representing premalignant tissue changes in the respiratory tract epithelium. Esophageal epithelial cells with atypical nuclei were found far more frequently in cigarette smokers than in nonsmokers. The term "atypical nuclei" describes nuclei with an irregular distribution of chromatin. Other abnormal changes including giant nuclei may also be present. Basal cell hyperplasia and hyperactive glands also were found more frequently in cigarette smokers than in nonsmokers. An increase in frequency with amount of cigarette smoking was noted for both epithelial cells with atypical nuclei and basal cell hyperplasia. Atypical nuclei in epithelial cells were also more frequently found in ex-cigarette smokers as compared to nonsmokers. Tables 20 and 21 illustrate the frequency of these findings:

TABLE 20.—*Atypical nuclei in basal cells of epithelium of esophagus of males, by smoking habits and age*

Atypical nuclei	Never smoked regularly		Current cigarette		Ex-cigarette		Pipe, cigar		Other	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
A. ALL MEN										
Number men	91	-------	779	-------	181	-------	89	-------	62	-------
Total sections [1]	787	100.0	6,752	100.0	1,586	100.0	766	100.0	522	100.0
No atypical nuclei	733	93.1	167	2.5	770	48.5	53	6.9	195	37.4
Some but <60 percent atypical	52	6.6	5,389	79.8	765	48.3	688	89.8	317	60.7
60 percent or more atypical	2	0.3	1,196	17.7	51	3.2	25	3.3	10	1.9
B. MEN UNDER AGE 50										
Number men	26	-------	236	-------	28	-------	9	-------	7	-------
Total sections [1]	223	100.0	2,059	100.0	258	100.0	77	100.0	53	100.0
No atypical nuclei	190	85.2	71	3.4	56	21.7	1	1.3	4	7.5
Some but <60 percent atypical	33	14.8	1,853	90.0	195	75.6	74	96.1	46	86.8
60 percent or more atypical	-------	-------	135	6.6	7	2.7	2	2.6	3	5.7
C. MEN AGED 50–69										
Number men	44	-------	445	-------	109	-------	38	-------	31	-------
Total sections [1]	379	100.0	3,853	100.0	953	100.0	310	100.0	256	100.0
No atypical nuclei	373	98.4	83	2.2	461	48.4	37	11.9	74	28.9
Some but <60 percent atypical	4	1.1	2,915	75.6	452	47.4	261	84.2	178	69.5
60 percent or more atypical	2	0.5	855	22.2	40	4.2	12	3.9	4	1.6
D. MEN AGED 70 OR OLDER										
Number men	21	-------	98	-------	44	-------	42	-------	24	-------
Total sections [1]	185	100.0	840	100.0	375	100.0	379	100.0	213	100.0
No atypical nuclei	170	91.9	13	1.5	253	67.4	15	4.0	117	54.9
Some but <60 percent atypical	15	8.1	621	74.0	118	31.5	353	93.1	93	43.7
60 percent or more atypical	-------	-------	206	24.5	4	1.1	11	2.9	3	1.4

[1] Sections with some epithelium present.

SOURCE: Auerbach, O., et al. [table 2(3)].

TABLE 21.—*Atypical nuclei in basal cells of epithelium of esophagus of males, by amount of smoking and age*

Cells with atypical nuclei	Never smoked regularly		Current cigarette smokers					
			<1 Pack		1-2 Packs		2+ Packs	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
A. All ages	91	--------	179	--------	413	--------	187	--------
Total sections [1]	787	100.0	1,544	100.0	3,629	100.0	1,579	100.0
No atypical nuclei	733	93.1	89	5.8	39	1.1	39	2.5
Some but <60 percent atypical	52	6.6	1,341	86.8	2,957	81.5	1,091	69.1
60 percent or more atypical	2	0.3	114	7.4	633	17.4	449	28.4
B. Men under age 50:								
Number men	26	--------	49	--------	132	--------	55	--------
Total sections [1]	223	100.0	433	100.0	1,169	100.0	457	100.0
No atypical nuclei	190	85.2	48	11.1	21	1.8	2	0.4
Some but <60 percent atypical	33	14.8	382	88.2	1,089	93.2	382	83.6
60 percent or more atypical	--------	--------	3	0.7	59	5.0	73	16.0
C. Men aged 50-69:								
Number men	44	--------	92	--------	240	--------	113	--------
Total sections [1]	379	100.0	789	100.0	2,116	100.0	948	100.0
No atypical nuclei	373	98.4	30	3.8	18	0.9	35	3.7
Some but <60 percent atypical	4	1.1	694	87.9	1,607	75.9	614	64.8
60 percent or more atypical	2	0.5	65	8.3	491	23.2	299	31.5
D. Men aged 70 or older:								
Number men	21	--------	38	--------	41	--------	19	--------
Total sections [1]	185	100.0	322	100.0	344	100.0	174	100.0
No atypical nuclei	170	91.9	11	3.4	--------	--------	2	1.1
Some but <60 percent atypical	15	8.1	265	82.3	261	75.9	95	54.7
60 percent or more atypical	--------	--------	46	14.3	83	24.1	77	44.2

[1] Sections with some epithelium present.

SOURCE: Auerbach, O., et al. [table 3(*5*)].

EXPERIMENTAL STUDIES

Because of the association noted between esophageal cancer and alcohol consumption reported in the Surgeon General's 1964 Report, a study (*58*) was undertaken to consider the possibility that the carcinogens known to be present in tobacco smoke could penetrate esophageal tissue more readily, if dissolved in aqueous solutions of ethanol. Mice were exposed to several compounds by intraesophageal tubation. Tissues were then removed and studied by fluorescence microscopy. Deeper penetration and a different distribution were found when benzo(a)pyrene was dissolved in aqueous solution of ethanol as compared to benzo(a)pyrene dissolved in olive oil. It was also found that benz(a)anthracene and fluoranthene dissolved in ethanol solution or aqueous caffeine solution could penetrate the epithelium of the esophagus.

RÉSUMÉ

The present evidence strengthens the conclusion that a four-fold to five-fold increased risk of dying from esophageal cancer is associated

with tobacco smoking. Autopsy evidence indicates that smokers have a greater frequency of pathologic changes of the esophageal tissue, some of which are generally considered to be premalignant. It has been demonstrated that known carcinogens such as benzo(a)pyrene and others can penetrate the esophageal tissue when dissolved in aqueous ethanol or caffeine solutions. The present evidence suggests that smoking may be a causal factor in the development of esophageal cancers, but is still insufficient for a firm judgment of causality. More information on alcohol as a confounding variable and/or interactant is vitally needed.

The data on women for the preceding categories of buccal, pharyngeal, laryngeal, and esophageal cancers have not been reported due to the relatively too few cases involved. However, Hammond has pooled these data into one group. Table 22 shows an increased mortality ratio in this overall combined category but the number of deaths is still too small for significant conclusions to be drawn.

TABLE 22.—*Mortality ratios and age-standardized death rates for cancer in women aged 45–64 by site and amount smoked*

Site	Never smoked	Cigarette smoking		Heavier cigarette smoking [1]	
	Death rate	Death rate	Mortality ratio	Death rate	Mortality ratio
Buccal cavity, pharynx, larynx, and esophagus	2	3	1.79	6	3.17
Lung [2]	7	15	2.17	25	3.63
Pancreas	6	11	1.81	16	2.58

[1] Smoked 20 or more cigarettes a day regardless of age, began smoking or smoked 10 or more cigarettes a day, and began smoking before age 25. [2] Excluding trachea, pleura.

SOURCE: Hammond, E. C. [table 26 (*40*)].

Table 22 also shows the dosage effect of smoking on women, for different cancer sites—an increased amount of smoking being reflected in an increased mortality ratio.

CANCER OF THE URINARY BLADDER

The Surgeon General's 1964 Report concluded: "Available data suggest an association between cigarette smoking and urinary bladder cancer in the male but are not sufficient to support judgment on the causal significance of this association."

The National Center for Health Statistics (*94*) reports that there has been no change in the death rate from cancer of the bladder and other urinary organs during the period 1950–64. For 1964, the male

death rate from this cause was 5.8 deaths per 100,000 population, and the female death rate was 2.6 deaths per 100,000 population.

The mortality data from the large prospective studies are presented below. The Hammond study reports the following mortality ratios and death rates for cancer of the bladder and other urinary tract sites, for males, by history of regular smoking:

TABLE 23.—*Bladder cancer mortality ratios and age-standardized death rates for male cigarette smokers, by specified age groups*

	Cigarette smokers	
	Age 45-64	Age 65-79
Mortality ratios	2.00	2.96
Death rates	[1] (4)7	(17)50

[1] Numbers in parentheses indicate death rates for persons who have never smoked regularly.

SOURCE: Hammond, E. C. [table 24 (*40*)].

The Canadian Pensioners study (*8*) included bladder cancer in the general category of genitourinary cancer.

TABLE 24.—*Genitourinary cancer mortality ratios for Canadian veterans by age and amount smoked*

Mortality ratios	Number of cigarettes smoked per day		
	1-9	10-20	21+
All ages	1.33	1.44	1.43
Age 70+	1.10	2.24	2.43

SOURCE: Canadian pensioners study [table 8.2 (*8*)].

The Dorn study of U.S. veterans (*49*) reports the following mortality ratios and death rates for males by quantity of cigarettes smoked per day and by pipe and/or cigar smoking:

TABLE 25.—*Bladder and other urinary tract cancer mortality ratios and death rates for U.S. veterans, by age, type and amount smoked*

	Number of cigarettes smoked per day					Pipe and/or cigars	Cigars	Pipe
	0	1-9	10-20	21-39	40+			
Mortality ratios	1.00	1.10	1.93	3.20	2.52	1.09	0.94	1.20
Death rates:								
Age 45-54	------	------	13	18	------	------	------	------
Age 55-64	8	2	12	14	20	14	18	14
Age 65-74	22	25	28	96	45	20	9	28
Age 75-84	89	------	------	------	------	------	------	------

SOURCE: U.S. veterans study [app. table A (*49*)].

The Doll and Hill survey of British physicians (*28*) reports the following standardized death rates for cancer of the urinary bladder:

TABLE 26.—*Death rates for cancer of urinary bladder by type of smoking*

Nonsmokers	Type of smoking			
	All smokers	Cigarette smokers	Mixed smokers	Pipe or cigar smokers
17	11	13	12	7

SOURCE: Study of British physicians [table 14 (*28*)].

TABLE 27.—*Death rates for cancer of urinary bladder by amount smoked*

Amount of tobacco smoked daily (g.)[1]				
1-14	15-24	25+	All amounts	Cessation
10	11	13	12	8

[1] 1 g. = 1 cigarette/day = ¼oz. tobacco/week.

SOURCE: Study of British physicians [table 15 (*28*)].

The Hammond and the Dorn studies report mortality ratios of more than 2.00 in smokers of more than 20 cigarettes per day. The Canadian study reports the same for men over 70 years, who smoke more than 10 cigarettes per day. The Doll and Hill survey is inconsistent with those previously mentioned in that it shows no association between type of smoking or amount smoked and bladder cancer. However, this survey consists of but 38 deaths due to bladder cancer.

Two controlled retrospective studies of bladder cancer patients have been reported since the Surgeon General's 1964 Report. In both studies these patients had a significantly greater percentage of smokers, the majority of whom were cigarette smokers, as compared with controls. The first study (*18*) reported 94 percent smokers in the patient group and 74 percent in the control group. When analyzed by the amount smoked, the patient group had 80 percent heavy smokers (greater than one pack per day for 30 years) as compared to only 45 percent heavy smokers in the control group. The second study (*89*) reported 93 percent smokers in the patient group and 84 percent in the control group. However, when compared by the amount smoked, there was a much larger difference between the two groups; there being 86 percent of the patient group with a high "smoking index" (amount smoked × duration of smoking) as compared to only 66 percent in the control group. The latter study also reported a greater frequency of inhalation and "cigarette only" smoking in the patient versus controls groups.

Autopsy Studies

There have been no reported studies analyzing changes in the bladder tissue of smokers compared with nonsmokers. Studies of this type would be helpful to determine if smoking is associated with pathologic changes commonly thought to be premalignant in other types of tissue.

Experimental Carcinogenesis

Cigarette smoke condensate as well as several tobacco smoke constituents were implanted with cholesterol directly into the bladder of mice (*16*). Only hydroquinone produced a significant number of bladder tumors.

Metabolic Studies of Endogenous Carcinogenic Substances in Man

Certain ortho-aminophenols and aryl hydroxylamines are known to be carcinogenic (*15*). Three normal intermediate metabolites of tryptophan are ortho-aminophenols (3-hydroxyanthranilic acid, 3-hydroxy-2-amino-acetophenone, 3-hydroxykynurenine) and are known to induce cancer when placed in the bladder of mice (*15*).

Kerr, et al. (*51*, *52*), performed metabolic studies on six men, three smokers and three nonsmokers. He found that the three nonsmokers had substantially increased urinary excretion values of 3-hydroxyanthranilic acid and 3-hydroxykynurenine, after having smoked for 5 weeks, with a concomitant decrease in the excretion of N'-methylnicotinamide, a normal end product of tryptophan metabolism. After having stopped smoking for 5 weeks, the three smokers showed decreased urinary excretion of these same intermediate metabolites and an increase in N'-methylnicotinamide excretion.

The carcinogenic metabolites increased an average of 50 percent while the normal end metabolite decreased an average of 34 percent in response to cigarette smoking. A reversal was noted after the men stopped smoking. These studies suggest that cigarette smoking changes the normal metabolic pattern of tryptophan, leading to the accumulation of carcinogenic metabolites in the urine. Further studies are needed to confirm these findings.

Another study, designed to detect abnormalities of tryptophan (*6*) in patients with various neoplastic or nonneoplastic conditions of the urinary tract, showed that 29 of 201 bladder cancer patients had both kynurenine and 3-hydroxykynurenine, in contrast to eight of 167 patients with other urinary tract diseases, neoplastic and nonneoplastic. However, more renal cancer patients had 3-hydroxyanthranilic acid than bladder cancer patients. This study did not include data concerning current smoking habits of the patients studied.

Résumé

The additional epidemiological, clinical, and experimental data strengthen the association between cigarette smoking and cancer of the urinary bladder, but are still insufficient to infer that the relationship is causal.

CANCER OF THE STOMACH

The Surgeon General's 1964 Report stated that no relationship has been established between tobacco use and stomach cancer. No new evidence refutes this statement.

Epidemiological evidence does not show a significant relationship between smoking and stomach cancer. The overall mortality ratios, although greater than for nonsmokers, are smaller than for any other disease related to smoking. There is also no gradient with the amount of tobacco smoked.

TABLE 28.—*Male mortality ratios and death rates for cancer of stomach by specified age groups*

	Age 45–64	Age 65–79
Mortality ratios	1.42	1.26
Death rates	[1](11) 16	(57) 72

[1] Numbers in parentheses indicate death rates of persons who had never smoked cigarettes regularly.

SOURCE: Hammond, E. C. [table 24 (*40*)].

TABLE 29.—*Mortality ratios and death rates for cancer of stomach by age, type, and amount smoked, in U.S. veterans*

	Cigarettes/day					Pipe and/or cigars	Cigar	Pipe
	0	1–9	10–20	21–39	40+			
Mortality ratio (total)	1.00	2.17	1.61	1.35	1.87	1.21	1.20	1.40
Death rate:								
Age 45 to 54	10	------	7	------	------	------	------	------
Age 55 to 64	13	27	21	24	53	15	9	21
Age 65 to 74	28	68	48	58	46	40	46	57
Age 75 to 84	87	------	------	------	------	114	212	------

SOURCE: U.S. Veterans study [app. table A (*49*)].

TABLE 30.—*Death rates for cancer of stomach by type and amount smoked, in British physicians*

Non-smokers	All smokers	Cigarette smokers	Amount of tobacco daily (g.) [1]				Given up smoking	Mixed	Pipe or cigar
			1-14	15-24	25+	All amounts			
27	25	30	28	28	26	28	18	14	30

[1] 1 g.=1 cigarette per day=¼ oz. tobacco per week.

SOURCE: Study of British physicians [tables 14 and 15 (*28*)].

RÉSUMÉ

Although cigarette smokers appear to have slightly higher death rates from cancer of the stomach, the differences are small and do not bear any consistent relationship with amount smoked.

CANCER OF THE PANCREAS

The Surgeon General's 1964 Report did not report on cancer of the pancreas.

The more recent epidemiologic evidence shows an increase in the death rates and mortality ratios for pancreatic cancer among male cigarette smokers (*40*, *49*). Comparably elevated ratios are noted for females but not to the extent noted for males (*40*) (see tables 22, 31, 32, 33). Both the U.S. veterans study (*49*) and the Canadian pensioners study (*8*) reveal a gradient of mortality risk increasing with the amount of cigarettes smoked. Data are insufficient to draw any conclusions for pipe and/or cigar smokers.

TABLE 31.—*Mortality ratios and death rates for cancer of pancreas by sex and specific age groups in cigarette smokers*

	Age 45-64		Age 65-79	
	Female	Male	Female	Male
Mortality ratio	1.81	2.69	[1] 1.41	2.17
Death rate	[2] (6) 11	[2] (7) 19	[2] (32) 45	[2] (31) 66

[1] Computed from app. table 19.
[2] Numbers in parentheses indicate death rates of persons who had never smoked cigarettes regularly.

SOURCE: Hammond, E. C. [tables 24, 26, and app. table 19 (*40*)].

TABLE 32.—*Mortality ratios and death rates for cancer of pancreas by age, type, and amount smoked, in U.S. veterans*

	Cigarettes/day					Pipe and/or cigars	Cigar	Pipe
	0	1-9	10-20	21-39	40+			
Mortality ratio (total)	1. 00	. 87	1. 93	2. 18	1. 87	1. 13	1. 52	. 74
Death rate:								
Age 45 to 54	------	------	9	21	------	26	------	------
Age 55 to 64	13	15	24	26	21	19	21	22
Age 65 to 74	29	29	50	56	27	38	58	19
Age 75 to 84	109	------	------	------	------	32	33	68

SOURCE: U.S. veterans study [app. table A (*49*)].

TABLE 33.—*Male mortality ratios for cancer of pancreas of current cigarette smokers by amount smoked*

	Cigarettes/day			
	0	1-9	10-20	21+
Mortality ratio	1. 00	1. 40	1. 96	2. 37

SOURCE: Canadian pensioners study [table 8.2 (*8*)].

RÉSUMÉ

An association between cigarette smoking and pancreatic cancer is implied, but in the absence of data on other possible causal factors, confounding variables and interactants, the significance of this association is not clear.

CITED REFERENCES

(1) ASHLEY, D. J. B., DAVIES, H. D. Cancer of the lung. Histology and biological behavior. Cancer (Philadelphia) 20(2): 165–174, February 1967.

(2) AUERBACH, O., HAMMOND, E. C., KIRMAN, D., GARFINKEL, L. Emphysema produced in dogs by cigarette smoking. Journal of the American Medical Association (Chicago) 199(4): 241–246, Jan. 23, 1967.

(3) AUERBACH, O., STOUT, A. P., HAMMOND, E. C., GARFINKEL, L. Histologic changes in esophagus in relation to smoking habits. Archives of Environmental Health (Chicago) 11(1): 4–15, July 1965.

(4) AUERBACH, O., STOUT, A. P., HAMMOND, E. C., GARFINKEL, L. Multiple primary bronchial carcinomas. Cancer (Philadelphia) 20(5): 699–705, May 1967.

(5) AUERBACH, O., STOUT, A. P., HAMMOND, E. C., GARFINKEL, L. The role of smoking in the development of lung cancer. Proceedings of the National Cancer Conference (New York) 5: 497–501, 1964.

(6) BENASSI, C. A., PERISSINOTTO, B., ALLEGRI, G. The metabolism of tryptophan in patients with bladder cancer and other urological diseases. Clinica Chimica Acta (Amsterdam) 8: 822–831, 1963.

(7) BERWALD, Y., SACHS, L. *In vitro* transformation of normal cells to tumor cells by carcinogenic hydrocarbons. Journal of the National Cancer Institute (Washington) 34(4): 641–658, October 1965.

(8) BEST, E. W. R. A Canadian study of smoking and health. Ottawa, Department of National Health and Welfare, 1966. 137 pp.

(9) BOCK, F. G., MOORE, G. E., CLARK, P. C. Carcinogenic activity of cigarette smoke condensates. III. Biological activity of refined tar from several types of cigarettes. Journal of the National Cancer Institute (Washington) 34(4): 481–493, April 1965.

(10) BOCK, F. G., MOORE, G. E., CROUCH, S. K. Tumor-promoting activity of extracts of unburned tobacco. Science (Washington) 145(3634): 831–833, August 1964.

(11) BOCK, F. G., MOORE, G. E., DOWD, J. E., CLARK, P. C. Carcinogenic activity of cigarette smoke condensate. Journal of the American Medical Association (Chicago) 181: 668–673, August 1962.

(12) BOCK, F. G., SHAMBERGER, R. J., MYERS, H. K. Tumour-promoting agents in unburned cigarette tobacco. Nature (London) 208(5010): 584–585, Nov. 6, 1965.

(13) BORENFREUND, E., KRIM, M., SANDERS, F. K., STERNBERG, S. S., BENDICH, A. Malignant conversion of cells *in vitro* by carcinogens and viruses. Proceedings of the National Academy of Sciences of the United States of America (Washington) 56: 672–679, 1966.

(14) BOUTWELL, R. K., BOSCH, D. K. The tumor-promoting action of phenol and related compounds for mouse skin. Cancer Research (Chicago) 19: 413–424, 1959.

(15) BOYLAND, E. The Biochemistry of Bladder Cancer. Springfield, Ill., C. C. Thomas, 1963. 95 pp.

(16) BOYLAND, E., BUSBY, E. R., DUKES, C. E., GROVER, P. L., MANSON, D. Further experiments on implantation of materials into the urinary bladder of mice. British Journal of Cancer (London) 18(3): 575–581, September 1964.

(17) CHERKES, L. A., APTEKAR, S. G., VOLGAREV, M. N. Hepatic tumors induced by selenium. Bulletin of Experimental Biology and Medicine (Moscow) 53(3): 313–317, July 1963.

(18) Cobb, B. G., Ansell, J. S. Cigarette smoking and cancer of the bladder. Journal of the American Medical Association (Chicago) 193(5): 329–332, Aug. 2, 1965.

(19) Cohen, S., Hossain, S. Primary carcinoma of the lung. A review of 417 histologically proved cases. Diseases of the Chest (Chicago) 49(1): 67–74, January 1966.

(20) Cook, J. W. Tobacco smoke and lung cancer. London. The Royal Institute of Chemistry. Lecture Series No. 5, 1961. 18 pp.

(21) Crocker, T. T., Nielsen, B. I., Lasnitzki, I. Carcinogenic hydrocarbons. Effects on suckling rat trachea in organ culture. Archives of Environmental Health (Chicago) 10(2): 240–250, February 1965.

(22) Day, T. D. Carcinogenic action of cigarette smoke condensate on mouse skin. An attempt at a quantitative study. British Journal of Cancer. (London) 21(1): 56–81, March 1967.

(23) Diamond, L. The effect of carcinogenic hydrocarbons on rodent and primate cells *in vitro*. Journal of Cellular and Comparative Physiology (Philadelphia) 66: 183–195, 1966.

(24) Dibenz(a,h)anthracene; No. 6383. *In:* Patterson, A. M., Capell, D. D., Walker, D. F., editors. The Ring Index. Columbus, the American Chemical Society, 1960. p. 919.

(25) Dickens, F., Jones, H. E. H., Waynforth, H. B. Oral, subcutaneous and intratracheal administration of carcinogenic lactones and related substances: The intratracheal administration of cigarette tar in the rat. British Journal of Cancer (London) 20: 134–144, March 1966.

(26) DiPaolo, J. A. Effect of cigarette smoke condensates on homografts of neonatal lung tissue in mice. Nature (London) 204(4964): 1159–1161. Dec. 19, 1964.

(27) DiPaolo, J. A., Levin, M. L. Tumor incidence in mice after oral painting with cigarette smoke condensate. Journal of the National Cancer Institute (Washington) 34(5): 595–600, May 1965.

(28) Doll, R., Hill, A. B. Mortality in relation to smoking: Ten years' observations of British doctors. (Part 1) British Medical Journal (London) 1(5395): 1399–1410, May 30, 1964.

(29) Doll, R., Hill, A. B. Mortality in relation to smoking: Ten years' observations of British doctors. (Concluded) British Medical Journal (London) 1(5396): 1460–1467, June 6, 1964.

(30) Dontenwill, W., Wiebecke, B. Tracheal and pulmonary aberrations following the inhalation of cigarette smoke by the golden hamster. *In:* Severi, L., editor. Lung Tumors in Animals. Perugia, Italy, Division of Cancer Research, University of Perugia, June 1966. Pp. 519–526.

(31) Druckrey, H., Schlibach, A. Quantitative Untersuchungen zur Bedeutung des Benzpyrens für die carcinogene Wirkung von Tabakrauch. Zeitschrift für Krebsforschung (Berlin) 65: 465–470, 1963.

(32) Druckrey, H., Schmähl, D., Benthner, H., Muth, F. Vergleichende Prüfung von Tabakrauchkondensaten, Benzpyren und Tabak-Extract auf Carcinogene Wirkung an Ratten. Naturwissenschaften (Berlin) 47 (24): 605–606, 1960.

(33) Ferri, E. S., Baratta, E. J. Polonium-210 in tobacco, cigarette smoke, and selected human organs. Public Health Reports (Washington) 81(2): 121–127, February 1966.

(34) Fitzhugh, O. G., Nelson, A. A., Bliss, C. I. The chronic oral toxicity of selenium. Journal of Pharmacology and Experimental Therapeutics (Baltimore) 80(3): 289–299, March 1944.

(35) GREGORY, L. P. Polonium-210 in leaf tobacco from four countries. Science (Washington) 150: 74–76, Oct. 1, 1965.

(36) GRICIUTE, L. Experimental pulmonary adematosis in rabbits. *In:* Severi, L., editor. Lung Tumors in Animals. Perugia, Italy, Division of Cancer Research, University of Perugia, June 1966. Pp. 789–797.

(37) GUERIN, M. Tumeurs pulmonaires et cancer buccal chez le rat soumis a l'inhalation de fumée de cigarette. Bulletin de l'Association Francaise pour l'Etude du Cancer (Paris) 46: 295–309, 1959.

(38) GUIMARD, J. Altérations cellulaires provoquées, *in vitro*, sur des fibroblastes quiescents et en mitose, par des goudrons entires de tabac. Archives des Sciences Physiologiques (Paris) 20: 153–167, 1966.

(39) HAENSZEL, W., SHIMKIN, M. B., MANTEL, N. A retrospective study of lung cancer in women. Journal of the National Cancer Institute (Washington) 21: 825–842, 1958.

(40) HAMMOND, E. C. Smoking in relation to the death rates of 1 million men and women. *In:* Haenszel, W., editor. Epidemiological Approaches to the Study of Cancer and Other Diseases. Bethesda, U.S. Public Health Service, National Cancer Institute Monograph No. 19, January 1966. Pp. 127–204.

(41) HARRIS, R. J. C., NEGRONI, G. Cigarette smoking and the induction of lung cancer in mice. *In:* Severi, L., editor. Lung Tumors in Animals. Perugia, Italy, Division of Cancer Research, University of Perugia, June 1966. Pp. 497–512.

(42) HERROLD, K. M. The effects of benzo(a)pyrene, cigarette smoke condensate and atmospheric pollutants on the respiratory system of Syrian hamsters. Acta; Unio Internationalis contra Cancrum (Louvain) 19: 710–714, 1963.

(43) HILL, C. R. Polonium-210 in man. Nature (London) 208(5009): 423–428, Oct. 30, 1965.

(44) HOFFMANN, D., WYNDER, E. L. Beitrag zur Carcinogenen Wirkung von Dibenzopyrenen. Zeitschrift für Krebsforschung 68: 137–49. 1966.

(45) HOFFMANN, D., WYNDER, E. L. On the isolation and identification of polycyclic aromatic hydrocarbons. Cancer (Philadelphia) 13(5): 1062–1073, September–October 1960.

(46) HOFFMANN, D., WYNDER, E. L. The reduction of the tumorigenicity of cigarette smoke condensate by addition of sodium nitrate to tobacco. Cancer Research (Chicago) 27: 172–174, January 1967.

(47) HOFFMANN, D., WYNDER, E. L. The tumor initiator in tobacco smoke (Abstract). Proceedings of the American Association for Cancer Research (Chicago) 7: 32, April 1966.

(48) HOMBURGER, F., TREGER, A., BAKER, J. R. Mouse-skin painting with smoke condensates from cigarettes made of pipe, cigar, and cigarette tobaccos. Journal of the National Cancer Institute (Washington) 31(6): 1445–1459, December 1963.

(49) KAHN, H. A. The Dorn study of smoking and mortality among U.S. veterans: Report on 8½ years of observation. *In:* Haenszel, W., editor. Epidemiological Approaches to the Study of Cancer and Other Diseases. Bethesda, U.S. Public Health Service, National Cancer Institute Monograph No. 19, January 1966. Pp. 1–125.

(50) KELLEY, T. F. Polonium-210 content of mainstream cigarette smoke. Science (Washington) 149: 537–538, July 30, 1965.

(51) KERR, W. K., BARKIN, M., LEVERS, P. E., WOO, S. K. C., MENCZYK, Z. The effect of cigarette smoking on bladder carcinogens in man. Canadian Medical Association Journal (Toronto) 93(1): 1–7, July 3, 1965.

(52) KERR, W. K., BARKIN, M., LEVERS, P. E., WOO, S. K. C., MENCZYK, Z. The effect of smoking on bladder carcinogens. Presented at the Meeting of the Section of Urology, the Academy of Medicine of Toronto, Toronto, Ontario, Canada, Mar. 16, 1965. [Unpublished.] 3 pp.

(53) KINOSITA, R. Experimental lung tumors in animals. *In:* Severi, L., editor. Tumors in Animals. Perugia, Italy, Division of Cancer Research, University of Perugia, June 1966. Pp. 59–84.

(54) KINOSITA, R., TANAKA, T. Induction of lung carcinoma by 4-nitroquinoline N-oxide. *In:* Severi, L., editor. Tumors in Animals. Perugia, Italy, Division of Cancer Research, University of Perugia, June 1966. Pp. 717–728.

(55) KIRYU, S., KURATSUNE, M. Polycyclic aromatic hydrocarbons in the cigarette tar produced by human smoking. Gann; Japanese Journal of Cancer Research (Tokyo) 57: 317–322, August 1966.

(56) KOERBLER, J., FRANK, P., TURNER, V. Abhängigkeit der karzenogene Wirkung der Tabakdestillate von Einwirkungsart. Oncologia (Basel) 12: 22–27, 1959.

(57) KUHN, H. Tobacco alkaloids and their pyrolysis products in the smoke. *In:* Von Euler, U. S., Editor. Tobacco Alkaloids and Related Compounds. New York, Macmillan, 1965. Pp. 37–51.

(58) KURATSUNE, M., KOHCHI, S., HORIE, A. Carcinogenesis in the esophagus. I. Penetration of benzo(a)pyrene and other hydrocarbons into the esophageal mucosa. Gann; Japanese Journal of Cancer Research (Tokyo) 56(2): 177–187, April 1965.

(59) LACASSAGNE, A., BUU-HOI, N. P., ZAJDELA, F., LAUIT-LAMY, D., CHALUET, O. Activité cancérogène d'Hydrocarbures Aromatiques polycycliques a norjau Fluoranthene. Acta; Unio Internationalis contra Cancrum (Louvain) 19: 490–496, 1963.

(60) LASNITZKI, I. Effect of cigarette smoke condensate on human foetal lung. British Empire Cancer Campaign for Research. Annual Report. 43: 350, 1965.

(61) LAZAR, P., CHOUROULINKOV, I., LIEBERMANN, C., GUERIN, M. Benzo(a) pyrene content and carcinogenicity of cigarette smoke condensate. Journal of the National Cancer Institute (Washington) 37(5): 573–579, November 1966.

(62) LEUCHTENBERGER, C., LEUCHTENBERGER, R. The role of influenza virus in the development of malignant transformation *in vitro* and in the respiratory tract of mice, with and without exposure to cigarette smoke. Rivista di Biologia (Perugia) 59: 445–463, 1966.

(63) LEUCHTENBERGER, C., LEUCHTENBERGER, R., HORISBERGER, M. Change of frequency and of spectrum of tumors in Snell's mice after chronic inhalation of fresh intermittent cigarette smoke. Proceedings of the American Association for Cancer Research (Chicago) 8: 40, 1967.

(64) LIPP, G., DOLBERG, U. Ueber die Anwendung der Dimethylphenole au Bestimmung von Nitrat und Nitrit im Tabak. Beiträge zur Tabakforschung. (Hamburg) 2: 345–359, 1964.

(65) LITTLE, J. B., RADFORD, E. P., JR. Polonium-210 in bronchial epithelium of cigarette smokers. Science (Washington) 155: 606, Feb. 3, 1967.

(66) LITTLE, J. B., RADFORD, E. P., MCCOMBS, H. L., HUNT, V. R. Distribution of Polonium-210 in pulmonary tissues of cigarette smokers. New England Journal of Medicine (Boston) 273(25): 1343–1351, Dec. 16, 1965.

(67) LITTLE, J. B., RADFORD, E. P., JR., MCCOMBS, H. L., HUNT, V. R. Polonium-210 in lungs and soft tissues of cigarette smokers. Radiation Research (New York) 22: 209+, 1964.

(68) MARSDEN, E. Some aspects of the relationship of radioactivity to lung cancer. New Zealand Medical Journal (Wellington) 64: 367–376, July 19, 1965.

(69) MOORE, C. Smoking and cancer of the mouth, pharynx, and larynx. Journal of the American Medical Association (Chicago) 191(4): 107–110, Jan. 25, 1965.

(70) MORI, K. Enhancement of experimental lung cancer in mice by inhalation of cigarette smoke. Gann; the Japanese Journal of Cancer Research (Tokyo) 57: 537–541, October 1966.

(71) NEURATH, G., DÜNGER, M., GERVE, J., LÜTTICH, W., WICHERN, H. Untersuchung der flüchtigen Basen des Tabakrauches. Beiträge zur Tabakforschung (Hamburg) 3: 563–569, 1966.

(72) NEURATH, G., PIRMANN, B., LÜTTICH, W., WICHERN, H. Zur Frage der N-Nitroso-Verbindungen im Tabakrauch II. Beiträge Tabakforschung (Hamburg) 3: 251–262, 1965.

(73) NEURATH, G., PIRMANN, B., WICHERN, H. Zur Frage der N-Nitroso-Verbindungen in Tabakrauch. Beiträge Tabakforschung 2: 311–319, 1964.

(74) NOAKES, D. N. The carcinogenicity of insecticide-sprayed tobacco in mice. Food and Cosmetics Toxicology (Oxford) 3: 305–310, August 1965.

(75) NORMAN, V., KEITH, C. H. Nitrogen oxides in tobacco smoke. Nature (London) 205(4974): 915–916, Feb. 27, 1965.

(76) RADFORD, E. P., JR., HUNT, V. R. Polonium-210: a volatile radioelement in cigarettes. Science (Washington) 143: 247–249, Jan. 17, 1964.

(77) RADFORD, E. P., JR., HUNT, V. R. Cigarettes and polonium-210. Science (Washington) 144: 366–367, Apr. 24, 1964.

(78) REEVES, A. L., DEITCH, D., VORWALD, A. J. Berylium carcinogenesis I. Inhalation exposure of rats to beryllium sulfate aerosol. Cancer Research (Baltimore) 27(3): 439–445, March 1967.

(79) ROCKEY, E. E. Evolution of cigarette smoking technics in dogs. International Surgery (Chicago) 46(5): 409–413, November 1966.

(80) ROCKEY, E. E., SPEER, F. D. The ill effects of cigarette smoking in dogs. International Surgery (Chicago) 46(6): 520–530, December 1966.

(81) SAFFIOTI, U., MONTESANO, R., SELLAKUMAR, A. R., BORG, S. A. Experimental cancer of the lung. Inhibition by vitamin A of the induction of tracheobronchial squamous metaplasia and squamous cell tumors. Cancer (Philadelphia) 20(5): 857–864, May 1967.

(82) SCHMÄHL, D. Vergleich der Empfindlichkeit zwischen Ratte und Maus gegen die carcinogene Wirkung von Tabakrauch Kondensaten. Arzneimittel-Forschung (Aulendorf) 17: 405, 1967.

(83) SCHMÄHL, D., THOMAS, C. Vergleichene Prüfung von Tabakrauchkondensaten bei subcutaner und ovaler Applikation auf carcinogene wirkung bei Ratten. Zeitschrift für Krebsforschung (Berlin) 66: 291–296, 1964.

(84) SEELKOPF, C., RICKEN, W., DHOM, G. Untersuchunger über die krebserzeugenden Eigenschaften des Zigarettenbeeres. Zeitschrift für Krebsforschung (Berlin) 65: 241–249, 1963.

(85) SELIKOFF, I. J., HAMMOND, E. C., CHURG, J. Asbestos exposure, smoking and neoplasia. Presented at the Sections on Diseases of the Chest and Preventive Medicine of the American Medical Association and the American College of Chest Physicians, Atlantic City, N.J. June 19, 1967. [Unpublished.]

(86) SERFONTEIN, W. J., HURTER, P. Nitrosamines as environmental carcinogens. II. Evidence for the presence of nitrosamines in tobacco smoke condensate. Cancer Research (Chicago) 26 (pt. I): 575–579, April 1966.

(87) SEVERI, L., editor. Lung Tumors in Animals. Perugia, Italy, Division of Cancer Research, University of Perugia, June 1966. 970 pp.

(88) SHABAD, L. M. Experimental cancer of the lungs. Federation Proceedings; Translation Supplement (Bethesda) 22 (No. 2, pt. II): 331–336, March–April 1963.

(89) STASZEWSKI, J. Smoking and cancer of the urinary bladder in males in Poland. British Journal of Cancer (London) 20: 32–35, March 1966.

(90) SUNDERMAN, F. W., DONNELLY, A. J. Studies of nickel carcinogenesis metastasizing pulmonary tumors in rats induced by the inhalation of nickel carbonyl. American Journal of Pathology (New York) 46(6): 1027–1041, June 1965.

(91) TIPTON, D. L., CROCKER, T. T. Duration of bronchial squamous metaplasia produced in dogs by cigarette smoke condensate. Journal of the National Cancer Institute (Washington) 33(3): 487–495, September 1964.

(92) TSO, T. C., HARLEY, N., ALEXANDER, L. T. Radium-226 and polonium-210 in burley and cigar wrapper tobacco. Tobacco (New York) 163(8): 28–29, Aug. 19, 1966.

(93) TSO, T. C., HARLEY, N., ALEXANDER, L. T. Source of lead-210 and polonium-210 in tobacco. Science (Washington) 153(3738): 880–882, Aug. 19, 1966.

(94) U.S. PUBLIC HEALTH SERVICE. National Center for Health Statistics. Mortality from diseases associated with smoking: United States, 1950–64. Washington, U.S. Department of Health, Education, and Welfare, Vital and Health Statistics Series 20, No. 4, Public Health Service Publication No. 1000, October 1966. 45 pp.

(95) U.S. PUBLIC HEALTH SERVICE. Smoking and Health. Report of the Advisory Committee to the Surgeon General of the Public Health Service. [Washington] U.S. Department of Health, Education, and Welfare, 1964. 387 pp.

(96) VAN DUUREN, B. L., SIVAK, A., SEGAL, A., ORRIS, L., LANGSETH, L. The tumor-promoting agents of tobacco leaf and tobacco smoke condensate. Journal of the National Cancer Institute (Washington) 37(4): 519–526, October 1966.

(97) VILENKINA, G. YA., CHERKES, L. D. Nucleic acid content in the liver of rats fed on a diet of selenium. Voprosy Piteniia (Moskva) 25(1): 30–33, 1966.

(98) WAGONER, J. K., ARCHER, V. E., LUNDIN, F. E., JR., HOLADAY, D. A., LLOYD, J. W. Radiation as the cause of lung cancer among uranium miners. New England Journal of Medicine (Boston) 273(4): 181–188, July 22, 1965.

(99) WATSON, W. L., FARPOUR, A. Terminal bronchiolar or "Alveolar Cell" cancer of the lung. 265 cases. Cancer (Philadelphia) 19(6): 776–780, June 1966.

(100) WEST, P. W. Selenium in paper and its possible association with lung cancer among cigarette smokers. [Unpublished.] 7 pp.

(101) WESWIG, P. H., YAMAMOTO, R. S., FALK, H., TWSLEY, I. J., HARR, J. R., BONE, J. F. Bioassay of selenium compounds for carcinogenesis in rats. Corvallis, Oreg. Oregon State University, Department of Agricultural Chemistry and Veterinary Medicine, 1966. Contract No. PH 43–63–44.

(102) WICKEN, A. J. Environmental and personal factors in lung cancer and bronchitis mortality in Northern Ireland, 1960–62 (London, England) Tobacco Research Council, Research Paper No. 9, 1966. 84 pp.

(103) WORLD HEALTH ORGANIZATION. Expert Committee on Cancer. Histopathology of Lung Tumours. First Report of Expert Committee on Cancer, Oslo, Nov. 17–22, 1958. WHO/CANC/2 Rev. 1 Feb. 23, 1959. 14 pp.

(*104*) WYNDER, E. L., BERG, J. W. Lung cancer among nonsmokers. With special reference to histological patterns. (In press.) Cancer (Philadelphia): July 16, 1966.

(*105*) WYNDER, E. L., GRAHAM, E. H. Tobacco smoking as a possible etiologic factor in bronchogenic carcinoma. A study of 684-proved cases. Journal of the American Medical Association (Chicago) 143: 329–336, 1950.

(*106*) WYNDER, E. L., HOFFMANN, D. The carcinogenicity of benzofluoranthenes. Cancer. (Philadelphia) 12(6): 1194–1199, November–December 1959.

(*107*) WYNDER, E. L., HOFFMANN, D. Experimental tobacco carcinogenesis. Advances in Cancer Research (New York) 8:249–453, 1964.

(*108*) WYNDER, E. L., HOFFMANN, D. Reduction of tumorigenicity of cigarette smoke: An experimental approach. Journal of the American Medical Association (Chicago) 192(2): 88–94, Apr. 12, 1965.

(*109*) WYNDER, E. L., HOFFMANN, D. Tobacco and tobacco smoke. Studies in experimental carcinogenesis. (In press.) New York, Academic Press, 1967.

(*110*) WYNDER, E. L., TAGUCHI, K., BADEN, V., HOFFMANN, D. The effect of cigarette smoke on respiratory tract of mice after passive inhalation. (In press.) Cancer Research (Philadelphia): 1967.

(*111*) WYNDER, E. L., TAGUCHI, K., BADEN, V. HOFFMANN, D. Effect of passive inhalation of cigarette smoke on the respiratory tract of mice and hamsters. Proceedings of the American Association for Cancer Research (Chicago) 7: 77, April 1966.

(*112*) YAVIN, A. I., DEPASQUALI, G., BARON, P. Polonium in cigarettes—spectroscopic analysis. Nature (London) 205(4974): 899–900, Feb. 27, 1965.

SUPPLEMENTAL REFERENCES

S1. ABELIN, T. Smoking habits and survival of lung cancer patients. Application of the temporary expection of life as a measure of survival. American Journal of Epidemiology (Baltimore) 84(1): 110–119, July 1966.

S2. ABELIN, T., TOKUHATA, G .K. Maternal age at birth and susceptibility to lung cancer. Lancet (London) 2: 1121–1123, Nov. 27, 1965.

S3. AHMED, N. Geographical incidence of oesophageal cancer in West Kenya. East African Medical Journal (Nairobi) 43(7): 235–248, July 1966.

S4. ALBERT, R. E., LIPPMANN, M., SPIEGELMAN, J., LIUZZI, A., NELSON, N. The deposition and clearance of radioactive particles in the human lung. Archives of Environmental Health (Chicago) 14: 10–15, January 1967.

S5. ALEXANDROV, K., RAITCHEV, R. Contribution expérimentale a la cancérogenese due au tabac. Doklady Bogarskoi Akademié Nauk (Sofiia) 18(8): 785–788, 1965.

S6. ALFRED, L. J. Differential inhibition of deoxyribonucleic acid and ribonucleic acid synthesis induced in cultured mammalian cells by 7: 12-dimethylbenzanthracene. Nature (London) 208: 1339–1341, December 1965.

S7. ANDERSON, A. E., JR., HERNANDEZ, J. A., HOLMES, W. L., FORAKER, A. G. Pulmonary emphysema. Prevalence, severity, and anatomical patterns in macrosections, with respect to smoking habits. Archives of Environmental Health (Chicago) 12(5): 569–577, May 1966.

S8. BADGER, G. M., NOVOTNY, J. The formation of aromatic hydrocarbons at high temperatures. XVIII. The pyrolysis of *n*-decane. Australian Journal of Chemistry (East Melbourne) 16(4): 613–622, August 1963.

S9. BALL, J. K., MCCARTER, J. A., SMITH, M. F. The interaction *in vitro* of polycyclic aromatic hydrocarbons with deoxyribonucleic acids. Biochemica et Biophysica Acta (Amsterdam) 103: 275–285, June 8, 1965.

271-394 O - 67 - 12

S10. Bignall, J. R., Martin, M., Smithers, D. W. Survival in 6086 cases of bronchial carcinoma. Lancet (London) 1(7499): 1067–1070, May 20, 1967.

S11. Bonser, G. M., Clayson, D. B., Jull, J. W. Some aspects of the experimental induction of tumours of the bladder. British Medical Bulletin (London) 14(2): 146–152, May 1958.

S12. Boyd, J., Langman, M., Doll, R. The epidemiology of gastrointestinal cancer with special reference to causation. Gut (London) 5: 196–200, April 1964.

S13. Boyland, E., Roe, F. J. C., Gorrod, J. W. Induction of pulmonary tumours in mice by nitrosonornicotine, a possible constituent of tobacco smoke. Nature (London) 202: 1126, June 13, 1964.

S14. Breslow, L. Epidemiology of cancer. World-Wide Abstracts of General Medicine (New York) 4: 34–36, October 1961.

S15. Breslow, L. Cancer epidemiology-implications for control. American Journal of Public Health and the Nation's Health (New York) 53(2): 218–222, February 1963.

S16. Breslow, L. Environmental carcinogenesis. California Medicine (San Francisco) 101(5): 371–375, November 1964.

S17. Breslow, L. Goals for California against cancer. California Medicine (San Francisco) 104(4): 254–266A, April 1966.

S18. Brozek, J., Keys, A. Changes of body weight in normal men who stop smoking cigarettes. Science (Washington) 125: 1203, June 14, 1957.

S19. Buell, P., Dunn, J. E. Jr., Breslow, L. The occupational-social class risks of cancer mortality in men. Journal of Chronic Diseases (St. Louis) 12(6): 600–621, December 1960.

S20. Carson, S., Goldhamer, R., Weinberg, M. S. Characterization of physical, chemical, and biological properties of mucus in the intact animal. Annals of the New York Academy of Sciences 130 (Article 3): 935–943, September–October 1960.

S21. Carson, S., Goldhamer, R., Carpenter, R. Responses of ciliated epithelium to irritants. Mucus transport in the respiratory tract. American Review of Respiratory Diseases (Baltimore) 93: 86–92, March 1966.

S22. Castigliano, S. G. Rebuttal to "1,000 cases of lung cancer" (letter). Pennsylvania Medical Journal (Harrisburg) 67(8): 94, 96, 1964.

S23. Cederlof, R., Friberg, L., Jonsson, E., Kaij, L. Morbidity among monozygotic twins. Archives of Environmental Health (Chicago) 10: 346–350, February 1965.

S24. Cigarettes, cancer and Polonium-210. Medical Journal of Australia (Sydney) 1: 548–549, Mar. 26, 1966.

S25. Cornfield, J., Haenszel, W., Hammond, E. C., Lilienfeld, A. M., Shimkin, M. B., Wynder, E. L. Smoking and lung cancer: Recent evidence and a disccussion of some questions. Journal of the National Cancer Institute (Washington) 22(I): 173–203, January 1959.

S26. Coury, C., Paillas, J., Ruffino, J., Marie, M., Frottier, J. Association d'un cancer bronchique et d'un cancer du plancher buccal. Semaine des Hopitaux de Paris 43(8/2): 530–533, February 1967.

S27. Dalhamn, T., Rylander, R. Cigarette smoke and ciliastasis. Effect of varying composition of smoke. Archives of Environmental Health (Chicago) 13(1): 47–50, July 1966.

S28. Damon, A., McClung, J. P. Previous pulmonary disease and lung cancer: A case-control study. Journal of Chronic Diseases (St. Louis) 20: 59–63, 1967.

S29. DARK, J., PEMBERTON, M., O'CONNOR, M., RUSSELL, M. H. Relighting of cigarettes and lung cancer. British Medical Journal (London) 2(5366): 1164–1166, Nov. 9, 1963.

S30. DEAN, G. Lung cancer among white South Africans. British Medical Journal (London) 2: 120–121, July 14, 1962.

S31. DEAN, G. Lung cancer in the Channel Islands. British Journal of Cancer (London) 19: 661–680, 1965.

S32. DEAN, G. Lung cancer and bronchitis in Northern Ireland, 1960–62. British Medical Journal (London) 1: 1506–1514, June 1966.

S33. DELARUE, N. C. Reconsideration of some significant aspects of the cigarette smoking-lung cancer controversy. Canadian Medical Association Journal (Toronto) 89: 1277–1283, Dec. 21, 1963.

S34. DE MAEYER-GUIGNARD, J., DE MAEYER, E. Effect of carcinogenic and non-carcinogenic hydrocarbons on interferon synthesis and virus plaque development. Journal of the National Cancer Institute (Washington) 34(2): 265–272, February 1965.

S35. DIPAOLO, J. A., KOTIN, P. Teratogenesis-oncogenesis: A study of possible relationships. Archives of Pathology (Chicago) 81: 3–23, January 1966.

S36. DOLL, R. Interpretations of epidemiologic data. Cancer Research (Chicago) 23(10): 1613–1623, November 1963.

S37. DOLL, R. Epidemiological observations on susceptibility to cancer in man with special reference to age. Acta; Unio Internationalis contra Cancrum (Louvain) 20: 747–752, 1964.

S38. DOLL, R. Cancer: The possibilities. British Medical Journal (London) 1(5433): 471–473, Feb. 20, 1965.

S39. DOLL, R. Cancer bronchique et tabac. Bronches (Paris) 16(5): 313–324. September–October 1966.

S40. DONTENWILL, W. Experimentelle Untersuchungen zur Genese des Lungencarcinoms. Arzneimittel-Forschung (Aulendorf) 14: 774–780, July 1964.

S41. DONTENWILL, W., RECKZEH, G., STADLER, L. Inhalationsexperimente im Zigarettenrauch. Beiträge zur Tabakforschung (Hamburg) 3: 438–448, 1966.

S42. DROGENDIJK, A. C. Smoking and lung cancer. Triangle; Sandoz Journal of Medical Science (Basel) 7: 166–169, 1966.

S43. DUNN, J. E., JR., WEIR, J. M. Cancer experience of several occupational groups followed prospectively. American Journal of Public Health and the Nation's Health (New York) 55(9): 1367–1375, September 1965.

S44. DURAN-REYNALS, F. Studies on the combined effects of fowl pox virus and methylcholanthrene in chickens. Annals of the New York Academy of Sciences 54: 977–991, 1954.

S45. ELMENHORST, H., RECKZEH, G. Aromatische Kohlenwasserstoffe im Tabakrauch. Beiträge zur Tabakforschung (Hamburg) 2(5): 180–204, May 1964.

S46. The endocrine and genetic factors in cancer of the lung. Growth (Philadelphia) 28(1): 1–15, March 1964.

S47. EPSTEIN, S. S. Two sensitive tests for carcinogens in the air. Journal of the Air Pollution Control Association (Pittsburgh) 16(10): 545–561, October 1966.

S48. EPSTEIN, S. S., JOSHI, S., ANDREA, J., MANTEL, N., SAWICKI, E., STANLEY, T., TABOR, E. C. Carcinogenicity of organic particulate pollutants in urban air after administration of trace quantities to neonatal mice. Nature (London) 212(5068): 1305–1307, Dec. 17, 1966.

S49. EPSTEIN, S. S., SMALL, M., FALK, H. L., MANTEL, N. On the association between photodynamic and carcinogenic activities in polycyclic compounds. Cancer Research (Chicago) 24: 855–862, June 1964.

S50. FERRI, E. S., BARATTA, E. J. Polonium-210 in tobacco, cigarette smoke, and selected human organs. Public Health Reports (Washington) 81(2): 121–127, February 1966.

S51. FINGERLAND, A., KOPECNY, J. Rakovina Plic U Zen. Sbornik Vedeckych Praci Lekarske Fakulty Karlovy University (Hradec Kralove) 8(4): 495–499, 1965.

S52. FISHBEIN, M. Russian ideas on lung cancer. Postgraduate Medicine (Minneapolis) 35(5): 559–560, May 1964.

S53. FLAKS, A. Toxicity of whole tobacco tar. Nature (London) 204(4958): 592–593, Nov. 7, 1964.

S54. FLAMANT, R., LASSERRE, O., LAZAR, P., LEGUERINAIS, J., DENOIX, P. Differerences in sex ratio according to cancer site and possible relationship with use of tobacco and alcohol. Review of 65,000 cases. Journal of the National Cancer Institute (Washington) 32(6): 1309–1316, June 1964.

S55. Future mortality from carcinoma of the lung (comments and abstracts). Medical Journal of Australia (Sydney) 2: 949–950, Nov. 12, 1966.

S56. Gains and losses reported in the war on cancer. Medical World News (New York) 8(1): 32, Jan. 6, 1967.

S57. GOLZ, H. H. Cigarette smoking and cancer of the bladder (letter). Virginia Medical Monthly (Richmond) 93: 227, April 1966.

S58. GRAHAM, S. Cross-cultural distributions of cancer: Implications for sociological epidemiology. Presented at the Annual Meeting of the American Sociological Association, Miami, Fla., Sept. 29, 1966. [Unpublished.]

S59. GROB, K. Zur Gaschromatographie des Cigarettenrauches. Beiträge zur Tabakforschung (Hamburg) 3(6): 403–453, September 1966.

S60. GSELL, V. O., JUNG, C. Lungenkrebs in alpinem ländlichem Gebiet ohne Luftverschmutzung. Deutsche Medizinische Wochenschrift (Stuttgart) 89(10): 909–919, 1964.

S61. HAENSZEL, W. Further epidemiological tests of theories on lung cancer etiology. Public Health Reports (Washington) 71: 163–172, 1956.

S62. HAMMOND, E. C. Smoking in relation to mortality and morbidity. Findings in first 34 months of followup in prospective study started in 1959. Journal of the National Cancer Institute (Washington) 32(5): 1161–1188, May 1964.

S63. HANBURY, W. J. Bronchogenic carcinoma in women. Thorax (London) 19: 338–342, July 1964.

S64. HECKER, E. Di Cocarcinogene des Crotonöls. *In:* Doerr, W., Linder, F., Wagner, G., editors. Aktuelle Probleme aus dem Gebiet der Cancerologie. New York, Springer 1966. Pp. 121–127.

S65. HECKER, E., KUBINYI, H. Ueber die Wirkstoffe des Crotonöls IV. Reindarstellung und Charakterisierung der entzündlichen und cocarcinogenen Wirkstoffe B_1 und B_2. Zeitschrift für Krebsforschung (Berlin) 67: 176, 1965.

S66. HEISE, E., GORLICH, M. Growth and therapy of mammary tumours induced by 7,12-dimethylbenzanthracene in rats. British Journal of Cancer (London) 20: 539–545, September 1966.

S67. HIGGINSON, J. Etiological factors in gastrointestinal cancer in man. Journal of the National Cancer Institute (Washington) 37(4): 527–545, October 1966.

S68. HILL, C. R. Polonium-210 in man. Nature (London) 208(5009): 423–438, October 30, 1965.

S69. HOFFMANN, D., RATHKAMP, G., AND WYNDER, E. L. Comparison of the yields of several selected components in the smoke from different tobacco products. Journal of the National Cancer Institute (Washington) 31: 627–637, September 1963.

S70. HOFFMANN, D., RUBIN, J. Chemical studies on tobacco smoke. I. The quantitative determination of indoles in cigarette smoke. Beiträge zur Tabakforschung (Hamburg) 3: 409–414, 1966.

S71. HOFFMANN, D., WYNDER, E. L. Selective filtration of phenols from cigarette smoke. Journal of the National Cancer Institute (Washington) 30: 67–84, January 1963.

S72. HOLLAND, R. H., ACEVEDO, A. R. Current status of arsenic in American cigarettes. Cancer (Philadelphia) 19: 1248–1250, September 1966.

S73. HOLLAND, R. H., WILSON, R. H., ACEVEDO, A. R., MCCALL, M. S., CLARK, D. A., LANZ, H. C. The cigarette smoke-arsenic-cancer of the lung problem. Acta; Unio Internationalis contra Cancrum (Louvain) 15: 608–611, 1959.

S74. HYDE, L. Cigarette smoking and cancer of the lung. Is there really any etiologic relationship? California Medicine (San Francisco) 98(6): 313–317, June 1963.

S75. JELLINCK, P. H., IRWIN, L. Effect of carcinogenic polynuclear hydrocarbons on the metabolism of estrogens. Nature (London) 190(4882): 787–788, May 25, 1963.

S76. KEAYS, J. The smoking enigma. Canadian Journal of Public Health (Toronto) 56(3): 105–108, March 1965.

S77. KELLER, A. Z., TERRIS, M. The association of alcohol and tobacco with cancer of the mouth and pharynx. American Journal of Public Health and the Nation's Health (New York) 55(10): 1578–1585, October 1965.

S78. KELLY, M. G., NEWTON, W. L., O'GARA, R. W. Susceptibility of newborn germ-free mice to tumor induction by 3-methylcholanthrene. Cancer Research (Chicago) 23(7): 978–982, August 1963.

S79. KENSLER, C. J., BATTISTA, S. P. Components of cigarette smoke with ciliary-depressant activity. New England Journal of Medicine (Boston) 269(22): 1161–1166, Nov. 28, 1963.

S80. KILBURN, K. H., SALZAMO, J. E., editors. Symposium on structure, function and measurement of respiratory cilia. American Review of Respiratory Diseases 93 (No. 3, pt. 2): 184, March 1966.

S81. KISSEN, D. M. The significance of personality in lung cancer in men. Annals of the New York Academy of Sciences 125: 820–826, 1966.

S82. KOTIN, P., FALK, H. L. Atmospheric factors in pathogenesis of lung cancer. Advances in Cancer Research (New York) 7: 475–514, 1963.

S83. KOTIN, P., WISELEY, D. V. Production of lung cancer in mice by inhalation exposure to influenza virus and aerosols of hydrocarbons. Progress in Experimental Tumor Research (Basel) 3: 186–215, 1963.

S84. KOURILSKY, R., HAPPERT, J. L. Pathologie comparée du cancer bronchopulmonaire chez l'homme et chez la souris cancérisée par le goudron de la fumée de cigarette. Bulletin de l'Academie Nationale de Medicine (Paris) 148: 346–350, 1964.

S85. KOURILSKY, R., HAPPERT, J. L. Comparaison morphologique, radiologique et biologique entre le cancer pulmonaire provoqué chez la souris par le goudron de fumée de cigarettes et le cancer bronchopulmonaire spontané chez l'homme. Journal Francais de Medicine et Chirurgie Thoraciques (Paris) 19: 467–478, May–June 1965.

S86. KREYBERG, H. J. Empirical relationship of lung cancer incidence to cigarette smoking and a stochastic model for the mode action of carcinogens. Biometrics (Tucson) 21: 839–857, December 1965.

S87. La controverse sur le cancer bronchique (editorial). Medicine et Hygiene (Geneva) 25(769): 216–217, March 1967.

S88. LANGMAN, M. J. S., DOLL, R., WILSON, J. Plasma and salivary thiocyanate in gastric cancer. Gut (London) 7: 549–752, 1966.

S89. LEA, A. J. Cigarette smoking and cancer of the lungs and of the bladder. Lancet (London) 1: 590–591, Mar. 12, 1966.

S90. LEES, T. W. The fall of the lung-cancer wave. (Letter) Lancet (London) 2: 443, Aug. 28, 1965.

S91. LEITCH, A., KENNAWAY, E. L. Experimental production of cancer by arsenic. British Medical Journal (London) 2: 1107–1108, Dec. 9, 1922.

S92. LEUCHTENBERGER, C., LEUCHTENBERGER, R. Cytological and cytochemical effects of agents implicated in various pathological conditions: The effect of viruses and of cigarette smoke on the cell and its neucleic acids. International Review of Cytology (New York) 14: 281–325, 1963.

S93. LEUCHTENBERGER, C., LEUCHTENBERGER, R. Cytochemie der Krebsveranderung. Schweizerisches Institut fur Experimentelle Krebsforschung (Lausanne) 96(14): 445–456, 1966.

S94. LEUCHTENBERGER, C., LEUCHTENBERGER, R. DNS in Tumoren und bie Virusinfektionen Zellaktivitat und DNS-Gehalt von interphase karnen. *In:* Handbuch der Histochemie 3 (pt. 3). Stuttgart, Fischer, 1966. Pp. 1–53.

S95. LEUCHTENBERGER, C., LEUCHTENBERGER, R. Substances cancerigenes. Medecine et Hygiene (Geneve) 25(764): 80–85, Jan. 25, 1967.

S96. LEUCHTENBERGER, C., LEUCHTENBERGER, R., RUCH, F., TANAKA, K., TANAKA, T. Cytological and cytochemical alterations in the respiratory tract of mice after exposure to cigarette smoke influenza virus, and both. Cancer Research (Chicago) 23(4): 555–565, May 1963.

S97. LEVIN, M. L. Smoking and cancer. Retrospective studies and epidemiological evaluation. Journal of Chronic Diseases (St. Louis) 16: 375–381, May 1963.

S98. LEVIN, M. L., GRAHAM, S. Tables for temporal factors in the cigarette-lung cancer relationship. Presented at the American Public Health Association meeting, New York City, Oct. 8, 1964. [Unpublished.] 20 pp.

S99. LIBERATI, P. S. The effects of smoking on the oral cavity. Dental Students' Magazine 44: 739–740, 770, 772, 774, June 1966.

S100. LILIENFELD, A. M. The epidemiologic method in cancer research (editorial). Journal of Chronic Disease (St. Louis) 8(5): 649–654, November 1958.

S101. LILIENFELD, A. M. The relationship of bladder cancer to smoking. American Journal of Public Health and the Nation's Health (New York) 54(11): 1864–1875, November 1964.

S102. LOMBARD, H. L. An epidemiological study in lung cancer. Cancer (Philadelphia) 18(10): 1301–1319, October 1965.

S103. LONG, P. H. Smoking and lung cancer. Medical Times (Manhasset) 88(4): 512–514, April 1960.

S104. Lung cancer in Japan especially in relation to the smoking habits. Tokyo, Japan Lung Cancer Association, 1966. 18 pp.

S105. MARKUSH, R. E., SCHAAF, W. E., SEIGEL, D. G. The influence of the death certifier on the results of epidemiologic studies. Journal of the National Medical Association (New York) 59(2): 105–113, March 1967.

S106. MARTIN, H. Feedback (letter to the editor). CA–A Cancer Journal for Clinicians (New York) 16: 138, May–June 1966.

S107. MASIN, F., MASIN, M. Frequencies of alveolar cells in concentrated sputum specimens related to cytologic classes. Acta Cytologica (Baltimore) 10(5): 362–367, September–October 1966.

S108. MCCLUNG, J. P. Previous pulmonary infection in lung cancer; a review. Journal of Chronic Diseases (St. Louis) 20(1): 65–77, January 1967.

S109. MEINSMA, L. A. A lung cancer epidemic in Western-Europe; possibilities of controlling the disease. Il Cancro (Torino) 19(2): 79–87, 1966.

S110. MILLER, J. A., MILLER, E. C. Natural and synthetic chemical carcinogens in the etiology of cancer. Cancer Research (Chicago) 25(8): 1292–1304, September 1965.

S111. MOLD, J. D., STEVENS, R. K., MEANS, R. E., RATH, J. M. The paraffin hydrocarbons of tobacco; *normal, ISO-*, and *Anteiso*-homologs. Biochemistry (Washington) 2(3): 605–610 May–June 1963.

S112. MONTGOMERY, P. O'B. Nucleolar studies. The Bulletin of Pathology 7(3): 66–67, March 1966.

S113. MONTGOMERY, P. O'B., REYNOLDS, R. C., COOK, J. E. Nucleolar "caps" induced by flying spot ultraviolet nuclear irradiation. American Journal of Pathology (New York) 49(3): 555–567, September 1966.

S114. MOORE, G. E., BROSS, I., SHAMBERGER, R., BOCK, F. G. Tar and nicotine retrieval from 56 brands of cigarettes. Cancer (Philadelphia) 20(3): 323–332, March 1967.

S115. MOUZAKIS, S. T. Personal communication.

S116. NEAL, J., RIGDON, R. H. Absorption and excretion of benzpyrene when fed to mice. Texas Reports on Biology and Medicine (Galveston) 22(1): 156–164, spring 1964.

S117. NELSON, N. Formal discussion of: Chemical and physical carcinogens. Cancer Research (Chicago) 25: 1314–1316, September 1965.

S118. OCHSNER, A. Health hazards from tobacco. *In:* Canter, P. D., editor. Traumatic Medicine and Surgery for the Attorney. London, Butterworths, 1965. Pp. 267–284.

S119. OCHSNER, A. Cancer of the lung: Recognition and management. Surgical Clinics of North America (Philadelphia) 46(6): 1411–1425, December 1966.

S120. OPPERS, V. M. Roken, longanker en sterftekansconcurrentie. Nederlands, Tijdschrift Voor Geneeskunde (Amsterdam) 108: 1574–1580, 1964.

S121. OSHIMA, Y., ISHIZAKI, T., MIYAMOTO, T., KABE, J., MAKINO, S. A study of Toyko-Yokohama asthma among Japanese. American Review of Respiratory Diseases (Baltimore) 90(4): 632–634, October 1964.

S122. OSMAN, S., BARSON, J. Hydrocarbons of cigar smoke. Tobacco (New York) 159(24): 30–32, Dec. 11, 1964.

S123. PAUL, J. S., REYNOLDS, R. C., MONTGOMERY, P. O'B. Inhibition of DNA-dependent RNA polymerase by 4-Nitroquinoline-N-Oxide in isolated nuclei. [Unpublished.] 4 pp.

S124. PAULIN, R. Cigarette et cancer du poumon. Laval Medical (Quebec) 35: 729–732, June 1964.

S125. PHILLIPS, A. J. An analysis of the increase in lung cancer in Canada. Canadian Medical Association Journal (Toronto) 95: 1172–1174, Dec. 3, 1966.

S126. PIKE, M. C., DOLL, R. Age at onset of lung cancer: Significance in relation to effect of smoking. Lancet (London) 1: 665–668, Mar. 27, 1965.

S127. POLIZZI, F. Rapporti epidemiologicic tra trumori primitivi del polmone, fumo di sigarette e malattie pregresse dell' apperato respiratorio. Annali della Sanita Pubblica (Roma) 25: 1271–1286, November–December 1964.

S128. PRICE, C. A. Lung cancer and tobacco smoking. Medical World (London): 14–21, June 1966.

S129. RAVENHOLT, R. T. Malignant cellular evolution. An analysis of the causation and prevention of cancer. Lancet (London) 1: 523–526, Mar. 5, 1966.

S130. REYNOLDS, R. C., MONTGOMERY, P. O'B., HUGHES, B. Nucleolar "caps" produced by Actinomycin D. Cancer Research (Chicago) 24(7): 1269–1277, August 1964.

S131. RIGDON, R. H., CORSSEN, G. Pulmonary lesions in the dogs from methylcholanthrene. Archives of Pathology (Chicago) 75: 323–331, March 1963.

S132. RIGDON, R. H., GIANNUKOS, N. J. Effect of carcinogenic hydrocarbons on growth of mice. Archives of Pathology (Chicago) 77: 198–204, February 1964.

S133. RIGDON, R. H., NEAL, J. Absorption and excretion of benzpyrene observations in the duck, chicken, mouse, and dog. Texas Reports on Biology and Medicine (Galveston) 21(2): 247–261, summer 1963.

S134. RIGDON, R. H., NEAL, J. Effects of feeding Benzo(a)pyrene on fertility, embryos, and young mice. Journal of the National Cancer Institute (Washington) 34(2): 297–305, February 1965.

S135. RIGDON, R. H., NEAL, J. Effect of intratracheal injection of Benzo(a)pyrene on ducks. Texas Reports of Biology and Medicine (Galveston) 23(2): 494–506, summer 1965.

S136. ROBBINS, W. T. Bronchial epithelium in smoking and nonsmoking college students. Journal of the American College Health Association (Ithaca) 14: 265–266, April 1966.

S137. ROBERTSON, L. S. Summary of a Report. The Eighth International Cancer Congress: Moscow, July 22–28, 1962. South African Cancer Bulletin (Johannesburg) 6(4): 133–135, October–December, 1962.

S138. ROE, F. J. C., FIELD, W. E. H. Chronic toxicity of essential oils and certain other products of natural origin. Food and Cosmetic Toxicology (Oxford) 3: 311–324, 1965.

S139. ROE, F. J. C., MITCHELY, B. C. V., WALTERS, M. Tests for carcinogenesis using newborn mice: 1.2 benzanthracene, 2-naphthylamine, 2-naphthylhydroxylamine and ethyl methane sulphonate. British Journal of Cancer (London) 17(2): 255–260, June 1963.

S140. ROSENBLATT, M. B. Sex distribution, longevity, smoking, and lung cancer. Journal of the American Geriatrics Society (Baltimore) 14(7): 711–715, July 1966.

S141. ROSS, J. C., LEY, G. D., KRUMHOLZ, R. A., RAHBARI, H. A technique for evaluation of gas mixing in the lung: Studies in cigarette smokers and nonsmokers. American Review of Respiratory Diseases (Baltimore) 95: 447–453, March 1967.

S142. RUSSELL, W. O. Cytology for early diagnosis of lung cancer. (Current Opinion) Medical Tribune (New York) 4: Nov. 15, 1963.

S143. RUSSELL, W. O. Exfoliative cytology for early diagnosis of lung cancer. Postgraduate Medicine (Minneapolis) 37(4): A46, A48, A50, April 1965.

S144. RUSSELL, W. O., NEIDHARDT, H. W., CHANG, S. C. How reliable is exfoliative cytology as a diagnostic tool? Surgery (St. Louis) 54(5): 825–832, November 1963.

S145. RUSSELL, W. O., NEIDHARDT, H. W., MOUNTAIN, C. L., GRIFFITH, K. M., CHANG, J. P. Cytodiagnosis of lung cancer. A report of a 4-year laboratory, clinical, and statistical study with a review of the literature on lung cancer and pulmonary cytology. Acta Cytologica (Baltimore) 7(1): 1–44, January–February 1963.

S146. SAWICKI, E., STANLEY, T. W., HAUSER, T. R., JOHNSON, H., ELBERT, W. Correlation of piperonal test values for aromatic compounds with the atmospheric concentration of benzo(a)pyrene. International Journal of Air and Water Pollution (London) 7: 57–70, 1963.

S147. SAWYER, K. C., SAWYER, R. B., LUBCHENCO, A. E., MCKINNON, D. A., HILL, K. A. Fatal primary cancer of the lung in a teenage smoker. Cancer (Philadelphia) 20(3): 451–457, March 1967.

S148. SCHWARTZ, T., SCHMIDT, F., PROLL, E. Verusche zur tierpathogenen Wirksamkeit des Tabakmosaik-Virus. Naturwissenschaften (Berlin) 53(18): 485–486, 1966.

S149. SEIDMAN, H. Lung cancer among Jewish, Catholic, and Protestant males in New York City. Cancer (Philadelphia) 19(2): 185–190, February 1966.

S150. SELIKOFF, I. J., HAMMOND, E. C., CHURG, J. Asbestos exposure, smoking and neoplasia. Presented at the Sections on Diseases of the Chest and Preventive Medicine of the American Medical Association and the American College of Chest Physicians, Atlantic City, N.J., June 19, 1967. [Unpublished.] 21 pp.

S151. SIRTORI, C. Relationship between cancer and senile changes in the lung. Electron microscopy study. Gerontologia (Basel) 9(4): 239–248, 1964.

S152. SKOOG, F., ARMSTRONG, D. J., CHERAYIL, J. D., HAMPEL, A. E., BOCK, R. M. Cytokinin activity: Localization in transfer RNA preparations. Science (Washington) 154: 1354–1356, Dec. 9, 1966.

S153. Smoking and cancer of the bladder. British Medical Journal (London) 2(5463): 661–662, Sept. 18, 1965.

S154. Smoking and esophageal histology (editorial). Journal of the American Medical Association (Chicago) 193: 151, July 12, 1965.

S155. Smoking and women (editorial). Scientific American (New York) 214(4): 48, 1966.

S156. SÖREMARK, R., HUNT, V. R. Distribution of Polonium-210 in mice followi inhalation of polonium-210-tagged tobacco smoke. Archives of Env mental Health (Chicago) 14: 585–588, April 1967.

S157. SPRINGETT, V. H. The beginning of the end of the increase in mortality from carcinoma of the lung. Thorax (London) 21: 132–138, 1966.

S158. Statistics on cancer. CA. A. Cancer Journal for Clinicians (New York) 17(1): 34–43, January–February 1967.

S159. STEVENS, K. M. Lung Cancer: an evolutionary approach. Australian Journal of Experimental Biology and Medical Science (Adelaide) 43: 421–428, July 1965.

S160. STITNIMANKARN, T., ROSAHN, R. D. Carcinoma of the lung at the Siriraj Hospital, Bangkok. Cancer (Philadelphia) 18(4): 510–515, April 1965.

S161. TOKUHATA, G. K. Smoking habits in lung-cancer proband families and comparable control families. Journal of the National Cancer Institute (Washington) 31(5): 1153–1171, November 1963.

S162. TOKUHATA, G. K. Familial factors in human lung cancer and smoking. American Journal of Public Health and the Nation's Health (New York) 54(1): 24–32, January 1964.

S163. TOTH, B., SHUBIK, P. Studies with malignant lymphomas: Possible interaction problems between chemical and viral-inducing agents. Bethesda, National Cancer Institute Monograph No. 22, September 1966. Pp. 313–328.

S164. TSUCHIYA, K. The relation of occupation to cancer especially cancer of the lung. Cancer (Philadelphia) 18(2): 136–144, February 1965.

S165. U.S. PUBLIC HEALTH SERVICE. National Center for Health Statistics. Mortality trends in the United States: 1954–63. Washington, U.S. Depart-