbestos in wet-rock form. Others deplored the fact that Dr. McDonald and his associates had conducted very little pathological review, such as the examination of autopsy material and lung-tissue slides, in arriving at their conclusions. Still others pointed out that ninety per cent of the lung cancers and mesotheliomas found in insulation workers occurred twenty years or more after the onset of exposure to asbestos—as, for example, in the cases of men who began working with asbestos at the age of twenty, and who died of cancer at fifty—and that by omitting persons born before 1891 Dr. McDonald and his associates had excluded from their calculations precisely the people who might be expected to show the effects of asbestos inhalation. (It was as if in studying the total occurrence of gray hair one refused to look at anyone born more than forty or fifty years ago.) In addition, a number of people pointed out that by including only deaths that

occurred twenty years or less after the onset of exposure, Dr. McDonald had perforce diluted the major disease effect of asbestos in his study. Perhaps the most telling criticism of Dr. McDonald's study, however, was made in a letter sent to Dr. Selikoff on January 7, 1972, by Herbert Seidman, who is chief of statistical analysis in the Department of Epidemiology and Statistics of the American Cancer Society. Seidman's critique was included in the addendum for the hearing record that was submitted by Dr. Nicholson. It described some of Dr. McDonald's methods of computing death rates as "ill-advised." It pointed out the lack of consideration that Dr. McDonald and his associates had given to the importance of the long latency period in the development of asbestos tumors, and it described the methodology used in the study to assess separately the importance of cumulative dust exposure and duration of exposure in relation to lung cancer as "inappropriate," because of the "paucity of basic data." In conclusion, Seidman wrote, "I think that the data have been collected fairly well but analyzed quite poorly."

As a layman, I had little way of judging the scientific validity of Dr. McDonald's work except through the

observations of those members of the independent medical community who had communicated their opinions of it to me. However, I had brought with me to the hearings a copy of Volume XXII of the *Archives of Environmental Health*, containing Dr. McDonald's article on mortality among the chrysotile-asbestos miners and millers of Quebec, which had been sent to me some months earlier by William P. Raines, a vice-president and director of public affairs for Johns-Manville. Since Dr. McDonald had referred to this mortality study during the course of his testimony, and since anyone attending the public hearings had the right to cross-examine witnesses, including members of the press, I decided to ask him some questions about it. After receiving permission from Goldberg to address Dr. McDonald, I reminded him that in his opening remarks he had declared that all his research had been performed independently.

"That is correct," Dr. McDonald replied. "All things are relative."

I then reminded Dr. McDonald that John Jobe, the executive vice-president for operations of Johns-Manville, had testified at the morning session that his company was supporting research on asbestos disease, and asked him if that was research other than what he had performed.

"I guess what Mr. Jobe is referring to is the fact that Johns-Manville, together with other mining companies, helps support the Institute of Occupational and Environmental Health, which is a granting body that receives research applications, and which therefore indirectly supports our research," Dr. McDonald replied. "Now, it is a very indirect relationship."

I then pointed out to Dr. McDonald that at the end of his article in the *Archives of Environmental Health*, a credit was listed in small type: "This work was undertaken with the assistance of a grant from the Institute of Occupational and Environmental Health of the Quebec Asbestos Mining Association."

"That is correct," Dr. McDonald said.

With that, I took my seat. Dr. McDonald had just indirectly admitted that Johns-Manville, together with other asbestos-mining companies, supported the Institute of Occupational and Environmental Health, and that the institute, in turn, had helped support his study. Moreover, the credits at the end of his article, which listed no financial support other than that supplied by the institute, had given the full and correct title of this organization—

the Institute of Occupational and Environmental Health of the Quebec Asbestos Mining Association. It seemed unnecessary to point out to the representatives of industry, labor, government, and the independent medical and scientific community who were gathered in the conference room something that many of them already knew—that Johns-Manville is, and for the past quarter of a century has been, the dominant member of the Quebec Asbestos Mining Association.

When the hearings were adjourned that afternoon, Ivan Sabourin, former attorney for the Quebec Asbestos Mining Association, came up to me and introduced himself. We talked briefly, and then I took a plane back to New York. I had never met Sabourin before, but I remembered reading something about him in connection with McGill University in a copy of the minutes of a 1965 meeting of the Asbestos Textile Institute. The following day, I took the minutes from my files and read them again. They informed me that a meeting was held on June 4, 1965, at the Motel Le Provence, in Thetford Mines, Canada, and they quoted Sabourin as saying that a recent article associating asbestos and cancer in the *Journal of the American Medical Association* was not convincing, and expressing regret over the adverse publicity that resulted from such articles. Sabourin then told the meeting that the Quebec Asbestos Mining Association wished to study respiratory diseases related to chrysotile asbestos, and that it was seeking "alliance with some university, such as McGill, for example, so that authoritative background for publicity can be had."

According to the minutes, the next speaker at the meeting was Dr. Lewis J. Cralley, of the United States Public Health Service, "who for the past several years has been supervising the extensive environmental study of asbestos employees in textile plants in the U.S.A." Dr. Cralley told the meeting that "the study was going well," that the Public Health Service was now extending its work into other asbestos industries, and that "the results to date certainly justify the program and its further expansion." Dr. Cralley did not elaborate on what these results had been, nor, for that matter, did he ever see fit to officially warn any segment of the asbestos industry, least of all the workers, that the data he was collecting showed that men employed in asbestos factories across the land were being exposed to grossly excessive levels of asbestos dust, and that excess mar-

ality from asbestos disease among workers in asbestos-textile factories had reached tragic proportions. (Indeed, six years passed before Dr. Johnson and Dr. Wagoner unearthed the data buried in Dr. Cralley's files and undertook to do something to rectify the appalling situation they discovered.) In this connection, I found it interesting to note that out of the seventy-odd people listed in the minutes as attending the 1965 meeting of the Asbestos Textile Institute, Dr. Cralley was the only invitee from any government, and the only one who did not represent an asbestos company or a related organization.

At the same time, I also reread a paper sent to me some months before by Johns-Manville, which gave a history of the company's health-research programs. Referring to Dr. McDonald's study of the Quebec asbestos miners and millers, the paper had this to say:

This study is being funded by the Institute of Occupational and Environmental Health, the scientific research arm of the Quebec Asbestos Mining Association (QAMA). As mentioned before, Johns-Manville is a principal member of the QAMA. The Institute of Occupational and Environmental Health plays a vital role in the Johns-Manville health research effort. Besides allocating QAMA funds for research projects, the seven-man scientific advisory committee of the Institute also reviews requests J-M receives from scientists and scientific organizations for money to conduct research in the asbestos/health field.

The paper then listed the chairman of the Institute's seven-man scientific advisory committee as Dr. George W. Wright, Director of Medical Research, St. Luke's Hospital, Cleveland, Ohio.

I DID not return to Washington for the final day of the hearings, but during the following week, thanks to Gershon Fishbein, editor of the *Occupational Health & Safety Letter*, and as a result of reading the *Occupational Safety & Health Reporter*, a newsletter published by the Bureau of National Affairs, Inc., I was able to keep abreast of most of the testimony that had been delivered during the two days of hearings I missed. By and large, this testimony ran true to form, in that it reflected the beliefs and self-interest of those who delivered it. Representatives of the asbestos industry, on the one hand, stated that an asbestos standard of two fibres per cubic centimetre of air either could not be achieved technically or would be prohibitive in cost, and that it would surely result in the shutting

down of many asbestos-manufacturing plants, with an attendant loss of jobs and an influx of foreign asbestos products into the United States. Representatives of labor unions, on the other hand, urged that the safety and health of workers be placed ahead of any economic considerations, that the two-fibre standard be adopted, and that efforts be made to reduce occupational exposure to asbestos to zero. In a way, much of this testimony tended to be misleading, for the hearings on the asbestos standard had become far more than just a disagreement between industry and labor over whether the standard should be five or two fibres. The introduction—by Dr. Selikoff and his associates at the Mount Sinai Environmental Sciences Laboratory, by the authors of the NIOSH criteria document, and by the Secretary of Labor's Advisory Committee on the Asbestos Standard—of proposals for performance standards that would a priori reduce dust levels in the manufacturing and installation of asbestos products by requiring the use of proper equipment, efficient exhaust and ventilation systems, and safe work practices was of crucial importance, for the carrying out of performance standards would obviously put the horse before the cart, where it belonged. In short, effective performance standards would be bound to lessen the importance of and reliance upon the laborious and time-consuming process of taking air samples and counting asbestos fibres beneath a microscope in order to determine whether the asbestos standard was being complied with. Thus, performance standards would go a long way toward obviating the kind of cooperation between industry and government that in factories such as Pittsburgh Corning's Tyler plant had for so many years reduced the taking of air samples and the counting of asbestos particles and fibres to a farce of tragic proportions and fatal consequences.

Two pieces of testimony delivered at the sessions I had missed were of particular interest to me in this respect, so a few days after the hearings were concluded I obtained full texts from the men who had presented them: The first was given on the second day by Duncan A. Holaday, research associate professor at the Mount Sinai Environmental Sciences Laboratory and formerly a senior industrial-hygiene engineer with the United States Public Health Service, where he had been instrumental in developing standards for protecting uranium miners against radiation exposure. (For this work, he

had been given the Distinguished Service Award of the Health Physics Society.) Holaday addressed himself at the hearings to the problem of how best to control asbestos dust:

The use of procedural standards, by which I mean regulations requiring the use of specified methods of treating and packing material, and work rules that reduce dust production and dispersion, is the best means of preventing overexposures to harmful substances. It is based upon the knowledge that certain operations and processes will release contaminants in the work area unless they are controlled. It is also known from experience that certain control measures will markedly reduce or eliminate these emissions. Therefore, the prudent course is to require that control procedures be instituted without waiting for information obtained by air samples and dust counts to demonstrate that contamination has, in fact, occurred.

The second piece of testimony that I found of special interest was delivered on the final day of the hearings by Sheldon Samuels. He began by saying that there were certain advantages in appearing at the end of the prolonged hearings. "As you know, Mr. Goldberg, I did not plan it that way, but it has provided me with an important overview, which I intend to exploit," he declared. "The basic issue before us was made crystal clear at your pre-hearing conference, when Mr. Walls, of the Asbestos Information Association, attempted to prevent Daniel Maciborski from being heard, and referred to him in a disgustingly unmentionable manner. Daniel Maciborski did not ask to be heard at these hearings for dramatic effect. He was trying to tell you that more than the company's admittedly advanced environmental-control and medical-surveillance programs were needed to reduce the risk to other workers. The issue before us is whether human life can be traded off in the marketplace, and whether workers must really face death on the job."

Samuels continued his testimony by urging the adoption of performance standards that would require equipment and work practices designed for zero emission of asbestos. "For a six-month transitional period the Industrial Union Department recommends a two-fibre level," he said. "Within two years, this level should be lowered to one fibre per cubic centimetre of air, and, ultimately, there should be a zero exposure to asbestos dust." Samuels also urged the adoption and strengthening of the NIOSH recommendations for labelling asbestos, for monitoring airborne asbestos dust, for conducting periodic medical examinations of asbestos workers, and for guaranteeing that the records

of such examinations be the property of the employee, and not the employer. "Most important of all, any employee who lacks confidence in the judgment of a physician who is directly responsible to the employer should have the right to choose another source of medical advice," Samuels declared, adding that Daniel Maciborski had passed a medical examination provided by a Johns-Manville physician only a few weeks before his own physician had diagnosed him as suffering from terminal mesothelioma.

MOST of the members of the independent medical and scientific community with whom I spoke seemed pleased by what had taken place at the hearings, and thought it likely that a two-fibre level would be adopted by the Occupational Safety and Health Administration as a permanent standard for occupational exposure to asbestos. Their optimism was based largely upon the reasoning that except for the testimony of Dr. Wright and Dr. McDonald—neither of whom could be considered completely independent medical researchers—the asbestos industry had set forth no real data to refute the conclusions and recommendations of the NIOSH criteria document and the Secretary of Labor's Advisory Committee on the Asbestos Standard. Mazzocchi, Samuels, and other union people, however, expressed a skepticism concerning the Department of Labor's motives and intent which was based upon long and bitter experience. In any event, once the hearings were concluded, nobody involved in the matter could do much but wait until June 6th, when, having presumably weighed all the evidence, the Department of Labor was required by law to promulgate a permanent standard for asbestos.

On Monday morning, March 20th, I received a long-distance call from James Bierer, the president of Pittsburgh Corning. Bierer started out by apologizing for not getting back to me earlier concerning my request to interview Dr. Grant about the Tyler plant. Then he told me that, upon the advice of legal counsel—because of the recent hearings in Washington and on account of possible litigation inherent in the Tyler situation—Pittsburgh Corning could not authorize me to conduct an interview with Dr. Grant, or, for that matter, with anyone else in its employ.

During the first week of April, I drove out to Paterson, New Jersey, and spent a day at the offices of the

Mount Sinai School of Medicine's Paterson Asbestos Control Program, where Dorothy Perron and several aides (among them Shirley S. Levine, Rayla Margoles, and Charles Nolan) have been working since 1968 to trace the nine hundred and thirty-three men who had worked for at least a year between 1941 and 1945 at the Union Asbestos & Rubber Company's plant there. I learned that, pressed by its insurance company, Union Asbestos had paid its workers five cents an hour extra to wear respirators, and had threatened in editorials published in the plant newspaper to fire them if they refused. I also discovered that the workers had lodged numerous complaints about the respirators, saying that they were difficult to breathe through. Indeed, some of the men had complained that, unable to work with the respirators, they had coated their nostrils with Vaseline and drunk large quantities of milk in an attempt to protect their respiratory tracts from the irritating amounts of airborne asbestos dust that filled the plant. (Obviously, such measures were pitiful protection against the pervasive nature of asbestos fibres, for when Dr. Selikoff and Dr. Hammond conducted their study of mortality among the men who had worked in the plant, they found a gross number of excess deaths resulting from asbestosis, lung cancer, mesothelioma, and other malignant tumors. Moreover, the asbestos-disease hazard extended far beyond workers directly involved in the production of insulation materials. For example, Rudolph Wild, the engineer who had developed the product manufactured in the Paterson and Tyler plants, died of mesothelioma. He may have had ample occupational exposure to asbestos, but his daughter also died of mesothelioma, and her only known exposure to asbestos had occurred when as a child she had played with samples of asbestos products her father had brought home from work. In addition to the engineer and his daughter, Robert E. Cryor, who had been manager of the Paterson plant between 1941 and 1944, died of mesothelioma in April of 1970.) During my visit to the Paterson Asbestos Control Program, I went through nearly fifty separate reports of medical examinations conducted by the company's physician which either told of abnormal lung X-rays or contained such notations as "This man is a poor risk" and "This man should not be put into a dusty area." I also discovered that during the war all blacks hired at the Union Asbestos plant in Paterson were automatically assigned to the ship-

ping department, where dust levels were considerably lower than on the production lines, because of a belief—widely held at the time—that the lungs of black people were somehow more susceptible to dust than the lungs of whites.

While I was in Paterson, I called Thomas Callahan, of Waldwick, New Jersey, who had been a foreman in charge of the asbestos-block department of the Paterson plant. Callahan had been sent to Tyler in October of 1954 to help set up machinery for the new factory that Union Asbestos was opening there and that was later purchased by Pittsburgh Corning. "I stayed a couple of months in Tyler, and then I was sent to the Union Asbestos plant in Bloomington, Illinois, where I worked for the next eight years," Callahan told me. "As far as I was concerned, our biggest problem was health. I always wore a respirator at Paterson, at Tyler, and up in Bloomington, and on one occasion I discharged a man who refused to wear his. A lot of men hated to wear them, you know. None of them seemed to understand the hazard."

Callahan went on to tell me that he felt that the Union Asbestos people had been concerned about the safety and health of the workers in the Paterson plant. "The company doctor X-rayed all the men continually to detect asbestosis, and, once he suspected it, he would always tell a fellow to get himself a job out-of-doors," Callahan said. "In addition, the company used to pay its workers an extra five cents an hour to wear their masks, but the men were human beings, you see, and a lot of them wouldn't conform to regulations. Believe me, the company did everything it could in those days, but there was no way it could improve the ventilation system. In any case, we were a lot more humane than other people in the business. I remember going one day in the early fifties with Edward Shuman—he was then the general manager of the plant—to see some Johns-Manville people in New York. We asked them if they knew of any way we could improve the dust situation in our factory. My God, they were brutal bastards! Why, they practically laughed in our faces! They told us that workmen's-compensation payments were the same for death as for disability. In effect, they told us to let the men work themselves to death! Afterward, we went to the Metropolitan Life Insurance people. Only one doctor over there knew anything about asbestos. He told us that the only solution was to

spot it early and tell the guy to run for his life. We did our best, you understand, but a lot of the men wouldn't wear their respirators, and our engineers told us it was impossible to improve the ventilation."

THE next day, I dropped by the Mount Sinai Environmental Sciences Laboratory to see what progress Dr. Selikoff and Dr. Hammond had made in their investigation into the mortality experience of the Paterson workers. Dr. Selikoff told me that as of December 31, 1971, Mrs. Perron and her associates had been able to trace eight hundred and seventy-seven of the nine hundred and thirty-three men who had worked at the Paterson plant during the war years. "It was a remarkable job of detective work, and Charles Nolan in particular has been incredibly adept at tracking down men who appeared to have dropped from sight," Dr. Selikoff said. "On the basis of the standard mortality tables, Dr. Hammond has calculated that in a normal population of that size, two hundred and ninety-nine deaths were to be expected. Instead, there were four hundred and eighty-four. As with the studies we conducted of the asbestos-insulation workers, the reason for the excess deaths—eight hundred and eighty-five, in this case—was not hard to come by. There should have been about fifty deaths from cancer of all sites. Instead, there were a hundred and forty-three. Only eleven of the men could have been expected to die of lung cancer, but there were actually seventy-three—a rate that is almost seven times as high as that of the general population. And though virtually none of these workers could have been expected to die of mesothelioma according to the mortality tables for the general population, there were seven deaths from the disease. Moreover, in this group of men the death rate from cancers of the stomach, colon, and esophagus were twice as high as they should have been. And though none of the men could have been expected to die of asbestosis, twenty-seven of them did."

When I asked Dr. Selikoff how he felt these statistics for the Paterson workers applied to the eight hundred and ninety-five men who had worked at the Tyler factory between 1954 and 1972, he shook his head. "I can only say that for the younger men—those who could be expected to live from twenty to fifty years after their first exposure to asbestos—the future looks awfully dismal," he replied.

Dr. Selikoff then told me that in 1971 Local 800 of the United Papermakers and Paperworkers Union had asked him and Dr. Hammond to review the medical histories of its members to help evaluate the effectiveness of Johns-Manville's dust-control measures at its Manville plant. "We have since completed this study, which, sadly, serves to corroborate our previous findings," he said, adding that he would call Dr. Nicholson in and let him describe the actual results, since he had headed the field team that developed the information.

Dr. Nicholson told me that out of a total of three thousand and seven employees at the Manville complex of factories he, Dr. Selikoff, and Dr. Hammond had decided to review the histories of the six hundred and eighty-nine production workers who were actively at work on January 1, 1959, and had by that time had at least twenty years' exposure to asbestos. "We studied the mortality experience of these men from January 1, 1959, until December 31, 1971," Dr. Nicholson said. "Unhappily, the results were at least as depressing as those for the Newark-New York asbestos-insulation workers and for the men employed in the Paterson plant. Using standard mortality tables of the National Center for Health Statistics, Dr. Hammond calculated that one hundred and thirty-four deaths were to be expected in this group of people. Instead, there were a hundred and ninety-nine."

Dr. Nicholson went on to say that the reasons for this large number of excess deaths among the Johns-Manville workers were, unfortunately, all too familiar. "Only eight deaths from lung cancer should have occurred, but there were twenty-seven," he told me. "And though no deaths from mesothelioma could normally be expected, there were fifteen. Cancers of the stomach, colon, and rectum were two and a half times what they should have been. In addition, though virtually no deaths from asbestosis would have been expected among the general population, twenty-four of the Johns-Manville employees died of this disease."

When I asked Dr. Selikoff if he thought it likely that the proposed two-fibre level would be adopted by the Department of Labor as a permanent standard for occupational exposure to asbestos, he shrugged. "I have no idea," he replied. "There has been a strange development in the past week that leads me to wonder, but before I tell you about it, I'd like Dr. Nicholson to give you his outlook on number

standards in general, for I wholeheartedly concur with it."

"I tend to think of number standards in this way," Dr. Nicholson said. "A standard specified as two fibres per cubic centimetre of air or five fibres per cubic centimetre of air sounds fairly innocuous. However, it is well to remember that a worker may inhale eight cubic metres, or eight million cubic centimetres, of air in a working day. Leaving aside the fact that there are many more fibres smaller than five microns in length in any environment containing airborne asbestos dust, a five-fibre-per-cubic-centimetre standard thus becomes, in terms of a man's lungs, a forty-million-fibre-a-day standard, and by the same token the proposed two-fibre standard would allow a worker to inhale sixteen million fibres a day. This, you see, is why we testified at the hearings in favor of performance standards designed not only to control asbestos emissions but to reduce them as close as possible to zero."

When Dr. Nicholson had concluded, I asked Dr. Selikoff to tell me about the recent development that had caused him to wonder whether the Department of Labor would promulgate the proposed two-fibre standard. By way of reply, he handed me a set of documents that included a page with this heading:

Enclosure A
Expert Judgments: Asbestos
Medical & Industrial Hygiene

Beneath this was a request: "Return as soon as possible to Arthur D. Little, Inc., 35 Acorn Park, Cambridge, Massachusetts, 02140. Retain a copy for reference during Phase II." Beneath the request was a space for the name and affiliation of the person to whom the documents were sent, and beneath that, under the words "Exposure-Response Judgments," was a table of boxes that asked the recipient to estimate what might be the incidence of asbestosis, lung cancer, and mesothelioma in a hundred workers after forty years of exposure, on the basis of an eight-hour working day, to two, five, twelve, and thirty asbestos fibres per cubic centimetre of air. Dr. Selikoff had filled in the boxes, and these were his estimates: At two fibres per cubic centimetre, fifty-five of a hundred workers would contract asbestosis, twelve of a hundred would develop lung cancer, and four of a hundred would be afflicted with mesothelioma. At five fibres per cubic centimetre (using his judgment on what had happened to the asbestos-insulation work-

ers), eighty-five of a hundred would develop asbestosis, twenty of a hundred would contract lung cancer, and seven of a hundred would develop mesothelioma. Dr. Selikoff's estimates were, of course, higher for workers exposed to twelve fibres per cubic centimetre of air, and for workers exposed to thirty fibres he estimated that ninety-five of a hundred would be afflicted with asbestosis, twenty of a hundred would be afflicted with lung cancer, and five of a hundred would develop mesothelioma. The reason Dr. Selikoff estimated fewer mesotheliomas at the highest level of exposure to asbestos dust was simply that previous studies had indicated that there would be more early deaths from asbestosis at such levels, and that fewer individuals would, therefore, survive long enough to develop mesothelioma.

The Arthur D. Little Phase I questionnaire also asked for a judgment on how frequently asbestos workers should be examined, and it stated that all the estimates and judgments solicited would be synthesized and included in a Phase II questionnaire, which would be sent out later. The front page of the questionnaire, which was headed "Health & Asbestos, Phase I Judgments, Background," explained what the Arthur D. Little people had in mind:

The formulation of public policy for coping with an occupational hazard such as asbestos will necessarily rely upon judgment until a great deal more research evidence is available than now exists. In particular, judgment concerning the relationship between exposure and response will be implicit in health standards for asbestos established by the Occupational Safety and Health Administration in the near future. But judgments, possibly different ones, on the same issue will be implicit in the response of labor and of industry to the proposed standards. As long as judgments on the response to exposure relationship are implicit rather than explicit and as long as groups affected by the standard lack needed data to buttress their judgments, protracted conflicts are inevitable and difficult to resolve. Moreover, the absence of a clearly defined and credible set of judgments makes it difficult, if not impossible, to identify the various costs and benefits associated with policies for reducing the hazard. This is so because the benefits of candidate standards depend upon projections of lives saved or illnesses eliminated at various exposure levels. So crucial a matter should not depend upon implicit judgment or even the explicit view of a single expert. We are to a search for a consensus that will be explicit and credible the necessary judgments on the exposure-response relationship for asbestos. Such a consensus is sought through the participation of 12 to 15 qualified experts whose judgments will be obtained, combined, and refined in a systematic way—a variant of the Delphi

process that has been used extensively to apply expertise to important issues not yet open to analysis.

When I told Dr. Selikoff that I had never heard of the Delphi process, and asked him what it meant, he shook his head and smiled. "I've never heard of it, either," he said. "But I'm pretty sure I know what it means. It means guesswork. And what's the point of guessing about the biological effects of asbestos when mortality studies of asbestos workers have already shown exactly what the effect has been?"

Dr. Selikoff now handed me a letter he had written on April 3rd to Mrs. Sonja T. Strong, of Arthur D. Little, Inc., concerning the Phase I questionnaire. Regarding the effectiveness of dust-counting as a method of insuring safe working conditions, Dr. Selikoff wrote:

As matters now stand, heavier use of performance standards seems to be intended. In this case, nothing in our experience indicates that the threshold limit values listed in your questionnaire will provide any effective safeguard against the occurrence of disease.

An obvious rejoinder might be: "Yes, but what if they were enforced? How much disease might then occur?" Following you into this never-never land, in which one-tenth of the workmen wear personal samplers on their coveralls and the rest of us are at the phase microscopes in the laboratory, the results would still not be very much different, although perhaps somewhat better, since peak excursions would not necessarily have been engineered out.

I have previously commented on the sorry state our nuclear-reactor industry would be in if radiation control had depended upon "threshold limit value" rather than engineering criteria. Can you imagine such regulation depending upon an army of inspectors with Geiger counters?

After describing some of the data developed in his studies of asbestos disease, Dr. Selikoff told Mrs. Strong that it was impossible to answer with any degree of accuracy the questions posed by her firm. He went on to point out that the weight of medical and scientific evidence concerning the occurrence of mesothelioma in non-occupational circumstances, such as in families of asbestos workers and in people living in the vicinity of asbestos factories, bore heavily on the advisability of reaching a level of exposure as close to zero as possible. "The numerous instances of mesothelioma among workmen presumably exposed to asbestos as a result of indirect occupational exposure in shipyards, even in the absence of fibre counts thirty years ago, strongly points to asbestos disease at low levels of exposure," his letter continued. "Literally hundreds of cases of mesotheli-

ma are now known to have occurred in such circumstances."

When I had finished reading the letter, I asked Dr. Selikoff why the Arthur D. Little company should be soliciting exposure-response judgments at this time.

"It is my understanding that A. D. Little has been awarded a contract by the Occupational Safety and Health Administration to formulate a consensus regarding exposure-response for asbestos disease," Dr. Selikoff replied.

"But the NIOSH criteria document and the Advisory Committee on the Asbestos Standard have already covered this ground by reviewing all the literature concerning asbestos disease," I said. "Not to mention the testimony given during four days of public hearings."

"True enough," Dr. Selikoff replied. "However, the A. D. Little people appear to have been specifically charged with determining the economic impact of the proposed permanent standard for occupational exposure to asbestos."

"Then why a questionnaire focussed solely upon medical judgments?" I asked.

"That is a question I have been asking myself," Dr. Selikoff said dryly. "I don't know the answer. If you find out, please tell me."

DURING the next few days, I made dozens of telephone calls to people in various agencies of the Department of Health, Education, and Welfare, in the independent medical community, and in a number of labor unions, trying to ascertain what lay behind the involvement of Arthur D. Little, Inc., in the process of promulgating a permanent standard for occupational exposure to asbestos. The people I spoke with at NIOSH were clearly unhappy over the fact that a private consulting firm had been asked, in effect, to duplicate (if not amend) in the space of a few weeks all the effort that over a period of years had gone into the assessments, conclusions, and recommendations of the NIOSH document. "Look," one of them told me. "Our recommendation for a two-fibre standard and our conclusion that it is technically feasible were upheld by the Secretary of Labor's own Advisory Committee on the Asbestos Standard. However, A. D. Little is up to something that has no basis in science and no specific authorization in the Occupational Safety and Health Act. It's trying to form a consensus for what is sometimes called the 'socially accept-

able risk' involved in occupational exposure to hazardous substances. In other words, it's trying to determine how much society is, or should be, willing to pay to avoid the loss of lives. The Act, however, clearly states that each employer shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees."

When I called Sheldon Samuels, at the Industrial Union Department, however, I was able to gain a new perspective on the matter. "The whole concept of economic-impact studies, as they now exist, began back in 1968 with the President's Task Force on Government Reorganization, which was headed by Roy L. Ash," Samuels told me. "The Ash commission called for an assessment of all government programs in terms of their effectiveness, and this has since been made by the Nixon Administration's Office of Management and Budget through a whole series of cost-benefit analyses that are conducted under the guise of environmental-impact studies. The present A. D. Little study has some extremely serious ramifications. Congress to the contrary, and throwing its Occupational Safety and Health Act to winds, the executive branch of government has decided on its own that the cost to the employer of meeting any new occupational-health standard must fall within an economic range that is acceptable to industry. The major point, of course, is the government's order of priorities in this whole matter. I mean, how in the name of God can a serious, in-depth cost-benefit study of the proposed asbestos standard fail to assess as one of its first priorities the cost to the worker and the whole community of the terrible incidence of asbestos disease?"

When I asked Samuels if the Industrial Union Department had heard from the Arthur D. Little people, he told me that two representatives of the firm had visited him the previous week. "A Dr. Donald W. Meals and an engineer spent a whole day here," Samuels said. "They indicated that they had been brought into the picture to mediate between labor and industry, and to come up with a standard for occupational exposure to asbestos that would make everybody happy, and they asked for our help. During the past few days, I polled the members of our ad-hoc Committee on the Asbestos Hazard, and we have decided to stand firm on the recommen-

dations we made at the public hearings, and not to participate in the A. D. Little economic-impact study. We have good reasons for believing that the A. D. Little people were brought into the standard-setting process not just to satisfy the Office of Management and Budget but to justify the asbestos industry's position. We have learned, for example, that in the economic-feasibility part of their study the A. D. Little people are relying almost entirely on guess-estimates from the asbestos industry—particularly from the shipbuilding industry, in which the government has an enormous stake."

I asked Samuels if he was aware that the A. D. Little study was also seeking medical judgments on the incidence of asbestos disease.

"Indeed I am," he replied. "In fact, just the other day I heard that A. D. Little's so-called panel of medical experts is loaded with doctors who are or have been connected with the asbestos industry. It'll be interesting to see this roster when the final report of the study comes out."

IN the second week of May, I visited Dr. Selikoff again and asked if he knew of any further developments in the involvement of Arthur D. Little in the standard-setting process. He told me that the firm had sent him the Phase II questionnaire of its economic-impact study. He also showed me a letter he had written on May 9th to Dr. Meals. The letter said, in part, "I have carefully considered the asbestos data forms sent me and am returning them to you unanswered. To have completed them, in my opinion, would only contribute further to an inappropriate exercise; my original misgivings (see my letter of April 3, 1972) are now amplified." In conclusion, Dr. Selikoff told Dr. Meals that the methodology upon which the A. D. Little study was based "could lead to serious misconceptions and misdirected advice."

The following morning, I telephoned Samuels to find out if he had any new information about the Arthur D. Little study, and he said he did.

"Have you looked at your mail today?" he asked.

I told him that I had not yet had time to do so.

"Well, see if there's a letter from me."

I went through the envelopes on my desk and saw that there was.

"Well, open it up and talk to me later," Samuels said. "You aren't going to believe what's inside."

After hanging up, I opened Samuels'

letter and pulled out three documents that had been stapled together. The first was a press release for Monday, May 8th, sent out by the Connecticut Development Commission, in Hartford. The second was a letter written on May 4th by Mark Feinberg, managing director of the Commission, to Jack Cawthorne, executive director of the National Association of State Development Agencies, in Washington, D.C. The third document was a letter written on Arthur D. Little stationery on January 25, 1972, by one John E. Kent. The letter from Feinberg to Cawthorne read:

DEAR JACK:

We have learned that a Massachusetts-based consulting firm, Arthur D. Little Inc., is attempting to sell a Connecticut manufacturer on moving its plant to Mexico. That information in itself is not startling, but what is startling is the fact that Arthur D. Little Inc. has a consulting contract from the U.S. Department of Labor to measure the impact of the standards being set for the asbestos industry under the recently enacted Occupational Safety and Health Act. And the company which Arthur D. Little is trying to move from Connecticut to Mexico is also in the asbestos industry. Thus it appears to me that at the same time as Arthur D. Little is carrying out a federal contract dealing with the asbestos industry and its problems, Arthur D. Little is also attempting to take one of our companies in that same industry to Mexico.

This activity by Arthur D. Little in my opinion looks like a Trojan horse which I feel is highly improper. On the one hand, Arthur D. Little is accepting federal funds and on the other hand, it is attempting to help Mexico attract a firm directly involved in the federal project. Furthermore, it is shocking to me that a New England consulting company which has so frequently put forth the doctrine of helping economic development here would "raid" a company in our state. As you know, we are certainly advocates of competition, free enterprise, and profit, but when a consultant presumably making a profit with federal dollars is at the same time attempting to take jobs away from our state and out of the country, it is a most serious matter.

I do not know what other companies in other states are being approached as our company was, and I feel strongly that the development directors of the other states should be warned about this Trojan-horse operation which certainly seems to be against the best interest of the people in the various states which may have similar situations. This operation by Arthur D. Little also seems to be contrary to all the efforts which we state development directors are making in cooperation with the U.S. Government to improve the national balance of payments and the economic development of our individual states.

Therefore, I am enclosing, for your use, the copy of the letter on Arthur D. Little stationery which was sent to the Connecticut company being "raided." I have taken out the company name and address in

order to avoid embarrassment for the firm. I strongly urge you to send a bulletin to all our members alerting them to this serious problem as soon as possible.

Sincerely yours,

MARK FEINBERG
Managing Director

P.S. You don't suppose there could be a relationship between the health and safety standards Arthur D. Little sets and the success of efforts to relocate American asbestos companies to Mexico?

After several phone calls, I learned that the corporation Arthur D. Little had attempted to relocate in Mexico was Raybestos-Manhattan, Inc., whose factory in Stratford, Connecticut, is a major producer of asbestos brake linings, clutch facings, and gaskets. A few weeks later, when I was able to examine a copy of Arthur D. Little's first report to the Department of Labor, which was entitled "Impact of Proposed O.S.H.A. Standard for Asbestos," I saw listed among its panel of experts John H. Marsh, who is the director of planning for Raybestos-Manhattan, and who had testified at the public hearings in Washington against the NIOSH recommendation requiring warning labels on asbestos products. Meanwhile, I had discovered that the asbestos industry was taking a hard look at the feasibility of moving some of its plants and facilities to Taiwan and Korea, where, presumably, it could operate unhindered by occupational-safety-and-health regulations. It was already becoming clear, however, that by involving Arthur D. Little, Inc., in the standard-setting process, the Department of Labor was attempting to counter the recommendations of the NIOSH criteria document, of the Secretary of Labor's Advisory Committee on the Asbestos Standard, and of the members of the independent medical and scientific community who had testified at the public hearings. It was also becoming clear how deeply the medical-industrial complex had succeeded in penetrating the workings of the government in matters relating to the prevention of industrial disease.

—PAUL BRODEUR

(This is the third of a series
of articles.)