

# Occupational Health and Safety Services in New York State

Morris Kleinfeld, M.D., Jacqueline Messite, M.D., Morris Wolf, R.N., M.P.H. and Robert Ratajack, M.S.

A previous report on industrial medical facilities which dealt with medical personnel and employee feeding facilities was issued by the Department of Labor in 1950.\* A second and broader survey of industrial medical facilities was undertaken in 1969 to determine the changes in the numbers of establishments having employee health services, the number of medical personnel involved in the provision of industrial medical services and to obtain updated information on the location and characteristics of employee health services in New York State's industrial medical establishments. The findings are presented in this report, which also contains information on the availability of occupational safety services and on the personnel who provide such services in New York State. The latter data were not collected in the 1950 survey.

## Method of Obtaining Data

\*State of New York, Department of Labor, Division of Industrial Hygiene and Safety Standards and Division of Research and Statistics, *Medical Personnel and Employee Feeding Facilities in New York State Establishments Employing 100 or more Workers, October 1950, No. B-55, March 1952.*

From the Division of Industrial Hygiene, New York State Department of Labor, 80 Centre St., New York, N.Y. 10013. Dr. Kleinfeld, Director; Dr. Messite, Assistant Director; Mr. Wolf, Consultant Public Health Nurse; Mr. Ratajack, Supervising Public Health Educator.

Reprint requests to New York State Dept. of Labor, 80 Centre St., New York, N.Y. 10013. (Dr. Kleinfeld).

The material presented in this report is based on information obtained in a questionnaire mailed to industrial establishments which employed 100 or more workers during the payroll week including September 17, 1969. Questionnaires were mailed to employers in both manufacturing and non-manufacturing industries; governmental agencies and railroads were excluded. Voluntary and proprietary hospitals, nursing homes, and clinics other than industrial, were also omitted from the survey because of the difficulty in accurately separating medical safety personnel provided for the benefit of employees from those that serve patients. Adjustments were made in the data obtained to account for differences in the reporting practices of the various sized employers and thus, the results of the survey are estimated aggregates of the total universe. Responses were obtained from 58% of all establishments to which questionnaires were mailed. About 50% of those employing 100 to 249 workers responded. The response rates from establishments employing 250-499 workers and 500 to 999 workers were 65% and 70%, respectively. Nearly all establishments with 1,000 or more workers responded.

Employers in establishments with 100 or more employees were requested to furnish information on the size of their workforce; the health facilities, if any, to which employees were referred; the medical and safety

personnel employed; and details on physical examinations either required or made available to employees. Questions also were included on the availability and use of specified types of community health services. The 1969 survey did not cover establishments employing fewer than 100 workers because all the evidence available prior to the survey indicated that very few employed medical or safety personnel.

For the purposes of the study an establishment was considered as providing employee health services if it reported the employment of medical personnel or the availability of a company operated medical facility. "Medical personnel" as defined in the survey include full-time or part-time physicians, registered nurses and practical nurses on the establishment payroll. "Company medical facilities" includes clinics or aid stations maintained by the employer or by a group of employers and also union-management fund health centers.

The criteria for establishment-provided safety services was the employment of industrial hygienists, professional safety engineers, and other safety personnel such as technicians or inspectors. While data for the survey were requested on an establishment basis, in some instances two or more establishments were combined when medical facilities and/or personnel were shared by these establishments.

## Findings of Survey

There were 6,836 establishments<sup>†</sup> in New York State with 100 or more workers; of these 48% were manufacturing and 52% non-manufacturing (Table 1).

A total of 1,115 establishments in the State employed medical personnel and 397 of these also had safety personnel. In 626 establishments there were safety personnel only (Table 1). In this report data on medical and safety services are treated separately.

Occupational health and safety requires two distinct types of service: (1) medical services required to take care of the worker when he becomes ill or injured, and those involved in preventive medical programs; and (2) industrial hygiene and safety services to insure that working conditions are safeguarded to prevent or reduce the incidence of occupational illnesses and accidents. Programs for health and safety education are important elements of industrial health and safety.

### Company-Provided Health Services.

— When health services for workers are provided by industry they may be directly furnished in on-premise health units or they may be provided in outside facilities but paid for by the employer.

(a) In-plant facilities: In-plant employee health service facilities vary in complexity, purpose, and size. They may range from a health clinic equipped to provide sophisticated medical diagnosis and treatment for employees, to the station furnishing only the simplest first-aid for on-the-job accidents or sudden illness. Circumstances that may influence the type of employee health installation include company size; the degree to which industrial hazards or dangerous occupations are present; the general availability of medical facilities or industrial medical personnel in the community; and plant policy on health services for employees.

Type of personnel	All industries	Manufacturing	Nonmanufacturing
Total, all establishments	6,836	3,266	3,570
Establishments having:			
Both medical and safety personnel	397	239	108
Medical personnel only	718	370	348
Safety personnel only	626	392	234

There was some type of on-premise facility to care for worker health or medical needs in about one-quarter of the State's establishments with 100 or more workers. Of the total of 6,836 establishments, approximately 25% have facilities on premises with the manufacturing category showing a greater percentage than the non-manufacturing category. In 1,647 of these establishments a health or first-aid unit was maintained at the establishment address. In 204 the facilities were located at the main location of the company or at another branch. In multi-unit companies a frequently occurring pattern was for the main health installation, staffed by professional medical personnel, to be located at the company headquarters or the main plant, with satellite units or simple first-aid stations at the various branches (Table 2).

Although no direct qualitative information was obtained on the type of installation, inasmuch as there were only 1,115 establishments with physicians and/or nurses in their employ, it may be inferred that in a considerable number of establishments medical or first-aid units were nominal. Information volunteered by a number of employers indicated that their aid-stations were merely repositories for first-aid supplies.

The prevalence of on-premise facilities increased with the size of the establishment. Almost all of the larger establishments with 1,000 or more workers had on-premise units, as did 60% of the establishments with 500 to 999 workers and 20% of those employing 100 to 499.

(b) Off-premise services: Some companies which do not have on-premise health installations make use of outside medical facilities that provide services comparable to those available on an in-plant basis in other establishments.

For workers in about 85 establishments, medical facilities—typically first-aid stations—were available in the buildings in which the establishments were located, or in ones nearby. Such facilities may be supported by a group of employers in the building or provided by the building management as a service for tenants.

Industrial medical centers which function in specified areas, or cater to particular industries, or provide services for the industrial community in general, are used by a number of companies, mainly for on-the-job illness or accident. For example, firms located at the airports in New York City use the services of the J. F. Kennedy Medical Center. Many companies located in New York City's financial district refer

Type of establishment	All industries	Manufacturing	Nonmanufacturing
Total, all establishments	6,836	3,266	3,570
Establishments with:			
Clinic or aid-station at establishment address	1,647	1,128	519
Clinic or aid-station at main unit or another branch	204	83	121
Clinic or aid-station maintained by group of employers	86	25	61

<sup>†</sup> This figure, which was derived from the New York State Division of Employment's list of employers, is actually a count of reporting units. In most cases a reporting unit is an establishment. However, if a firm operates in more than one location and/or more than one industry, all its operations within a county within one industry constitute one reporting unit.

employees to the Stock Exchange Medical Center for emergency care. In Buffalo employees in a variety of industries use the services of the Buffalo Industrial Medical Center. In Brooklyn the Brookdale Hospital and Medical Center provides occupational health services for industry.

Among firms where preemployment or periodic health examinations were required or offered to workers by management, a number used the services of outside medical groups specializing in diagnostic work or medical testing, particularly in the case of health services for executive personnel. Sometimes the examinations were performed in the off-premise offices of a physician, who was reimbursed on a fee-for service basis by the company.

In some establishments union-management welfare fund health centers took care of health problems for workers under union contract<sup>4</sup>. Welfare fund plans under which the employer contributes to a fund—usually administered by representatives of both union and management—to cover the costs of health and hospital care, as well as life and disability insurance are becoming increasingly important in collective bargaining agreements. In a number of industries such as the hotel trades, apparel manufacture, shipping, and laundries, union health centers financed by the funds, with medical staffs that often include physician specialists, are operated to provide diagnostic services and treatment for member patients. Almost all of the union health centers are located in New York City.

But for the large majority of establishments, almost two-thirds, there were no on-premise or company-programmed facilities for employee health care. When work injuries or sudden illnesses occurred on the job, the practice was to call upon outside providers of health services in the off-premise offices of physicians or nearby hospital emergency rooms.

**Industrial Establishments with Medical Personnel.** — Medical personnel, namely, physicians, registered

nurses, and practical nurses were employed to provide health services for employees in 1,115, or one of every six of the State's industrial establishments with 100 or more workers. A total of 3,132 medical workers were on the payroll—1,097 physicians, 1,906 registered nurses, and 129 practical nurses.

The same circumstances that influence the establishment of an on-premise health facility by a company affect the employment of industrial medical personnel. The size of an establishment's workforce is one of the prime determinants in a company's decision to provide on-premise services by professional medical personnel. The survey data indicate that this factor is of greater significance than the type of industry. All establishments with 10,000 or more workers employed medical personnel, as did somewhat more than half of those with 500 to 1,000 workers. But only about 6% of the units with 100 to 249 workers did so (Table 3).

The employment of medical personnel was encountered more often outside than in New York City. The proportion of establishments with medical personnel was larger in the

manufacturing than in the non-manufacturing field—20% as compared with 13%.

**Type of Medical Personnel.** — A total of 670 industrial establishments employed physicians—1,097 in number. Of these company physicians, 329 were employed on a full-time basis, 768 part-time.

About 30% of the establishments with medical personnel employed registered nurses. Of the 1,906 registered nurses employed all but 277 were employed full-time. Slightly more than half worked in establishments with 1,000 or more workers. A significantly greater number of registered nurses were found in manufacturing rather than in non-manufacturing industries (Table 4).

In some establishments the physicians who provided medical services were not employees but were engaged on a retainer-fee basis, being paid a flat annual retainer in return for which they provided medical service for the employees. In other establishments medical service was provided by off-premise physicians with whom there was no formal arrangement but who were paid on a fee-for-service basis.

Table 3. — Number of Establishments Employing Medical Personnel by Size of Establishment, New York State, September 1969

Size of establishment	All establishments	Establishments employing medical personnel	
		Total	Percent of number : all establishments
Total, all establishments	6,836	1,115	16.3
Establishments employing:			
100 - 249 workers	4,590	268	5.8
250 - 499 workers	1,327	250	18.8
500 - 999 workers	584	312	53.4
1,000 - 1,499 workers	140	112	80.0
1,500 - 2,499 workers	85	71	83.5
2,500 - 4,999 workers	68	62	91.2
5,000 - 9,999 workers	30	28	93.3
10,000 - workers and over	12	12	100.0

Table 4. — Type of Professional Medical Personnel in Manufacturing and Nonmanufacturing Industries, New York State, Sept. 1969

Type of personnel	All industries	Number of professional medical personnel	
		Manufacturing	Nonmanufacturing
Physicians	1,097	512	585
Full-time	329	118	211
Part-time	768	394	374
Registered nurses	1,906	1,065	841
Full-time	1,629	966	663
Part-time	277	99	178

<sup>4</sup>Figures for union health centers probably are to some extent overstated because in some cases it was not clear whether the employer contributed to a fund which maintained a health center or to one which merely paid for employee health care.

**Coverage of the Company's Medical Unit by Professional Personnel.** —

Physicians or registered nurses on a full-time basis were provided in most of the establishments with medical personnel. Medical units in 147 establishments were staffed by both physicians and registered nurses employed on a full-time basis. At 45 additional locations there were full-time physicians who serviced the unit alone or with other physicians or with nurses hired as part-time employees. But in most establishments it was the registered nurse who was available on a full-time basis to care for ill or injured employees. In about half of these establishments the registered nurse worked under the direction of physicians employed on a part-time basis. The predominant patterns are indicated in Table 5.

As might be expected, the proportion of establishments that employed both physicians and nurses increased with the size of the establishment.

(a) Manufacturing establishments with medical personnel: There were 3,266 manufacturing establishments in the State with 100 or more workers (Table 1). Of these, 659 (20%) had in their employ a total of 1,679 health service personnel—512 physicians, 1,065 registered nurses, and 102 practical nurses. Among the physicians, 118 were employed full-time and 394 part-time (Table 4). More than 90% of the registered nurses were full-time workers (966 compared with 99 part-time (Table 4).

The majority of establishments with medical personnel were durable goods industries (Table 6), although three of every five manufacturing plants in New York State with 100 or more workers were engaged in the production of nondurable goods.

The higher proportion of medical service employees in durable goods industries may be attributed in part to the fact that durable goods plants on the average are larger and in part to the fact that they tend to be more hazardous than nondurable goods industries.

A total of 1,061 medical service personnel—282 physicians, 692 registered nurses, and 87 practical nurses were employed by durable goods firms. The proportion of establishments employing such personnel was highest in

**Table 5. — Types of Medical Personnel Staffing Patterns in Manufacturing and Nonmanufacturing Industries, New York State, Sept. 1969.**

Type of personnel	All industries	Manufacturing	Nonmanufacturing
Total	1,115	659	456
Establishments with:			
Full-time registered nurses only	325	222	103
Part-time physicians and full-time registered nurses	294	191	103
Part-time physicians only	86	53	33
Full-time physicians and full-time registered nurses	76	31	45
Part-time physicians and full-time and part-time registered nurses	53	20	33
Other combinations	281	142	139

**Table 6. — Number and Percent Distribution of Medical Personnel by Type of Industry, New York State, Sept. 1969.**

Type of Industry	Establishments		Medical personnel	
	: With medical personnel :	: Number :	: Number :	: Percent :
Total, all industries	6,836	1,115	16.3	3,132
Total, all manufacturing	3,266	629	20.2	1,679
Durable goods	1,327	397	29.9	1,061
Lumber and wood products	31	—	—	—
Furniture and fixtures	85	10	11.8	13
Stone, clay, and glass products	74	22	29.7	42
Primary metal industries	163	67	41.9	175
Fabricated metal products (incl. ordnance)	220	46	20.9	116
Machinery (excl. electrical)	204	69	33.8	148
Electrical equipment and supplies	326	109	33.4	299
Transportation equipment	93	41	44.1	172
Instruments and related products	131	33	25.2	97
Nondurable goods	1,939	262	13.5	618
Food and kindred products	296	45	15.2	108
Tobacco manufactures	7	2	28.6	5
Textile mill products	141	22	15.6	31
Apparel and other textile products	420	16	3.8	26
Paper and allied products	224	31	13.8	51
Printing and publishing	298	36	12.1	96
Chemicals and allied products	168	66	39.3	174
Petroleum and coal products	11	8	72.7	24
Rubber and plastics products, n. e. c.	74	8	10.8	17
Leather and leather products	143	12	8.4	50
Miscellaneous manufacturing industries	187	16	10.2	36
Total, all non-manufacturing	3,570	456	12.8	1,453
Wholesale trade	469	70	14.9	268
Retail trade	664	124	18.7	338
Finance, insurance, real estate	773	113	14.6	415
Services	925	70	7.6	152
Transportation, communication public utilities	448	69	15.4	266
Mining	19	6	31.6	8
Contract construction	268	4	1.5	6
Agriculture	4	—	—	—

the transportation equipment (44.1%), primary metal (41.1%), electrical machinery and equipment (33.4%), and nonelectrical machinery (33.8%) industries.

Nondurable goods firms employed 618 medical personnel in 262 establishments, with the highest proportion in chemical and allied products establishments. The apparel and textile products industry had the lowest proportion of medical staff.

Nonmanufacturing establishments with medical personnel: Medical personnel were employed by 456 (13%) of the State's nonmanufacturing establishments. On-premise medical services for employees of these establishments included 585 physicians of whom 211 were employed full-time; 841 registered nurses of whom 663 were employed full-time; and 27 practical nurses.

The employment of medical personnel in nonmanufacturing establishments was most common in the retail trade industry, which includes department stores and apparel and accessory shops (19%). Approximately 15% of the establishments engaged in the wholesale trade, finance, insurance, and real estate, the transportation, communication, and public utility segments of non-manufacturing employed medical personnel.

**Physical Examination Programs.** — While many of the businesses that provide employee health services limit these services to care of on-the-job accidents or illnesses, some are concerned about the overall health and general health examinations.

Workers in approximately 2,300, or one-third, of the establishments were given a general physical examination when they were hired. When pre-employment examinations were given, they usually were for all workers. More than 90% of the manufacturing industries having physical examination programs required all employees to be examined. In 80 establishments the examination was restricted to executive personnel (Table 7).

Programs for periodic general physical examinations were in effect in about 1,075 establishments. But in 57% such checkup services were limited to executive staff.

In a few establishments physical examinations were limited to workers

Table 7. — Patterns of Physical Examinations in Manufacturing and Nonmanufacturing Establishments, New York State, Sept. 1969.

Patterns of Physical Examinations	Total Establishments	Manufacturing	Nonmanufacturing
Total Establishments with Programs	2,578	1,498	1,080
Preemployment examinations for:			
All employees	2,222	1,378	844
Executives only	80	28	52
Periodic examinations for:			
All employees*	260	258	202
Executives only	608	295	313
Percent of establishments with programs	37.7	45.9	30.3

\* Individual programs do not add to total because some establishments had more than one program.

in specified jobs—often hazardous occupations such as foundry work or employment involving exposure to lead, silica, or dangerous chemicals. In some cases operators of motorized equipment were required to have periodic physical examinations. Also in some establishments special testing was done for particular groups of workers, for example, blood tests for food handlers, or eye tests for workers on jobs where visual acuity is essential.

**Comparison of 1969 Data on In-plant Industrial Medical Personnel.** — Table 8 indicates that 771 or approximately 12% more plants were included in the 1969 study. However, there was no appreciable change noted in the number of percent of establishments with medical personnel (table 8).

Table 9 shows a nearly identical number of total medical personnel employed by industry in 1969 and in 1950. However, there was a sharp decrease in the number of licensed practical nurses employed, a moderate increase in the number of physicians employed full-time and a marked increase in the number of part-time registered nurses working in industry.

**Community Health Services for Employees.** — The survey sought to obtain information from employers on the availability of community preven-

tive medicine services provided by State or local health departments or by voluntary organizations and the utilization of these services for their employees. The community health services inquired about were chest x-ray, diabetes detection, and heart examination.

The survey found that employers in a large proportion of establishments were unaware of community preventive medicine services that were available in their own localities.

Approximately a third of the establishments reported that they actively encouraged worker participation in these programs by arranging to have them provided on company premises during working hours or allowing time off for workers to go for off-premise service. In establishments joining community programs, the typical practice was released time for workers.

In addition to the examination and testing services referred to above, some employers reported that their companies participated in community flu immunization programs.

**Safety Services.** — Like medical programs, industrial safety activities range from comprehensive efforts, planned and executed by safety specialists, to the conduct of informal day-to-day safety activities by work supervisors. At the professional level, industrial hygienists and safety

Table 8. — In-plant Medical Personnel in New York State Industry, 1969 and 1950

	1969	1950
Establishments in the survey	6,836	6,055
Establishments with medical personnel	1,115	1,165
Percent of establishments with medical personnel	16.3	19.2

engineers are mutually concerned with industrial safety and health.

As previously indicated, safety services in this report are defined as including activities designed to prevent and reduce the incidence of both illnesses and accidents arising from occupational sources. As such they include the detection and control of hazards in equipment, the work environment, work procedures and practices, the design and provision of equipment that safeguards the worker against accidents, toxic substances, and pollution of the industrial atmosphere, the development and enforcement of standards of safe practice, and the education of management and workers in all aspects of occupational safety and health.

A total of 2,133 safety personnel in establishments throughout the State were employed. These included 81 industrial hygienists, 534 safety engineers, and 1,518 other safety personnel (Table 10).

The large majority of safety employees (71%) were technical-level, subprofessional workers such as technicians and inspectors; only 29% were professional.

Nine of every ten of the industrial hygienists, a relatively new professional specialty, and an equal proportion of safety engineers were employed full-time at their safety jobs. Among nonprofessional workers the proportion of full-time workers on safety programs was somewhat less—three-quarters. Included in this group were a number of workers who were involved in product inspection in addition to safety work. In some cases plant foremen or other production workers were employed part-time on company safety programs.

Table 10 shows that there are relatively few trained industrial hygienists and safety engineers when compared to other safety personnel in all industrial establishments. Factors which may be responsible or which need to be considered to remedy this condition are the current non-availability of such personnel as well as a shortage of training facilities for industrial hygienists and safety engineers.

## Summary and Conclusion

In 1969 a survey was conducted to

Table 9. — Percent Changes in In-plant Medical Personnel in New York State Industry, 1969 and 1950

	1969	1950	Percent 1950	Change 1969
Establishments in the survey	6,836	6,055	+	12.9
Establishments with medical personnel	1,115	1,165	—	4.3
Total medical personnel	3,132	3,131		—
Physicians	1,097	1,111	—	1.3
Full-time	329	278	+	18.3
Part-time	768	833	—	7.8
Registered nurses	1,906	1,741	+	9.5
Full-time	1,629	1,622	+	0.4
Part-time	277	119	+	132.8
Licensed practical nurses	129	279	—	53.8

Table 10. — Types of Personnel Employed in Safety Activities in Manufacturing and nonmanufacturing Industries, New York State, Sept. 1969

Industry group	Total	Type of Personnel		
		Industrial hygienist	Safety engineer	Other safety personnel
All industries	2,133	81	534	1,518
Manufacturing	1,397	56	351	990
Durable goods	880	35	206	639
Non-durable goods	517	21	145	351
Non-manufacturing	736	25	183	528
Wholesale trade	89	19	26	44
Retail trade	83	—	24	59
Finance, insurance, real estate	126	3	57	66
Services	110	2	124	84
Transportation, communication, public utilities	251	—	39	212
Extractive industries and contract construction	77	1	13	63

determine the number of establishments having employee health services, number of medical personnel providing industrial medical services and information on the location and characteristics of employee health services in New York State industry. Data acquired in the 1969 survey also facilitated certain comparisons with the findings of a similar survey conducted in 1950. The 1969 survey also included information on the number and distribution of safety personnel in New York State industry. Data were collected from establishments with 100 or more employees in both the 1950 and 1969 surveys.

As of September 1969 there were 6,836 establishments in New York State with 100 or more workers. Of these 48% were engaged in manufacturing and 52% in nonmanufacturing.

Medical personnel were employed at 1,115 establishments of which 397 had safety personnel on their payrolls. Of the total number of establishments 25% had on-premises employee health facilities with the manufacturing category showing a greater percentage than the nonmanufacturing category. The prevalence of on-premise medical facilities increased with the size of the establishment. Off-premise employee health services were available through specially organized industrial medical centers found mainly in urban areas, groups of physicians specializing in diagnostic work or medical testing of employees, union-management welfare fund health centers and hospitals serving the general community. In the large majority of establishments, only off-premise services were available. A total of 3,132

medical personnel were employed by 1,115 establishments. The personnel included 1,097 physicians, 1,906 registered nurses and 129 practical nurses. Of the 1,097 physicians, 329 were employed full-time. All but 277 of the 1,906 registered nurses were employed full-time. A significantly greater number of registered nurses were employed in the manufacturing rather than in the non-manufacturing industries. The proportion of establishments with medical personnel was larger in the manufacturing than in the non-manufacturing field. Within the manufacturing field, a higher proportion of medical service employees was noted in the durable goods industries. Workers in approximately one-third of all establishments surveyed received physical examinations when they were hired. More than 90% of the manufacturing industries having physical examination programs required all employees to be examined. Periodic examination programs were in effect in

about 1,075 establishments. Comparison of 1969 and 1950 data shows no appreciable increase in the number or percent of establishments having medical personnel despite a 12% increase in the number of establishments surveyed in 1969. Nor was there any change in the total number of medical personnel employed. There was, however, a trend toward the employment of more physicians on a full-time basis and a great increase in the employment of part-time registered nurses. Employers in a large proportion of establishments were generally unaware of community preventive medicine services that were available in their localities. Eighty-one industrial hygienists, 534 safety engineers and 1,518 other safety personnel were employed in New York State industry. The large majority of the total of 2,133 were sub-professional. Most industrial hygienists and safety engineers were employed full-time. Nonprofessional safety personnel frequently were in-

involved with safety activities only during part of their work time.

The lack of significant change between 1950 and 1969 in the data on industrial medical personnel and the dearth of well trained industrial hygienists and safety engineers is important in the light of the intent of the Federal Occupational Health and Safety Act of 1970. It will be of interest to determine ten years hence the effect of the Act, especially its provisions for the training of occupational safety and health personnel. It is anticipated that there will be an upward trend in the overall number of industrial medical and safety programs and in the number of trained personnel to provide health and safety services in industry in New York State.

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**Moving Mountains** — Popular notions about Man's relationship to Nature seem to have reversed in the last century. Until then human power was so puny as to seem negligible when pitted against Nature, which was generally regarded as a hostile force to be subjugated whenever possible. Settlers who cleared the rocks from New England fields and sailed in clipper-ships hardly had reason to worry about ruining Nature. They had to fight her every inch of the way. In those days the idea that human activities might conceivably bring an end to life on earth would have seemed ridiculous.

Now suddenly the tables have turned. People are coming to realize that they have the power collectively to move mountains, quite literally, and even contaminate the seas or the atmosphere perhaps irretrievably. In this country the realization probably began with the disappearance of the buffalo and the carrier pigeon. The release of radioactive products into the environment and the widely publicized discussion of genetic effects after Hiroshima have doubtless contributed a great deal to the change in our attitudes about Nature as well. But in recent months the concept of our ecosystem as a fragile equilibrium in serious danger has been strikingly heightened by a whole series of events. The rupture of the oil tanker off the coast of England, the leaking oil wells off Santa Barbara, the evidence accumulated against residual pesticides, and the increasingly obvious smog are examples. — Hunter, TH: Apollo and the Environment (editorial), *The Pharos of Alpha Omega Alpha* 33:59 (Apr) 1970

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