

## CONFIDENTIAL REPORT

## TOBACCO INDUSTRY RESEARCH COMMITTEE MEETING

NOVEMBER 8, 1957

Attendance

Timothy V. Hartnett, Chairman

Paul M. Hahn

Emery M. Lewis

Albert Clay

Paul D. Goddard

J. R. Hutson Jr.

W. T. Reed Jr.

Lewis Gruber

O. Parker McComas

E. A. Darr

C. S. Stephano

J. B. Hutson

J. Whitney Peterson

The American Tobacco Company, Inc.

Brown &amp; Williamson Tobacco Corp.

Burley Auction Warehouse Assn.

Burley Stabilization Corp.

The Imperial Tobacco Company, Ltd.

Larus &amp; Brother Company, Inc.

P. Lorillard Company, Inc.

Philip Morris, Inc.

R. J. Reynolds Tobacco Co.

Stephano Brothers, Inc.

Tobacco Associates, Inc.

United States Tobacco Co.

George W. Whiteside

Freeman J. Daniels

John Vance Hewitt

Chadbourn, Parke, Whiteside &amp; Wolff

Perkins, Daniels, McCormack &amp; Collins

Conboy, Hewitt, O'Brien &amp; Boardman

John W. Hill

Richard W. Darrow

Carl G. Thompson Jr.

Hill and Knowlton, Inc.

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C. C. Little, Scientific Director

W. T. Hoyt, Executive Secretary

1. Mr. Hartnett opened the meeting and welcomed Mr. J. R. Hutson Jr. of The Imperial Tobacco Company, Ltd., who was in attendance. He explained that The Imperial Tobacco Company had recently approached him with the thought of having its leaf-buying organization become a member of TIRC. Since this had been agreeable to the Executive Committee he asked for confirmation by the entire Committee. The Imperial Tobacco Company, Ltd. was voted to membership in TIRC.

2. Mr. Hartnett asked for approval by the Committee of the following actions taken by the Executive Committee:

- a. The formation of a Tobacco Information Committee, which group would act as a subcommittee to the TIRC in the same manner as the Industry Technical Committee, its composition to be drawn from public relations representatives in the companies and public relations counsel representing the companies. The formation of the Tobacco Information Committee was approved.

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- b. The confirmation of Dr. Little as Scientific Director to the TIRC on an annual basis beginning with the calendar year 1958. This was approved.
- c. The provision of a supplementary budget in the amount of \$104,500.00 during 1957 to cover the issuance of two issues of Tobacco and Health, expanded distribution of Dr. Little's Annual Report, the building of a new Exhibit for scientific meetings, a speakers' program, paperback books of "Science Looks at Smoking" for the use of Hill and Knowlton, Inc., plus minor expenses in excess of the amount approved for the 1957 budget. This was approved.
- d. The approval of an additional assessment of 1/16th of a cent per thousand tax-paid (domestic) cigarettes for the year 1957, based upon the formula for contributions made by the manufacturing companies. This was necessary to cover the cash lag between contributions and budgeted amounts. This was approved by the Committee.
3. The grant awards made by the SAB since the TIRC meeting of May 9, 1957, were approved in the amount of \$248,802.04, making the grant approvals and renewals since the inception of the Committee a grand total of \$1,927,973.10.
4. The Chairman made a resume of events since the last meeting of TIRC, and described the series of attacks which had been made upon tobacco from various sources. He also outlined major forthcoming events which will have to be faced public relations-wise. These comments will be found in Attachment #1.
5. Dr. Little reported as Scientific Director on the research activities of the Committee with particular reference to progress on research projects. See Attachment #2.

Dr. Little described the results of the Pathologic-Anatomic Study and, in doing so, advised the Committee of the paper being presented before the National Academy of Sciences by Dr. Wilson and Miss Mary H. Burke on November 20th, which paper is entirely founded on the statistical evaluations arising from the Pathologic-Anatomic Study.

The Scientific Director explained the benefits which are being derived from various conferences which have been called by the SAB, and particularly referred to the cardiovascular conferences, the tissue culture conferences and the psychosomatic conference. These meetings have brought together not only grantees of the TIRC but scientists of stature who are in a position to contribute to the subject of the conferences. The results have been great and have provided a greatly improved liaison between the scientists themselves, as well as between the scientists and the SAB. - Dr. Little advised the Committee members that the SAB intended to continue these conferences during 1958, and that subcommittees of the Board have been delegated for the purpose of arranging them.

He explained in detail the efforts being made by the Scientific Director and Board members to expand contact with many segments related to the subject of tobacco use and health. Among these are the Tobacco Manufacturers' Standing

Committee, recent visitors from which have been Sir Charles Ellis and Sir Ronald Fisher; Washington scientists, among whom are Drs. Burney, Heller, Dorn and others; the drug and allied industries; and scientific organizations and groups.

Dr. Little concluded by expressing the intention of attempting to standardize methods of assay, to solicit additional advisers to the Board and to arrange, if possible, for outside scientists to undertake speaking engagements on the subject of tobacco use and health.

6. Mr. Darrow gave a report on public relations activities, with particular reference to the following:

a. Tobacco Information Committee

The Tobacco Information Committee was formed from what was formerly the Public Relations Committee of the TIRC.

Members of TIRC should nominate representatives on the Tobacco Information Committee, and a chairman and secretary should be designated.

It is planned to hold meetings of the Committee every two months, and more frequently if necessary, for discussion and guidance on the public relations activities of the TIRC.

One function of the Committee will be to act as the publishing group for the Tobacco and Health publication.

b. Tobacco and Health

The second issue of the publication, Tobacco and Health, will feature stories from the 1957 Report of the Scientific Director.

The first issue had a printing of 350,000, the bulk of which went to doctors and dentists.

Reactions are just beginning to be received in increasing quantity, but as yet responses number less than fifty, of which more than half are straight requests for the statements of scientists. Most of the rest are either rude or vulgar reactions from doctors or dentists. There have been several intelligently critical replies.

c. Annual Report

The 1957 Annual Report of the Scientific Director is in the hands of the printer. As soon as galley proofs are given a final check, printing will proceed.

It is currently planned not to attempt distribution to all doctors. However, selected lists of doctors and scientists directly working in the field of cancer and heart research will receive copies. This will include the membership of such organizations as the American Association

for Cancer Research, American Association for Thoracic Surgery, members and directors of the National Research Council, American Cancer Society, Sloan-Kettering Institute, state and territorial health officers, executives of state and county medical societies, deans of medical schools, as well as full coverage of medical and scientific journals, press, magazines and radio.

A press release will be issued at the time of publication, and stories from the Report will be featured in the next issue of Tobacco and Health.

d. Northrup Book

First interest in the Northrup book reached its peak during July and August, coinciding with the statement by the Surgeon General of the United States and the congressional hearings.

Ads: Plans are progressing for a series of eight contemplated ads, averaging 125 lines each, as tentatively approved by the Executive Committee. Costs and details are being ironed out at present. The suggestion has been made that TIRC buy the rights to the book, which has not been considered advisable. The consensus was that the matter should be explored further as it was felt the ads would be an excellent way to get the true story across. It is hoped that the ads can be initiated shortly after the first of the year. (Mr. Darrow showed suggested copy and layout for such ads.)

e. Scientific Review and Editorial Research

The continuing review of scientific papers, both published and delivered at meetings, and of lay press reports on the subject of tobacco and health has proved particularly valuable during this period. Several dozen scientific publications are received regularly and screened, in addition to many times this number which are checked two or three times monthly at the New York Academy of Medicine. Selected, pertinent articles are compiled once monthly into Current Digest for distribution to a controlled list of scientists and interested lay people.

The screening of lay and scientific literature is a corollary to the regular checking of programs of hundreds of scientific and medical meetings, at which papers may be given relating to tobacco use or to those areas of health or interest to the TIRC research program. In addition to learning of possible news-making attacks on tobacco, this activity also frequently results in obtaining scientific papers of useful significance prior to their publication.

These activities provide a basis for dealing with everything from routine requests for information from scientists, individuals and from information media to the actions and statements necessitated by major news-making events.

f. TV Film

Estimates are being made as to the feasibility of producing a 30-minute film relating to the scientific efforts of TIRC. Estimates are available on production, print and distribution costs. Explorations are now being made as to the participation of doctors and scientists interested in the tobacco and health question. This whole subject will be brought before the Executive Committee at the earliest possible date.

7. The budget, as indicated in Attachment #3, was presented to the Committee. It was decided that funds for grants be approved in the amount of \$500,000 for the year 1958, and that all other budgeting be left to the Executive Committee for final decision.

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CONFIDENTIALATTACHMENT #1

## STATEMENT BY THE CHAIRMAN

NOVEMBER 8, 1957

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1. Resume of Events

Since the last meeting of the TIRC there have been a series of attacks on tobacco from various sources. These have been very serious and have called for a great deal of care and attention public relations-wise. Due to the fact that we were organized and able to cope with these outbursts, we have been able to come through them as well as can be expected. In fact, in some instances, such as the hearings in Washington, the outcome of these events has even resulted in providing a better balance of opinion on the subject of tobacco and health than existed previously.

Specifically, the following events occurred:

- a. The final report by Hammond & Horn on their statistical study was presented at the American Medical Association meeting on June 4th. It is our understanding that, although this concludes the statistical work, it will subsequently be published in the Journal of the American Medical Association.
- b. The Medical Research Council in England issued a statement in June which was supplemented by a statement by the Minister of Health condemning tobacco as being a major cause of lung cancer, and calling for an expanded program to advise the public of hazards of smoking. This program encompassed asking local health authorities to inform the general public of the risks of smoking and to utilize their education departments for that purpose.
- c. Early in July the Surgeon General issued a statement, largely based on the Joint Study Group Report, advising the public that "excessive" cigarette smoking is one of the causative factors of lung cancer. This was immediately challenged by Dr. Little, who referred to the comments of the SAB in its criticism of the Study Group Report, which said that the report had contributed nothing new but had drawn conclusions based upon selected information.
- d. THE READER'S DIGEST had two articles, one in July and one in August, entitled "The Facts Behind Filter Tip Cigarettes." With the enormous circulation of THE READER'S DIGEST, these naturally had a very pronounced adverse effect.
- e. U. S. NEWS AND WORLD REPORT carried an interview with Dr. John R. Heller, who supported the position of the Surgeon General in warning the public about the hazards of smoking. This piece was supplemented by giving Dr. Little's reply to the Surgeon General.

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- f. In July, hearings were held by the Subcommittee on Legal and Monetary Affairs as that Committee studied the Federal Trade Commission supervision of advertising practices. The Subcommittee began its hearings with the subject of tobacco and health and had as its first witnesses Drs. Wynder and Hammond. However, at the hearings were other witnesses who did not support the cigarette theory but gave considerable evidence to the fact that opinions incriminating tobacco were not justified. Principal among these were Drs. Little, Macdonald, Greene and Rigdon.
- g. THE ATLANTIC MONTHLY, in its October issue, carried an article by Dr. David Rutstein entitled "An Open Letter to Dr. Clarence Cook Little." This endeavored to take Dr. Little to task for his attitude that matters relating to tobacco and health needed more research before any conclusions could be drawn, and suggested that people should be advised to stop smoking during the period that such research was being conducted. Dr. Little has been given equal space in the December issue.
- h. The American Cancer Society, at its annual meeting in New York City last week, heard its retiring President, Dr. David Wood, accuse tobacco of being a causative factor in lung cancer. He also expressed the feeling that it would be desirable for the Cancer Society to discourage young people from smoking through a positive educational program. A resolution was proposed and approved, urging all public health agencies to take such measures as might be indicated by present knowledge on cigarettes and cancer.

## 2. Coming Events

- a. American Cancer Society Workshop Conference on Lung Cancer: Yesterday and today, at Virginia Beach, the American Cancer Society is holding a series of meetings dealing with various phases of lung cancer. Approximately 100 people are in attendance, a dozen of whom have been invited from outside the United States. The members of our SAB, as such, have not been invited; however Dr. Cattell, Dr. Kotin and Dr. Hockett are present at the Conference. They will be conversant with the principal discussions. It is impossible to estimate exactly what publicity will come from these meetings but, since they represent the fourth in a series of such meetings on lung cancer, the last one having been held at Princeton, experience indicates that there will be publicity forthcoming. Certain precautions have been taken with regard to the meeting which include a letter written by Dr. Hockett to Dr. Davies of the Cancer Society concerning the meeting, which will serve as a matter of record. Dr. Little has likewise addressed Dr. Cowdry, who is chairman of the Workshop on Biological Testing.
- b. The American Public Health Association is scheduled in Cleveland, November 11-15. The preliminary program shows several papers which may be troublesome, principal among which is one by Dr. Morton Levin entitled "Epidemiological and Program Implications of the Relationship between Smoking and Disease."

- c. Veterans Administration Study: Results from this are expected to be made available at the International Cancer Congress to be held in London in July of 1958. We do expect, however, that there will be an earlier release concerning the Study, probably in the spring of 1958, as a result of trial runs of statistics which will be assembled by that time.
- d. The American Cancer Society pamphlet, "To Smoke Or Not To Smoke": This will be distributed shortly through its various chapters around the country. We understand that this pamphlet, without directly advising people against smoking, has taken the position that persons should decide whether or not to smoke in the light of information published by the American Cancer Society and in conjunction with advice from their family physicians.
- e. Various state efforts to use educational facilities to advise youth of the hazards of smoking, as a result of the Surgeon General's recent advice, can be expected.

### 3. Public Information Policy

- a. The TIRC will continue its information policy, as in the past, with statements being issued by your Chairman and Dr. Little as the occasion dictates.
- b. The SAB has expressed itself as feeling that the time has come when it can expand its activities in making public utterances where positive information concerning their work is available. This would encompass acquainting doctors and scientists with the work and efforts of the SAB, the results and progress of research by TIRC grantees, and some more specific comments on behalf of the Board in connection with scientific reports that deserve comment. An example of this was the statement by the Board with regard to the Study Group Report.
- c. The Tobacco Information Committee will permit the dissemination of information which does not, in any way, relate to the TIRC or its SAB. The first vehicle of the Tobacco Information Committee was Tobacco and Health. When Tobacco and Health, as a publication, was first conceived it was planned to issue this document for the TIRC as a compilation of selected comments on the subject. When the SAB was advised of this, two of its members felt that the document presented a hazard to their maintenance of an impartial attitude as scientific advisers to the TIRC. In fact, they felt strongly enough that they raised the question whether or not to continue on the SAB. The formation of the Tobacco Information Committee has completely satisfied these scientists. I am happy to report to you that since the mailing of Tobacco and Health to all doctors and dentists, the press and others, there has been no impugning of the scientific integrity of the SAB. We feel that this instrumentality will prove very useful in the future.

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4. TIRC Exhibit

The Exhibit, photographs of which are at hand, has now been shown at the Maine Medical Association meeting, Medical Society of Virginia meeting, and will be shown at the meetings of the American Public Health Association, American Medical Association and the American Association for the Advancement of Science. The Executive Secretary attended the last showing of this two weeks ago in Washington and reports that it was well received.

A second Exhibit is to be prepared to cover instances where two meetings are held simultaneously. When the Exhibit is shown, materials related to the TIRC and its grantees are and will be made available.

5. "Science Looks at Smoking"

This book has proven to be most effective. Between the hard-cover and paperback books, it has attained enormous circulation and was well received at a time when we needed it most, as it was published just prior to the hearings in Washington, receiving considerable press attention around that time.

6. Medimetric Study of Doctors

Since the last meeting, a copy of the latest Medimetric Study has been completed and sent to you. We plan on having another check of this panel made in February of 1958.

7. Wynder Visit by Drs. Cattell and Hockett

A visit was made to Dr. Wynder's laboratory by Drs. Cattell and Hockett, following which Dr. Hockett wrote Dr. Wynder a letter describing his objections concerning the visit and his criticism of certain of Dr. Wynder's techniques.

8. Annual Report of the Scientific Director

This document has now been completed and is in the process of being printed. It is more complete and thorough than last year's Report, as might be expected, and includes published papers by grantees of TIRC. It will be distributed as quickly as possible.

9. Washington Liaison

Both Dr. Hockett and Dr. Little are maintaining more intensified liaison with the National Institutes of Health, the Veterans Administration and other scientific groups in Washington. This is largely as a result of the more clearly defined attitude of the Surgeon General and the National Cancer Institute, as well as the forthcoming Veterans Administration Study.

CONFIDENTIALATTACHMENT #2

## STATEMENT BY THE SCIENTIFIC DIRECTOR

NOVEMBER 8, 1957

With a particular view to reporting high points in the recent findings of grantees, I am submitting a series of brief paragraphs outlining some of these which seem to me especially significant. Some items are taken from very recent reports not yet distributed to the members of the Scientific Advisory Board.

1. B. L. Freedlander and F. F. French, Mount Zion Hospital, San Francisco, California. (#12)

Main interest has been in the possible carcinogenic or cocarcinogenic action of tobacco nitrogen bases, their oxidation and pyrolysis products.

These workers have shown that injection of finely divided carbon particles into the blood stream will produce an increased number of lung tumors in Strain A mice (about double). They found considerable quantities of carbon particles trapped in the lung. When the neutral fraction of a cigarette smoke condensate was adsorbed on such carbon before injection, there were not quite so many tumors as were produced by the carbon alone. (Difference not significant.)

They have also found that a niacin-deficient diet in Strain A mice seems to increase the number of spontaneous lung adenomas, probably significantly. Feeding 3-pyridyl ethyl ketone, a nicotine derivative found in smoke and thought by Wooley to be a niacin antagonist, did not increase the number of adenomas. When given to niacin-deficient animals of this strain, it actually seemed to decrease the number of adenomas that would have been expected as if it were being converted into niacin.

Giving urethane along with niacin deficiency had a marked effect in increasing the average number of lung tumors per mouse. Again the addition of 3-pyridyl ethyl ketone seemed partially to correct the niacin deficiency.

Earlier experiments by these workers have shown no cocarcinogenic effect of any tobacco nitrogen base studied, on (1) spontaneous pulmonary adenomas in Strain A mice, (2) on urethane-induced pulmonary adenomas in Strain A mice, (3) on X-ray induced lymphomas in C57 black mice, or (4) on ultra-violet light-induced skin tumors in Swiss mice.

This work seems to me to emphasize the possibility that even human lung cancer may be induced by agents approaching the lung through the blood stream, rather than through air inhalation. (Murphy has previously shown that carcinogens applied on the skin short of skin-tumor production may increase the incidence of lung tumors.) It also emphasizes the possible role of vitamin deficiency in carcinogenesis and shows the complete inactivity of cigarette smoke neutral fraction by a new method.

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2. Cecillie Leuchtenberger, Western Reserve University, Cleveland, Ohio.  
(#74, #159)

Mice have been subjected to cigarette smoke inhalation in chambers and their bronchi and tracheae then subjected to minute histological and cytochemical examination.

Some of the mice showed no significant changes but others showed bronchitis and either mild or marked proliferative changes akin to those observed by Auerbach in human lungs. Some of these changes were analogous to those described by the latter as "carcinoma-in-situ" and translated by LIFE Magazine as "little nests of cancer". Cytochemical examination showed DNA sometimes increased, and nuclear volumes, tyrosine and dry mass frequently increased.

At first glance these findings appear to be damaging. However, it must be recalled that all other smoke-inhalation experiments with animals have failed to produce either squamous-cell carcinomas or any significant increase in adenocarcinomas.

If the continuation of Dr. Leuchtenberger's experiment fails to produce such lung cancers in her animals, it will suggest, quite strongly, that the observed changes including the "carcinoma-in-situ" are not actually precancerous changes as some have thought. In other words, the use of animals will enable Leuchtenberger to do what Auerbach could not - to follow the supposed precancerous changes to their ultimate outcome and see whether they really do develop into cancer. She will also be able to discontinue smoke exposure of some animals and see whether the inflammatory changes disappear.

Incidentally, Dr. Auerbach has reported a discrepancy in his own work. He has been finding his so-called "carcinoma-in-situ" as often in the tracheae of his smoking subjects as in their bronchi, yet bronchogenic cancer is seemingly becoming more common whereas tracheal cancer is not. This is hard to reconcile with the view that "carcinoma-in-situ" is actually a precancerous lesion.

Dr. Leuchtenberger noticed, incidentally, that her smoked mice lost weight or remained stationary whereas her controls gained. This would seem to be in line with Brozek's findings.

3. Fred G. Bock, Roswell Park Memorial Institute, Buffalo, N.Y. (#28, #154)

I asked Bock specifically for any data he might have on the relative activity of cigarette smokes made on a machine like Wynder's and the Ecusta-type machine that he has set up. Bock is using both skin painting and the sebaceous gland suppression test. The latter is not considered to be a direct carcinogenicity test because of false-positives and false-negatives that have been observed. However, it is a test of biological activity which may, in some way, be akin to carcinogenicity.

By skin painting of 113 mice (including C3H, C57 BL, Marsh and ICR Swiss) with condensate from a manifold (Wynder) machine, he originally got in pilot experiments 14 skin tumors, of which only one was actually malignant, (squamous-cell carcinoma). The rest were papillomas.

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Mice painted with smoke condensate produced in their own laboratory (by the Ecusta-type machine, I judge. His report is not too clear.) have developed 30 tumors in 191 mice. While these have not yet been examined histologically, he thinks they will all or mostly prove to be papillomas.

The sebaceous gland suppression test is not very quantitative. However, when the puff-frequency is diminished from 2 a minute to one in two minutes, no great difference in activity resulted. Neither did different resistances to air-flow cause any significant difference in activity. Other variables have not yet been studied.

Bock's main purpose has been to determine whether trauma, shaving and manner of tar application are very significant in relation to skin carcinogenesis.

His work has actually done nothing to clarify the relation between mouse-skin reactions and the susceptibility of human tissues.

4. Sherwood and Emerson, Strong Memorial Hospital, Rochester, N.Y. (#68)

The main purpose of this study was to collect and study old chest X-ray plates of persons who were eventually diagnosed as having lung cancer, with a view to assisting in the earlier diagnosis of the disease. Some material on the history of patients was also collected. The final report has been received.

Experts on reading X-ray plates can judge better than I whether the study will assist significantly in this respect.

To me a point of particular interest was an observation they made on smoking habits in relation to type of employment. Persons whose occupations were construed by the authors as subjecting them to inhalation of dusts and fumes were found to be "heavy" smokers much more often than persons not so exposed. The degree of difference seemed striking on superficial consideration without formal statistical analysis. This finding suggests that it might be worthwhile to determine from more extensive studies whether smoking tends to relieve discomfort due to inhalation of irritating materials, either as dusts or gases. If this should prove true, it might turn out that heavier smoking is a result rather than a cause of some irritations which may predispose to lung cancer. The work of Mancuso tends to fit into this possibility.

This finding was mentioned to Drs. Heller, Mider and Dorn.

5. Clark W. Griffin, M.D., Anderson Hospital and Tumor Clinic, Houston, Texas. (#7)

Griffin has conducted a series of experiments designed to determine whether tobacco smoke or smoke condensates would antagonize the effects of other carcinogenic agents (particularly acetylamino fluorene and azo dyes). In theory, an antagonistic effect might indicate the presence of a carcinogen in smoke. This experimental design would seem to be clouded by the possible existence of primary carcinogen inhibitors whose action is not indicative of a carcinogenic

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action of their own. Both skin painting and smoke inhalation were used. Levels of liver riboflavin and liver deoxyribose nucleic acid were used as indirect indices of impending tumor production. (The reliability of this indirect index may be open to question.)

Griffin found less riboflavin reduction and less liver damage in smoked animals receiving acetylaminofluorene. Certain crude tobacco smoke preparations had a similar inhibitory action. Other smoke preparations, including those from Ecusta Paper Company and presumably more closely similar to "normal" smoke showed no action of this kind.

The inconsistent results and alternative possible interpretations leave the question of whether carcinogens are present in normal cigarette smoke unsettled so far as this study is concerned. (The recurrence of the vitamin involvement in this work raises the question whether supplemental riboflavin feeding would affect liver cancer induction.)

6. Charles McArthur, Student Health Service, Harvard University, Cambridge, Mass. (#42)

Using the accumulated comprehensive data on subjects of the Grant Foundation Study over a period of sixteen or eighteen years, Dr. McArthur has endeavored to determine what correlations may exist between smoking practices and personality or psychological factors.

The study first convinced him that sociological and religious factors are uppermost in determining whether or not a young man will first take up smoking. Among those who start, however, McArthur believes he has strong evidence that psychological factors will determine whether (1) he remains a relatively light and casual smoker who can rather easily discontinue the practice, or (2) he becomes an increasingly heavy and compulsive smoker who can discontinue only with great difficulty.

He feels that he could now take a group of new smokers and, from psychological data, make an accurate prediction as to which persons would belong eventually to each class.

The psychological factor making the difference is related to oral satisfaction or frustration in early childhood, according to McArthur.

This finding is one of the first concrete hints of a basic constitutional difference of the kind that may prove to be linked both to disease predisposition and to smoking tendencies and thus possibly to relate smoking and disease statistically but without causality relationships.

7. E. M. Butt, M.D., University of Southern California, Los Angeles, Cal. (#95)

Dr. Butt says that he finds so much lead deposited in the lungs of city dwellers that he is almost afraid to publish the results.

8. William S. Murray (R. H. Gwynn), Roscoe B. Jackson Memorial Laboratory,  
Bar Harbor, Maine. (#52)
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Experiments on transplantation, to subcutaneous and intraperitoneal sites, of lung tissue from one mouse strain to another, followed by intravenous administrations of carcinogenic agents, have shown that tumor incidence depends mainly on (1) the hereditary character of the donor strain, and (2) the potency of the carcinogen.

Because of their toxicity, tobacco smoke condensations have not been applied successfully by the same technique. Treatment of tissue before transplantation may prove feasible, however.

Preliminary experiments with tobacco smoke condensates seemed to produce a slight fall in certain skin sterols when applied to mice. This type of action is considered characteristic of carcinogenic agents as contrasted with simple irritants. Much more exhaustive experiments will be required to evaluate this finding.

A smoke condensate from Dr. Wynder proved to have much stronger action on mouse skins (apart from tumor production) than smoke condensates made in the Jackson Laboratory. This tends to confirm the suggestion that "tars" produced by different machines under different conditions may differ substantially in nature.

9. Freddy Homburger, Tufts University School of Medicine, Boston, Mass.  
Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Maine. Bio-Research  
Laboratories, Inc., Boston, Mass. (#29B)
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Using a subcutaneous airpouch for tumor transplantation based on Selye's method, Homburger has studied the action of known carcinogenic agents and tobacco smoke condensates in tumor growth inhibition. 3,4-Benzpyrene has been used as a standard carcinogen.

The relatively small doses of whole tobacco smoke that could be introduced (as limited by nicotine toxicity) has produced no tumor inhibition effects so far.

10. C. M. Pomerat, University of Texas Medical Branch, Galveston, Texas. (#134B)
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During the few months that Dr. Nakanishi has been working in Pomerat's laboratory, they have succeeded in growing lung tissue from several different animal species and more recently from a human embryo in vitro. Chromosome counts are being made at intervals.

Preliminary exposures to cigarette smoke have been made with use of Ecusta material, whole. Some changes in the mitochondria and a slight spreading of chromosome numbers have occurred as a result. Dr. Pomerat has seen no changes as yet which he would interpret as in the direction of carcinogenesis.

Control work with use of known chemical carcinogens, nicotine and nicotine-free tobacco smoke condensate is to be started shortly.

11. R. H. Rigdon, University of Texas Medical Branch, Galveston, Texas. (#72)

Dr. Rigdon is now introducing methyl cholanthrene in peanut oil into the tracheae of ducks. A very intense inflammation is quickly produced. Cigarette smoke condensate similarly introduced is so far practically without effect.

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