APR 3 1956

AIR POLLUTION FOUNDATION

704 SOUTH SPRING STREET

LOS ANGELES 14, CALIFORNIA

Tel.: MAdison 6-9441

April 2, 1956

LAUREN B. HITCHCOCK
President and Managing Director

Dr. Lee A. DuBridge, President
California Institute of Technology
1201 East California Street
Pasadena 4, California

Dear Dr. DuBridge:

After our meeting with The Ford Foundation late in January, you will recall that we thought it would be wise to see if we had planted any seeds and if they would germinate by themselves.

When David Dietz, science editor for the Scripps-Howard Newspapers, printed the enclosed column recently and sent me a copy, I thought it would interest Mr. Lindsay since it summarizes some of the main sociological points that were made during our meeting in New York.

Mr. Lindsay's acknowledgement does not indicate that The Ford Foundation has given any further thought to the air pollution problem.

It has, of course, seemed to us that the sociological aspects of the air pollution problem, as we emphasized them in our meeting with them, might well fall within one or more of the five categories of work that The Ford Foundation supports. Since I am not familiar with their definitions of these categories, nor do I know how rigorously they adhere to them, I think our main problem is to know whether there are any aspects of the national and international air pollution problem that The Ford Foundation might consider properly fell within any of their categories.

The record of several of the leading foundations makes clear that decisions to support or not to support certain undertakings can be made conveniently on the basis of "interpretations" of their policies, so that in the end the worthiness of a cause is not always determined strictly by the letter of their defined categories.

In any case, I wonder if you would agree that it might be a good idea if you could explore with Mr. Gaither the possibilities of The Ford Foundation's taking another look at some of the opportunities for bettering man's condition or status among the plethora of problems in the ever-broadening subject of air pollution.

Sincerely yours,

L. B. Hitchcock

LBH:mek
Enclosures

DAVID DIETZ—

Half of Nation Is Suffering From Smog

Smog may cost the United States more money in the next 25 years than it cost the nation to fight two World Wars. This is the warning of Dr. Lauren B. Hitchcock, president of the Air Pollution Foundation.

Incidentally, don't feel too superior to Los Angeles. He warns further that one of these days you may find yourself living in a comparable haze of smoke and fumes.

Almost half of the U. S. population—some 76 million people or 46% of the nation to be more exact—are now living in areas that have atmospheric pollution, he adds.

Air pollution is no isolated problem characteristic of a few cities like Los Angeles, Chicago, and New Orleans.

"Of the 76 million residents of the United States suffering air pollution, 40% live in the six eastern states of Massachusetts, Rhode Island, Connecticut, New York, New Jersey, and Pennsylvania," he said.

Cost factors include one billion dollars' worth of unburned gasoline emitted from auto exausts annually and at least another billion dollars in laundry bills and the cleaning of buildings, furnishings, and automobiles.

To this must be added the effect on health. Many medical men are inclined to blame a considerable portion of the increase in lung cancer on smog and fumes.

"At the cost of a few millions now," Dr. Hitchcock says, "we can effect savings to the country of billions in the years to come, plus far-reaching health benefits."

He points out that over one-third of the residents of air-polluted regions live in three metropolitan areas, namely the New York-Northeastern New Jersey area, Chicago, and Los Angeles.

Air pollution is now being noted in varying degrees in 30 metropolitan areas of the nation having populations of more than a half million, and in 71 other centers of lesser populations.

In addition, reports of atmospheric pollution are becoming common outside the United States. They come from Mexico City, Bogota, Sao Paulo, London, Liverpool, Manchester, Paris, Cologne, Copenhagen, Sydney, Melbourne, and Tokyo.

Dr. Hitchcock estimates that at least 33 million people outside the United States are in regions suffering from air pollution.

The Air Pollution Foundation is now 18 months old. To date it has spent more than $1,250,000 on basic studies, resulting in a series of 14 technical reports of which some 10,000 copies have been distributed in the U. S. and abroad.

THE FORD FOUNDATION
477 MADISON AVENUE
NEW YORK 22, N.Y.

March 29, 1956

Mr. Lauren B. Hitchock, President
Air Pollution Foundation
704 South Spring Street
Los Angeles 14, California

Dear Mr. Hitchock:

Thank you very much for your note of March 23 enclosing a column written by David Dietz.

We enjoyed very much the opportunity to hear your presentation and will be interested in learning of your progress from time to time.

Sincerely yours,

Franklin A. Lindsay

cc: Mr. Asa Call

April 10, 1956

Dr. Lauren B. Hitchcock
President and Managing Director
Air Pollution Foundation
704 South Spring Street
Los Angeles 14, California

Dear Lauren:

Without pretending to have had time to give adequate consideration to the matter, I am nevertheless giving you herein a few offhand reactions to the letter from Mr. Chappellet of the Western Oil and Gas Association about the future activities of the Foundation.

I must say at once that I would be strongly opposed to converting the Air Pollution Foundation into a sort of a new Southern California "All Year Club" or in any other way going into the advertising or public relations business. If an organization is needed for this purpose, I suggest a new one be formed; it is possible that many of the non-academic members of the present APF Board of Trustees would be suitable members of the new organization, but I for one would beg to bow out.

I am inclined to agree with Bill Mullendore that our real job in Southern California is not to attract industrial migration, but to repel it. There is no such thing as an industry which does not contribute to the smog -- for every industry employs people and every person who drives a car contributes to the smog and, as far as we can now foresee, he will always do so. It will be all we can do to reduce sources of air pollution to tolerable levels even if the population remains at its present value. It would be almost hopeless to attain pure air in Los Angeles if the population continues to increase rapidly. Therefore, in a sense, it would be logical to say that the more the rest of the country hears about how terrible the Los Angeles smog is the better it will be for Los Angeles, because this will reduce the rate at which the population grows and hence the rate at which the air pollution problem gets worse.

It should be added that while many of the present members of the Board of Trustees might be suitable members of the board of a new public relations and advertising foundation, the present staff of the Foundation was hardly recruited for this purpose and could hardly be asked to take on this kind of work.

Implicit in this whole proposal is the suggestion that the research task for the APF has now been completed or has been taken over by others. This I do not believe. If the State of California and the Federal Government are in air pollution research "up to their ears", I have seen small indication that their work will be of great usefulness in Los Angeles. Both state and federal funds seem to be channeled through public health agencies and are therefore aimed at the investigation of the health aspects of air pollution, not at the engineering problem of getting rid of it. The research program of the Air Pollution Foundation could well be increased, and certainly large county, state and federal funds would be very useful in supporting increased research; but I firmly believe that the Foundation still has a job plugging away at the fundamentals of this problem and making available unbiased, technical information to the people of the area and to the law enforcement agencies.

Finally, Mr. Chappellet seems to feel that the Foundation has failed at the job which it originally undertook. If this is true, it would be better to dissolve the Foundation and not try to convert it into an instrument to do a job for which it was never intended. It would even more surely fail in that one.

I hope my remarks are not too blunt and I hope they will not be taken as at all personal. I am sure Mr. Chappellet had only the highest motives in mind, but if he correctly visualizes a problem, I feel he has turned to the wrong agency to help solve it.

Sincerely,

L. A. DuBridge

APR 5 - 1956

AIR POLLUTION FOUNDATION
704 SOUTH SPRING STREET
LOS ANGELES 14, CALIFORNIA
Tel.: MAdison 6-9441

April 4, 1956

LAUREN B. HITCHCOCK
President and Managing Director

Dr. L. A. DuBridge, President
California Institute of Technology
1201 East California Street
Pasadena 4, California

Dear Dr. DuBridge:

As partial background for our discussion with Mr. Call in his office at 11:00 a.m., Friday, April 6, I am enclosing copies of a WOGA internal memorandum and some notes by our secretary, Gerald Kelly.

Cancelled re-set for April 17th

Sincerely yours,

L. B. Hitchcock
mek

LBH:mek
Enclosures

L. B. Hitchcock

This group was to have been comprised of:
Messrs. Kelly
Allen
Call
Banks
Taylor
LAD
LBH

WESTERN OIL AND GAS ASSOCIATION

MICHIGAN 6386 · 510 WEST SIXTH STREET · LOS ANGELES 14, CALIFORNIA

March 15, 1956

REESE H. TAYLOR

MAR 16 1956

To Members of the
AIR POLLUTION POLICY COMMITTEE

SUBJECT: AIR POLLUTION FOUNDATION

Gentlemen:

During a recent private conversation among Mayor Norris Poulson of Los Angeles, Mr. Harry Morrison, and myself, the subject of smog came up. Mr. Poulson expressed deep concern over the effect of the smog problem on the national reputation of the City of Los Angeles. Tourists, new industries, and new commercial enterprises are being discouraged from coming here by this publicity.

Mr. Poulson expressed himself in favor of a national public relations effort for Los Angeles to counteract the bad effects of this adverse publicity.

Because of the oil industry's traditional strong interest in the tourist industry and in continued industrial and commercial migration to Los Angeles, Mr. Poulson's comments stimulated discussion here at the Association. Out of this discussion has come the following proposal: It seems to us that there is one organization which is in an excellent position to carry on the public relations campaign Mr. Poulson suggests. This is the Air Pollution Foundation. The organization, the name, the financial support, the strong Board of Directors and the nucleus of personnel for such an effort are all in being. The Foundation is a going concern.

Where the falling off of industrial migration to Los Angeles is concerned, the Foundation is likewise in a special position. The Los Angeles

(more)

Chamber of Commerce still favors industrial migration which will not add to our smog problem. It seems logical, therefore, that the Air Pollution Foundation, again as a going concern, could set up a special department in air pollution control. This department could act as a counseling group to show industries who might wish to migrate here how they could meet the local air pollution control requirements. The department could be staffed with specialists in air pollution control engineering. These specialists would have at their finger tips all of the latest technology in control equipment and methods and accurate information on the cost of such equipment. The department could work closely with the industrial development people in the Los Angeles Chamber of Commerce and with other groups who seek to attract additional industrial migration.

The above proposals should be considered in the following frame of reference:

The original mission of the Air Pollution, if I understand it properly, was to study every phase of air pollution and to recommend constructive remedial action. It was to coordinate the work of all fact finding agencies in the field, thus preventing duplicating of research efforts.

Without attempting to evaluate the performance of the Foundation, I believe that it is a matter of fact that the basic situation has changed radically since the Foundation was established. The State of California and the Federal Government are now in air pollution research up to their ears. While there is still the need for a privately-financed organization to act as a watchdog on the activities of tax-supported bodies in air pollution control research, I hardly believe that the State of California and the Federal Government are going to be "coordinated" by the Foundation. In addition, we have seen that the acceptance right here in Los Angeles by the Board of Supervisors of the

Foundation's recommendations has been less than was hoped. Put another way, the Foundation has not managed to become a prophet in its own county.

Therefore, since the original mission of the Foundation has been somewhat superseded, a change of direction into the two activities outlined above would not necessarily call for an expanded organization or an increased expenditure of money. The Foundation could simply substitute some of the funds that it is now spending on research to the activities that I have suggested.

Cordially,

Felix Chappellet

Felix Chappellet
Vice President
and General Manager

I. Greater exercise of the police power

A. Example: The requirement of the Edison Company

B. Example: Fletcher Bowron's conditional permit concept.

II. Industry will go through three stages: Surprise, anger, and defense.

A. The defensive position will develop slowly, probably through the evolution:

1. We've done all that could be expected of us.

2. We've spent large sums of money which subsequent scientific investigation proved to be unnecessary.

3. It's unreasonable to call upon the police power to require us to expend funds unless it has been established in advance that the expenditure will reduce air pollution.

B. The next step will be a gradual sympathetic bonding together of industry.

1. Industry will commence to look for an organization which can protect it from this abuse of police power.

2. It is logical to assume that the Air Pollution Foundation will be approached.* The decision will

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*Felix Chappellet's inter Western Oil and Gas Association memorandum gives evidence of the first forthcoming request by industry that the Air Pollution Foundation render a new service.

then have to be made as to whether to keep the Foundation a private objective research organization.

a. It is my prediction that if it stays so and this defensive industrial unified effort richochets off the Foundation to another organization, that the Foundation will gradually die on the vine. It will die on the vine because government will be concentrating on entering the field of research and the Air Pollution Foundation's research program will be relegated to the background.

b. If the Foundation accepts this new responsibility when requested by industry, it will require a new look. The Foundation

(1) Will have to fight for principles

(2) Will have to become an advocate against the abuse of police power.

(a) In a very minor manner, the Foundation has already started to lean in this direction:

(i) Example: Thinking which tends to indicate a recommendation against the exercise of the police power which would require

the public to purchase devices for curtailing automobile air pollution unless it is first established that such devices would accomplish the purpose.

(ii) Example: Recommendation against Fletcher Bowron's conditional permit concept.

GGK:lsh
March 23, 1956

APR 20 1956

AIR POLLUTION FOUNDATION

704 SOUTH SPRING STREET

LOS ANGELES 14, CALIFORNIA

Tel.: MAdison 6-9441

LAUREN B. HITCHCOCK
President and Managing Director

To: Our Trustees and Contributors

Subject: Publication of Report No. 14, "Solar Radiation, Absorption Rates, and Photochemical Primary Processes in Urban Air"

We take pleasure in announcing the publication of an important study prepared for the Foundation by Professors Philip A. Leighton and William A. Perkins of the chemistry faculty at Stanford University. Dr. Leighton, the senior author, is known internationally as an authority in the field of photochemistry.

In this 130-page report the role of sunlight and sky radiation in smog formation is systematically analyzed in terms of all the known and probable substances present in polluted air. With all presently available information, this report supports the conclusion that nitrogen dioxide is of major importance in smog formation. Dr. F. E. Blacet, Chairman of the Department of Chemistry, University of California at Los Angeles, says in his foreword to this report:

> "Scientists and engineers actively concerned with air pollution problems will find this report, including its extensive bibliography, an invaluable reference and a guide to research. Although the correlations of existing information are excellent, the most distinctive features of the report are the original contributions made by the authors. They have found answers to a number of problems which others have pondered over but not solved. They are to be congratulated on the production of a scholarly analysis of the role that solar radiation may play in the creation of smog."

Copies of this report are being furnished to selected reference libraries in various cities over the country and to scientists and organizations working on problems of air pollution control.

As a supporter of this Foundation you are entitled to a complimentary copy. Additional copies are available from this office at a cost of $5.00 per copy. Please fill out the enclosed post card and return it to us in the event that you wish to receive any copies.

Sincerely yours,

L. B. Hitchcock

L. B. Hitchcock

LBH:mek
Enclosure

APR 26 1956

AIR POLLUTION FOUNDATION

704 SOUTH SPRING STREET
LOS ANGELES 14, CALIFORNIA
Tel.: MAdison 6-9441

LAUREN B. HITCHCOCK
President and Managing Director

April 25, 1956

To: Raymond B. Allen
F. M. Banks
Arnold O. Beckman
Walter Braunschweiger
Asa V. Call
L. A. DuBridge
A. J. Gock
James E. Shelton
Reese H. Taylor
Gerald G. Kelly

Gentlemen:

Mr. Asa V. Call, Chairman of the Executive Committee, has asked that members be polled on a question that has been raised by our Secretary, Mr. Gerald G. Kelly of Musick, Peeler, and Garrett.

Musick, Peeler, and Garrett have been asked if they will represent a prospective manufacturer and vendor of a patented auto exhaust control device. Mr. Call has expressed as his personal opinion that he sees no conflict, himself, with the interests of the Air Pollution Foundation, but he feels that the question should be submitted to the Executive Committee.

I have discussed this question with independent counsel who volunteered the opinion that they could see no conflict in this matter.

Please complete and return the attached ballot in the enclosed envelope.

Sincerely yours,

L. B. Hitchcock

L. B. Hitchcock

LBH:mek
Enclosures

SHELL OIL COMPANY
SHELL BUILDING
1008 WEST SIXTH STREET
LOS ANGELES 54, CALIFORNIA

S. F. BOWLBY
VICE PRESIDENT

May 2, 1956

Dr. L. B. Hitchcock
Air Pollution Foundation
704 South Spring Street
Los Angeles 14, California

Dear Dr. Hitchcock:

I appreciate very much your letter of May 1 and am happy indeed that you found your visit to our refineries both interesting and instructive. Our people are so thoroughly imbued with the philosophy of air pollution control and a zeal for its excellent performance that all they need is the responsive ear of someone such as yourself to whom to tell our story. Thus it is not at all surprising that you were welcomed with open arms and on a common basis of exchange.

During the earlier years of our costly and continuing battle on this front we were frequently sore burdened by the indictments of the misinformed critics to whom you have referred. It has long been my conviction that one of the principal functions of the Air Pollution Foundation was to correctly inform the public, as its only nonpartisan representative, of the principal causes and sources of air pollution. It is evident that you and your organization are doing just that, and I hope that those persons will see this community problem in its true perspective.

If I can at any time be of any service to you or your organization I would be grateful if you would call on me. Meanwhile, please accept my continuing good wishes for your success in combating this public menace through accumulated research and public information.

Sincerely yours,

S. F. Bowlby

SFB:hmn

mailed to
A. V. C.
L. A. Du B.
R. TAYLOR
F. CHAPPELLET
B. L.

MAY 8 - 1956

AIR POLLUTION FOUNDATION

704 SOUTH SPRING STREET

LOS ANGELES 14, CALIFORNIA

Tel. Madison 6-1986

LAUREN B. HITCHCOCK
President and Managing Director

To: **Members of the Research Committee**

R. B. Allen , Chairman — **A. O. Beckman**
J. L. Atwood — **L. K. Firestone**
F. M. Banks — **L. A. DuBridge - ex officio**

Gentlemen:

For your convenience I have attempted to summarize the attached extensive minutes of the Technical Advisory Committee meeting of February 4, 1956.

Summary

This meeting was concerned principally with the third basic objective of APF, namely "to determine what remains to be done," using as a basis the recent APF Report No. 12, "Second Technical Progress Report." Consensus was that the APF program, as it presently exists, is well-chosen and that APF continue to emphasize in its own work and work with others the importance of the auto exhaust problem.

Discussion of the role APF should play in relation to the Air Pollution Control District led to the conclusion that APF should be concerned with correlating all types of information and disseminating appropriate conclusions. APF has been of considerable technical assistance and is continuing to be, although for political reasons APCD cannot publicly acknowledge this.

As a matter of policy, APF would expect to cut back in any research area where others became active and apparently capable of providing necessary answers.

Certain recommendations in Report No. 12 are now being implemented by APCD, which perhaps illustrates APF influence. It was generally agreed that the appointment of a new director of research for APCD would facilitate improved cooperation.

Dr. Young, acting chairman, felt that Dr. Leighton's work on photochemistry should be continued, and Hitchcock reported that it was being continued.

AIR POLLUTION FOUNDATION

To: Members of the Research Committee May 7, 1956

Photochemical studies at Franklin Institute, Philadelphia, sponsored by API are progressing very well, and as a result APF will probably discontinue its project at Armour Research Foundation in Chicago. Only the APF is supporting work on photochemical studies on auto exhaust in its programs at Kansas City and Pasadena. Both projects are considered very important by the committee. The committee also reaffirms the importance of work on oxides of nitrogen.

No duplications appear to be found in the APF's research program. The committee went on record as supporting conferences involving active research workers within limited areas in the air pollution field.

Original signed by
L. B. Hitchcock
L. B. Hitchcock

LBH:mek

TECHNICAL ADVISORY COMMITTEE MINUTES OF FEBRUARY 4, 1956

A.P.F. personnel present: L. B. Hitchcock, W. L. Faith, L. H. Rogers, M. Neiburger, and E. A. Ramzetti.

T.A.C. members present: W. G. Young, W. H. Clausson, A. J. Haagen-Smit, J. A. Middleton, Peter Kyropoulos, and L. M. Richards.

T.A.C. member absent: C. M. Heinen.

Dr. Wm. G. Young, Chairman, submitted a proposed agenda for the meeting and a copy is attached to these minutes. This agenda was drawn around a discussion of the third objective of the A.P.F., "To determine what remains to be done".

A discussion was initiated on the research areas for which the A.P.F. and the Los Angeles County A.P.C.D. should be responsible. A question was posed by the Chairman on the desirability of A.P.F. limiting themselves to work on pure compounds (the long view) while the A.P.C.D. should be concerned with monitoring gross mixtures, etc. An additional question was whether the A.P.F. should withdraw from certain areas of research, permitting the A.P.C.D. to carry on. There was agreement that the A.P.F. should be concerned with correlating all types of information and disseminating appropriate conclusions.

Dr. Haagen-Smit stated that the A.P.F. should assist the A.P.C.D. in all possible ways, while trying to avoid any attempts to obtain credit for such assistance. Specifically, he felt that the A.P.C.D. needed help in correlating the data from the 14 monitoring stations but that providing it was a delicate problem. Dr. Hitchcock stated that this was one of their objectives but that its proper execution involved many unsolved problems.

The Chairman asked whether the A.P.C.D. was supposed to develop any instruments and methods or whether they were completely dependent upon others. A.P.F. personnel felt that no generalization was possible and that the A.P.F. program had to be flexible to reflect the changing status of problems and programs. Faith stated that the A.P.F. would cut back in any research area where others became active and apparently capable of providing any necessary answers.

I C Discussion of Recommendations on Page 30 of A.P.F. Report #12:

Recommendations 1, 2, and 3 of this report are now being implemented by the A.P.C.D. A problem exists with reference to recommendation 3, since the A.P.F. cannot approach the problem directly because of politics and there is little prospect that the A.P.C.D. will really handle the data from the 14 stations rapidly. The A.P.C.D. has collected a staff of 15 under Chass, who are supposed to analyze the data. Dr. Haagen-Smit recommended that the A.P.F. attempt to guide the A.P.C.D. as a parent would a child but without expecting to receive credit for any help.

Dr. Neiburger suggested that the A.P.C.D. be requested to publish their monitoring station data in the same manner that weather data is published by the U.S. Weather Bureau. Ramzetti stated that data was available from the A.P.C.D. if requested specifically and if approximately three months were allowed for them to segregate the required information. It was generally agreed that changing this situation would depend upon the selection of a Director of Research for the A.P.C.D. and his insistence upon cooperation.

In connection with recommendation 5, Middleton pointed out the desirability of correlating numerical data with physiological reactions, such as eye irritation and plant damage. He pointed out that the University of California is working on the biochemical aspects of smog, with a budget of $95,000 and is not monitoring smog. Renzetti pointed out that the A.P.C.D. has chosen the Fox Ammon but that their data can't be made readily available for study.

Dr. Young emphasized the desirability of correlating eye irritation with oxidant measurements and asked whether anyone could actually measure eye irritation. Rogers described a project which Merryfield of U.S.C. will carry out at the A.P.C.D. with Health, Education and Welfare funds. The A.P.F. has encouraged the use of eye irritation panels at all monitoring stations.

Rogers described a proposed project on the biochemical aspects of eye irritation at U.C.L.A., based on the hypothesis of thiol reactions.

With reference to recommendation 6, Dr. Young pointed out that phenols could arise from hydrocarbons, since the ozonization of allylic systems sometimes gives abnormal products. For example, the ozonization of phenylethylene gives up to a 70% yield of phenols by the migration of phenyl groups.

Dr. Haagen-Smit also pointed out that phenols occurred in auto exhaust as well as incinerator effluents. He also described the formation of benzene from irradiation of diacetyl.

II A Discussion of "How is Smog Formed?":

Dr. Young opened a discussion of Dr. Leighton's work with the recommendation that his program be continued, since expected results might allow some elimination of possible smog contributors. There was considerable discussion on the desirability of Leighton's approach to the investigation of smog, which concluded with the statement by Dr. Hitchcock that the program had been continued for a period of one year.

II B Photochemical Studies on Pure Compounds:

The Chairman recalled that previous recommendations were to do work on photochemical reactions in mixtures and he questioned whether working on pure compounds should not also be expedited. Faith pointed out that the A.P.F. was supporting work at Armour Research Foundation on pure compounds. This led Clausen to question whether duplication of effort was being avoided between the A.P.F. and A.P.I. programs. Rogers pointed out that this was being handled by having the Armour and Franklin Institute people meet periodically.

In working with photochemical reactions in hydrocarbon mixtures, the desirability of studying the relative reactivities of olefinic vs. saturated hydrocarbons was mentioned. This type of work is on the program at Franklin Institute. Clausen pointed out that work at Armour and at Franklin covers the same concentration regions and that the Franklin program appears to cover adequately this important research area. In view of this comment, Rogers wondered whether it was logical to continue the program at Armour Research.

II C Photochemical Studies on Combustion Effluents:

Only the A.P.F. is supporting work in this area with programs at Midwest and Stanford Research Institutes. The Chairman remarked that it was impossible to

define the effluent from an incinerator and therefore any results would always be questionable. Faith stated that the work at Battelle had been dropped for this reason. Hitchcock concluded the discussion by pointing out that incinerators are now enmeshed in politics and they were no longer concerned with them on their program.

II E No questions or objections were raised in connection with the summary of future plans for work in this area.

III B Trajectory and Air Tracer Studies:

Since the A.P.F. is preparing a report on data collected during the 1954 aerometric survey, Haagen-Smit wondered whether this report could not be a joint issue from the A.P.C.D. and the A.P.F. The discussion following showed the difficulty of a joint report and was concluded by Haagen-Smit pointing out the desirability of giving credit to the A.P.C.D. whenever possible.

III C Stack Cases and Industrial Effluents:

The Chairman opened this phase with a rhetorical question concerning the state of knowledge of aerosols in smog and in industrial emissions. The program of Dr. Al Bush at U.C.L.A. is just concerned with size distribution of aerosols from combustion processes. A further question concerned the photo-sensitization of chemical reactions by aerosols and whether any evidence was available that aerosols did not participate in such reactions.

Rogers hopes to have Dr. Calvert of Ohio State do some work on aerosols along the lines raised by Young.

A discussion then followed on methods for determining nitric oxide and nitrogen dioxide in stack gases. Both the petroleum industry and the A.S.T.M. are looking at this problem but neither one is a logical source for a solution. Faith pointed out that Griswold of the A.P.C.D. had approached Caltech on a broad program involving nitrogen oxides. Any such contract would probably be adequate to cover problems in this area.

III D Composition of Auto Exhaust:

A review was given of the work by C.R.C. on the composition of auto exhaust and deficiencies in analytical methods being used. Kyropoulos pointed out that such studies should first be done in the laboratory on a dynamometer, then on a proving ground with carefully selected conditions, and last in the field with an adequate sample of cars. The discussion was concluded with the statement that the A.P.F. should not do any work in this area.

III E Composition of Incinerator Gases:

The Chairman asked whether work on this subject should be dropped. Faith indicated that this action had already been taken.

III F Are There Other Sources?:

During a short discussion of this topic, no new ideas were presented.

IV How May Smog Be Controlled?:

The Chairman opened this phase of the discussion with the question of whether the present level of effort should not be made more ambitious. At this point, Faith stated that the objectives of the Stanford Research Institute and Midwest Research Institute projects include measures of how much reduction in emissions was necessary to keep smog at an acceptable level. These conclusions are to be drawn on the basis of eye irritation and oxidant measurements.

IV C Auto Exhausts:

Kyropoulos stated that the fuel cut-off device under study by the automobile industry works and that the A.P.C.D. is now examining a new simple good device which also has considerable promise. In all, there are three devices which look very hopeful for the reduction of hydrocarbon emissions in auto exhaust.

Faith stated that the automobile industry is looking for other approaches besides devices on the carburetor. It was agreed that the A.P.C.D. cannot support work on devices because of the profit motive. The A.P.C.D. can only test devices to determine whether they function properly or not.

In discussing devices for controlling oxides of nitrogen, Faith stated that the proposed program at Caltech, supported by the A.P.C.D., would be concerned with the control of oxides of nitrogen from both industrial stack emissions and automobile exhaust. Faith believes that work in this is the most neglected research area. They have been trying to interest others in working in this field.

Hitchcock asked whether work on oxides of nitrogen was of obvious importance and should be stressed. The Chairman replied affirmatively to this question by pointing out that the Committee had made recommendation for work in this area at their last meeting and that he was convinced that work is necessary.

General Suggestions by the Committee:

Haagen-Smit asked whether the work on an aerosol concentrometer was to be done by Dr. Goetz of Caltech. Upon receiving an affirmative reply, he asked whether a visibility meter could be developed. Bonnetti stated that Duntley had developed such a device and that the A.P.F. was considering the feasibility of such equipment.

Haagen-Smit asked whether there were duplications in effort among the projects listed on page 4 of the Air Pollution Foundation "Air Pollution Research Program". No obvious duplications were revealed during the discussion and there was general agreement that a need existed for a nitrogen dioxide spectrometer.

Clausen stated that more conferences involving active research workers within limited areas in the air pollution field were desirable and that if possible they should be of the Gordon Conference type. The Committee went on record as supporting this type of conference.

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Kyropoulos felt that this concentration of effort would be necessary for them to have any real accomplishment to show. Haagen-Smit felt that about one-third of the present effort was on the automobile and that this should be increased to 90%.

Claussen suggested dropping the Armour Research Foundation work and putting this effort on the problem of nitrogen dioxide from automobiles.

The Chairman felt that if the effort were to be directed into a narrow field using a "shot gun" approach, the answer should be no - but if the effort were to be carefully directed to a narrow field, the answer might be yes. He wondered what the type of effort would be if it were to be concentrated.

Hitchcock stated that the concentrated effort would be on methods, instruments, and basic chemistry related to the auto exhaust problem.

The Chairman pointed out that if there is synergism between various emissions, then concentration of effort on auto exhaust would be a mistake. He also could not see the basis on which a decision would be made as to which items would be removed from the collection of significant contributors.

Rogers stated that about the only work which could not be related to auto exhaust was instrument development and meteorology.

In summary, it was concluded that almost any part of the A.P.F. program could be related to the auto exhaust problem by appropriate phrasing of the description.

The meeting was adjourned.

L. M. RICHARDS

LMR:h
Attachment

A.P.F. TECHNICAL ADVISORY COMMITTEE
Proposed Agenda for Meeting of February 4, 1956
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Extension of Present Work

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1. Chemical
2. Instrumentation
a. On known substances
b. On unknown substances

(B) Monitoring atmosphere?

(C) Conclusions - page 28-29*
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(C) Photochemical studies on various combustion effluents
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2. Incinerators

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III. WHAT ARE THE SOURCES?

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C. Stack Gases and Industrial Effluents - Page 103
1. Hydrocarbons - page 103
2. Sulfur Dioxide - page 105
3. Aerosols - page 105
4. Other Industrial Emissions - page 106

D. Composition of Automobile Exhaust - page 107

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IV. HOW MAY SMOG BE CONTROLLED?

C. Devices for the Control of Hydrocarbons from Automobile Exhaust - page 124
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Suggestions from the Committee

*Page numbers refer to SECOND TECHNICAL PROGRESS REPORT.

MAY 8 - 1956

AIR POLLUTION FOUNDATION

704 SOUTH SPRING STREET

LOS ANGELES 14, CALIFORNIA

Tel. Madison 6-1986

LAUREN B. HITCHCOCK
President and Managing Director

To: **Members of the Research Committee**

R. B. Allen , Chairman — **A. O. Beckman**
J. L. Atwood — **L. K. Firestone**
F. M. Banks — **L. A. DuBridge - ex officio**

Gentlemen:

For your convenience I have attempted to summarize the attached extensive minutes of the Technical Advisory Committee meeting of February 4, 1956.

Summary

This meeting was concerned principally with the third basic objective of APF, namely "to determine what remains to be done," using as a basis the recent APF Report No. 12, "Second Technical Progress Report." Consensus was that the APF program, as it presently exists, is well-chosen and that APF continue to emphasize in its own work and work with others the importance of the auto exhaust problem.

Discussion of the role APF should play in relation to the Air Pollution Control District led to the conclusion that APF should be concerned with correlating all types of information and disseminating appropriate conclusions. APF has been of considerable technical assistance and is continuing to be, although for political reasons APCD cannot publicly acknowledge this.

As a matter of policy, APF would expect to cut back in any research area where others became active and apparently capable of providing necessary answers.

Certain recommendations in Report No. 12 are now being implemented by APCD, which perhaps illustrates APF influence. It was generally agreed that the appointment of a new director of research for APCD would facilitate improved cooperation.

Dr. Young, acting chairman, felt that Dr. Leighton's work on photochemistry should be continued, and Hitchcock reported that it was being continued.

AIR POLLUTION FOUNDATION

To: Members of the Research Committee May 7, 1956

Photochemical studies at Franklin Institute, Philadelphia, sponsored by API are progressing very well, and as a result APF will probably discontinue its project at Armour Research Foundation in Chicago. Only the APF is supporting work on photochemical studies on auto exhaust in its programs at Kansas City and Pasadena. Both projects are considered very important by the committee. The committee also reaffirms the importance of work on oxides of nitrogen.

No duplications appear to be found in the APF's research program. The committee went on record as supporting conferences involving active research workers within limited areas in the air pollution field.

Original signed by
L. B. Hitchcock
L. B. Hitchcock

LBH:mek

TECHNICAL ADVISORY COMMITTEE MINUTES OF FEBRUARY 4, 1956

A.P.F. personnel present: L. B. Hitchcock, W. L. Faith, L. H. Rogers, M. Neiburger, and E. A. Ramzetti.

T.A.C. members present: W. G. Young, W. H. Clausson, A. J. Haagen-Smit, J. A. Middleton, Peter Kyropoulos, and L. M. Richards.

T.A.C. member absent: C. M. Heinen.

Dr. Wm. G. Young, Chairman, submitted a proposed agenda for the meeting and a copy is attached to these minutes. This agenda was drawn around a discussion of the third objective of the A.P.F., "To determine what remains to be done".

A discussion was initiated on the research areas for which the A.P.F. and the Los Angeles County A.P.C.D. should be responsible. A question was posed by the Chairman on the desirability of A.P.F. limiting themselves to work on pure compounds (the long view) while the A.P.C.D. should be concerned with monitoring gross mixtures, etc. An additional question was whether the A.P.F. should withdraw from certain areas of research, permitting the A.P.C.D. to carry on. There was agreement that the A.P.F. should be concerned with correlating all types of information and disseminating appropriate conclusions.

Dr. Haagen-Smit stated that the A.P.F. should assist the A.P.C.D. in all possible ways, while trying to avoid any attempts to obtain credit for such assistance. Specifically, he felt that the A.P.C.D. needed help in correlating the data from the 14 monitoring stations but that providing it was a delicate problem. Dr. Hitchcock stated that this was one of their objectives but that its proper execution involved many unsolved problems.

The Chairman asked whether the A.P.C.D. was supposed to develop any instruments and methods or whether they were completely dependent upon others. A.P.F. personnel felt that no generalization was possible and that the A.P.F. program had to be flexible to reflect the changing status of problems and programs. Faith stated that the A.P.F. would cut back in any research area where others became active and apparently capable of providing any necessary answers.

I C Discussion of Recommendations on Page 30 of A.P.F. Report #12:

Recommendations 1, 2, and 3 of this report are now being implemented by the A.P.C.D. A problem exists with reference to recommendation 3, since the A.P.F. cannot approach the problem directly because of politics and there is little prospect that the A.P.C.D. will really handle the data from the 14 stations rapidly. The A.P.C.D. has collected a staff of 15 under Chass, who are supposed to analyze the data. Dr. Haagen-Smit recommended that the A.P.F. attempt to guide the A.P.C.D. as a parent would a child but without expecting to receive credit for any help.

Dr. Neiburger suggested that the A.P.C.D. be requested to publish their monitoring station data in the same manner that weather data is published by the U.S. Weather Bureau. Ramzetti stated that data was available from the A.P.C.D. if requested specifically and if approximately three months were allowed for them to segregate the required information. It was generally agreed that changing this situation would depend upon the selection of a Director of Research for the A.P.C.D. and his insistence upon cooperation.

In connection with recommendation 5, Middleton pointed out the desirability of correlating numerical data with physiological reactions, such as eye irritation and plant damage. He pointed out that the University of California is working on the biochemical aspects of smog, with a budget of $95,000 and is not monitoring smog. Renzetti pointed out that the A.P.C.D. has chosen the Fox Ammon but that their data can't be made readily available for study.

Dr. Young emphasized the desirability of correlating eye irritation with oxidant measurements and asked whether anyone could actually measure eye irritation. Rogers described a project which Merryfield of U.S.C. will carry out at the A.P.C.D. with Health, Education and Welfare funds. The A.P.F. has encouraged the use of eye irritation panels at all monitoring stations.

Rogers described a proposed project on the biochemical aspects of eye irritation at U.C.L.A., based on the hypothesis of thiol reactions.

With reference to recommendation 6, Dr. Young pointed out that phenols could arise from hydrocarbons, since the ozonization of allylic systems sometimes gives abnormal products. For example, the ozonization of phenylethylene gives up to a 70% yield of phenols by the migration of phenyl groups.

Dr. Haagen-Smit also pointed out that phenols occurred in auto exhaust as well as incinerator effluents. He also described the formation of benzene from irradiation of diacetyl.

II A Discussion of "How is Smog Formed?":

Dr. Young opened a discussion of Dr. Leighton's work with the recommendation that his program be continued, since expected results might allow some elimination of possible smog contributors. There was considerable discussion on the desirability of Leighton's approach to the investigation of smog, which concluded with the statement by Dr. Hitchcock that the program had been continued for a period of one year.

II B Photochemical Studies on Pure Compounds:

The Chairman recalled that previous recommendations were to do work on photochemical reactions in mixtures and he questioned whether working on pure compounds should not also be expedited. Faith pointed out that the A.P.F. was supporting work at Armour Research Foundation on pure compounds. This led Clausen to question whether duplication of effort was being avoided between the A.P.F. and A.P.I. programs. Rogers pointed out that this was being handled by having the Armour and Franklin Institute people meet periodically.

In working with photochemical reactions in hydrocarbon mixtures, the desirability of studying the relative reactivities of olefinic vs. saturated hydrocarbons was mentioned. This type of work is on the program at Franklin Institute. Clausen pointed out that work at Armour and at Franklin covers the same concentration regions and that the Franklin program appears to cover adequately this important research area. In view of this comment, Rogers wondered whether it was logical to continue the program at Armour Research.

II C Photochemical Studies on Combustion Effluents:

Only the A.P.F. is supporting work in this area with programs at Midwest and Stanford Research Institutes. The Chairman remarked that it was impossible to

define the effluent from an incinerator and therefore any results would always be questionable. Faith stated that the work at Battelle had been dropped for this reason. Hitchcock concluded the discussion by pointing out that incinerators are now enmeshed in politics and they were no longer concerned with them on their program.

II E No questions or objections were raised in connection with the summary of future plans for work in this area.

III B Trajectory and Air Tracer Studies:

Since the A.P.F. is preparing a report on data collected during the 1954 aerometric survey, Haagen-Smit wondered whether this report could not be a joint issue from the A.P.C.D. and the A.P.F. The discussion following showed the difficulty of a joint report and was concluded by Haagen-Smit pointing out the desirability of giving credit to the A.P.C.D. whenever possible.

III C Stack Cases and Industrial Effluents:

The Chairman opened this phase with a rhetorical question concerning the state of knowledge of aerosols in smog and in industrial emissions. The program of Dr. Al Bush at U.C.L.A. is just concerned with size distribution of aerosols from combustion processes. A further question concerned the photo-sensitization of chemical reactions by aerosols and whether any evidence was available that aerosols did not participate in such reactions.

Rogers hopes to have Dr. Calvert of Ohio State do some work on aerosols along the lines raised by Young.

A discussion then followed on methods for determining nitric oxide and nitrogen dioxide in stack gases. Both the petroleum industry and the A.S.T.M. are looking at this problem but neither one is a logical source for a solution. Faith pointed out that Griswold of the A.P.C.D. had approached Caltech on a broad program involving nitrogen oxides. Any such contract would probably be adequate to cover problems in this area.

III D Composition of Auto Exhaust:

A review was given of the work by C.R.C. on the composition of auto exhaust and deficiencies in analytical methods being used. Kyropoulos pointed out that such studies should first be done in the laboratory on a dynamometer, then on a proving ground with carefully selected conditions, and last in the field with an adequate sample of cars. The discussion was concluded with the statement that the A.P.F. should not do any work in this area.

III E Composition of Incinerator Gases:

The Chairman asked whether work on this subject should be dropped. Faith indicated that this action had already been taken.

III F Are There Other Sources?:

During a short discussion of this topic, no new ideas were presented.

IV How May Smog Be Controlled?:

The Chairman opened this phase of the discussion with the question of whether the present level of effort should not be made more ambitious. At this point, Faith stated that the objectives of the Stanford Research Institute and Midwest Research Institute projects include measures of how much reduction in emissions was necessary to keep smog at an acceptable level. These conclusions are to be drawn on the basis of eye irritation and oxidant measurements.

IV C Auto Exhausts:

Kyropoulos stated that the fuel cut-off device under study by the automobile industry works and that the A.P.C.D. is now examining a new simple good device which also has considerable promise. In all, there are three devices which look very hopeful for the reduction of hydrocarbon emissions in auto exhaust.

Faith stated that the automobile industry is looking for other approaches besides devices on the carburetor. It was agreed that the A.P.C.D. cannot support work on devices because of the profit motive. The A.P.C.D. can only test devices to determine whether they function properly or not.

In discussing devices for controlling oxides of nitrogen, Faith stated that the proposed program at Caltech, supported by the A.P.C.D., would be concerned with the control of oxides of nitrogen from both industrial stack emissions and automobile exhaust. Faith believes that work in this is the most neglected research area. They have been trying to interest others in working in this field.

Hitchcock asked whether work on oxides of nitrogen was of obvious importance and should be stressed. The Chairman replied affirmatively to this question by pointing out that the Committee had made recommendation for work in this area at their last meeting and that he was convinced that work is necessary.

General Suggestions by the Committee:

Haagen-Smit asked whether the work on an aerosol concentrometer was to be done by Dr. Goetz of Caltech. Upon receiving an affirmative reply, he asked whether a visibility meter could be developed. Bonnetti stated that Duntley had developed such a device and that the A.P.F. was considering the feasibility of such equipment.

Haagen-Smit asked whether there were duplications in effort among the projects listed on page 4 of the Air Pollution Foundation "Air Pollution Research Program". No obvious duplications were revealed during the discussion and there was general agreement that a need existed for a nitrogen dioxide spectrometer.

Clausen stated that more conferences involving active research workers within limited areas in the air pollution field were desirable and that if possible they should be of the Gordon Conference type. The Committee went on record as supporting this type of conference.

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In summary, it was concluded that almost any part of the A.P.F. program could be related to the auto exhaust problem by appropriate phrasing of the description.

The meeting was adjourned.

L. M. RICHARDS

LMR:h
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MAY 10 1956

CALIFORNIA INSTITUTE OF TECHNOLOGY

PASADENA

4

May 10, 1956

Dr. Lauren B. Hitchcock
President and Managing Director
Air Pollution Foundation
704 South Spring Street
Los Angeles 14, California

Dear Dr. Hitchcock:

At the request of Dr. DuBridge the proposal on the study of the catalytic decomposition of nitric oxide is being withdrawn. In accord with the concensus of wishes it is to be submitted to the Air Pollution Control District of Los Angeles County.

Even though I will not have the privilege of working directly with you and your group, I do hope that an informal contact can be continually maintained with Dr. Rogers. I enjoy his approach to problems, and I am sure he reflects the healthy attitude of your whole organization.

Sincerely,

Wm. H. C.

Wm. H. Corcoran
Associate Professor
Chemical Engineering

WHC:ea
cc: L.A. DuBridge

(blind) cc: W.N. Lacey ✔

PROPOSAL FOR THE STUDY OF THE CATALYTIC DECOMPOSITION OF NITRIC OXIDE

Reactions among oxides of nitrogen, hydrocarbons and their combustion products, oxygen, ozone, and nitrogen are of interest in a fundamental understanding of atmospheric pollution problems. As there are many avenues to use in attacking this complex gas system, it seems desirable to pick a small portion of the problem and develop a thorough understanding in that limited field. A combination of the rather specialized investigations can be used to give a more clear picture of the whole problem. One of the narrow fields of attack that is of fundamental import is the catalytic decomposition of nitric oxide. It is proposed that a study be made of that reaction.

In the early part of the work it is planned that temperatures in the range of ambient to 1000° F. be given major consideration. Decomposition rates for systems having initial concentrations of nitric oxide of less than 1 per cent in mixtures with oxygen and nitrogen at total pressures in the region of 1 atmosphere would be studied. Steady-state-flow techniques would be used.

It is proposed that the work be conducted in the Chemical Engineering Laboratory at the California Institute. W. H. Corcoran would have responsibility for the program. A postdoctoral research fellow would be supported for one year for full-time work on the problem. In this period a thorough literature study would be made of the problem and initial experimental work begun. A budget for the work is given as follows:

Item	Amount
One year's salary for postdoctoral fellow	$ 5,000
Travel expense for discussion of problem with workers in the field	1,600
Experimental apparatus, equipment, and supplies	6,000
Indirect labor (35 per cent of direct labor)	1,750
TOTAL	$14,350

MAY 14 1956

AIR POLLUTION FOUNDATION

704 SOUTH SPRING STREET

LOS ANGELES 14, CALIFORNIA

Tel.: MAdison 6-9441

LAUREN B. HITCHCOCK
President and Managing Director

To: Our Trustees and Contributors

Subject: Publication of Report No. 13, "Wind Trajectory Studies of the Movement of Polluted Air in the Los Angeles Basin"

We take pleasure in announcing the publication of this report prepared under the direction of our meteorologist, Dr. Morris Neiburger, with the assistance of our physicist, N. A. Renzetti, and Rita Tice, all of the Foundation staff.

In this study, chemical tests of pollutants regularly measured over a network of stations are combined with the movement of air in the Los Angeles Basin along paths that can be estimated from Weather Bureau data. This sort of scientific detective work leads to some interesting conclusions. For example, this study indicates that motor vehicle exhaust gases appear to be a major source of pollution on smoggy days, and in some cases appear to be the only assignable source of pollution. Contribution of industrial pollution, while significant, reaches central and northeastern sections of the Basin occasionally. We believe this report will be of much interest to all of you who are concerned about the smog problem and its cure.

Copies of this report are being furnished to selected reference libraries in various cities over the country and to scientists and organizations working on problems of air pollution control.

As a supporter of this Foundation you are entitled to a complimentary copy. Additional copies are available from this office at a cost of $4.00 per copy. Please fill out the enclosed post card and return it to us in the event that you wish to receive any copies.

Sincerely yours,

L. B. Hitchcock

L. B. Hitchcock

LBH:mek
Enclosure

JUN 2 1956

AIR POLLUTION FOUNDATION

704 SOUTH SPRING STREET

LOS ANGELES 14, CALIFORNIA

Tel.: MAdison 6-9441

LAUREN B. HITCHCOCK
President and Managing Director

May 31, 1956

To the Board of Trustees of the Air Pollution Foundation

Gentlemen:

Believing that many business leaders in the community have not had the opportunity to fully acquaint themselves with the progress of the Foundation, I have prepared this statement. It is a current, capsule report on our achievements.

During the past two years, rapid strides have been taken toward getting the most important jobs done first. The Foundation is rightfully proud that it has used its good offices to separate the important from the unimportant, to avoid the waste of time and money, to recognize the danger of interesting experiments which might do nothing to identify and control the principal causes of smog.

Responsible civic leaders created this Foundation knowing that the limitations of time, the enormity of the problem, plus the eagerness of the public for a solution would force it to be highly selective in its work. By using our best scientific judgment and balancing our efforts at all times with common sense, we have kept our goals constantly in mind. The results speak for themselves.

We have been alert to the dangers of friction, needless rivalry or duplication in the battle against smog. Never before has there been such complete agreement among government, industrial, educational, and other agencies on the approach to elimination of smog. The Foundation's influence has materially assisted in this progress. And it is progress.

We know now what our principal targets are. We are building an arsenal of weapons in the form of scientific instruments and methods of analysis.

Considerable work is under way to develop a realistic solution to the automobile-smog problem. The Foundation is emphasizing -- by word and deed -- not only the importance of the auto exhaust as a contributor to smog, but what is being done, what remains to be done, and what the cost will be to the average citizen.

Bold studies are under way by the Foundation this year to determine how much the smog suspects in exhaust must be curtailed in order to give relief. Others are on the drafting board.

The field of atmospheric exploration here is of such gigantic proportions that every ounce of mind, muscle, and money must be prorated wisely and every legitimate hand given a job to do. The Foundation is in constant touch with industry, the Air Pollution Control District, with state, federal, and private workers in this field.

In its brief history, the Foundation has tested alternate fuels and exposed this popularized theory as an unfeasible remedy for smog. It has conducted a crash program on an auto device which looked promising.

My scientific associates and I have called national conferences on the auto problem, on disposal of combustible rubbish, on the chemical and the visibility aspects of smog.

The Foundation's independent findings on backyard rubbish burning figured prominently in the decision of Los Angeles County to abandon this important source of air pollution.

The Foundation has made an independent audit of refinery emissions. Its present program includes further investigation of combustion processes. The magnitude of the latter problem requires severe rationing of funds. There is still much to be done.

In its first year, the Foundation pointed up the need for constant basin-wide monitoring of pollutants in the atmosphere -- a practice which is being activated officially now. It helped develop instruments which count -- continuously, around-the-clock -- the various significant impurities.

Studies of the movements of polluted air further helped to clear away certain doubts as the source of that air and the direction it follows on smoggy days.

All these facts have paved the way for a more orderly attack on smog -- many steps closer to the day when new abatement devices can be ordered and the public will buy without fear of a bad bargain.

Meanwhile, every person, car, and factory raises the smog intensity rapidly in Southern California -- thus compounding our job of attacking smog at its source. But we will say to our friends that "smog can be licked, with the proper information and adequate abatement methods." It will require, however, the backing of the entire community.

You will be hearing from me again in the near future -- on the problem of auto exhaust, on rubbish burning. I have even contemplated a letter on the baffling problem of oxides of nitrogen -- one of the toughest yet to face this young and still rugged community.

Sincerely,

L. B. Hitchcock

L. B. Hitchcock

JUN 21 1956

AIR POLLUTION FOUNDATION

704 SOUTH SPRING STREET

LOS ANGELES 14, CALIFORNIA

Tel.: MAdison 6-9441

June 20, 1956

W. L. FAITH
Vice President and Chief Engineer

TO THE BOARD OF TRUSTEES OF THE AIR POLLUTION FOUNDATION

Gentlemen:

Is the automobile really a major contributor to smog? If we hear this question once, we hear it several times each day. Our answer is YES!!

The automobile can be indicted on nine counts:

1. Over 50 per cent of the total pollution going into the air each day comes from the automobile.

2. Seventy-five per cent of the hydrocarbons found in the atmosphere comes from the automobile.

3. Seventy per cent of the oxides of nitrogen in the air comes from the automobile.

4. Hydrocarbons and nitrogen dioxide are the principal smog-forming air contaminants. In the presence of sunshine these materials react to form ozone, the peculiar fingerprint of Los Angeles smog. No other method of forming significant amounts of ozone in the lower atmosphere is known.

5. Typical smog damage to vegetation has been duplicated by subjecting plants to the action of a mixture of ozone and hydrocarbons (both in amounts similar to those found in the Los Angeles atmosphere on smoggy days).

6. Scientific studies show that the only material in the air that is both capable of absorbing energy from sunlight and present in amounts sufficient to cause the smog-forming reaction is nitrogen dioxide.

7. Tests in large chambers have demonstrated that auto exhaust (in quantities similar to those in the Los Angeles atmosphere) will produce eye irritation when subjected to sunlight.

8. A study of wind trajectories in the Los Angeles Basin shows that air masses of high ozone values and noticeable eye irritation in downtown Los Angeles and in Pasadena nearly always have passed over heavy traffic areas, and in many cases have not passed over any other major pollution source.

9. Scientific experiments have also shown that oxides of nitrogen at very low concentrations will react with hydrocarbons to form an aerosol capable of restricting visibility, even in the absence of sunlight.

Another question we hear continually: Why don't you do something about it? The answer: WE ARE!

The Air Pollution Foundation keeps its finger on the pulse of every major research project in the field. And there's plenty going on in the automobile industry, the petroleum industry, the chemical industry, the mechanical industries, the Control District, university laboratories, etc.

We are picking up the loose ends and doing the necessary jobs others have skipped. We have two major projects in Kansas City and South Pasadena dealing with auto exhaust. These projects will give answers to three questions:

1. How much reduction in exhaust hydrocarbons is required to reduce the frequency and severity of eye irritation?

2. Will control of oxides of nitrogen also be necessary?

3. If so, how much?

There is still plenty of work to be done on controlling oxides of nitrogen, much to learn about the visibility problem.

These studies won't be cheap, but this will be the subject of a future letter.

Sincerely yours,

W L Faith

W. L. Faith

JUL 16 1956

JUN 26 1956

AIR POLLUTION FOUNDATION
704 SOUTH SPRING STREET
LOS ANGELES 14, CALIFORNIA
Tel.: MAdison 6-9441

LAUREN B. HITCHCOCK
President and Managing Director

June 25, 1956

Dr. Lee A. DuBridge, President
California Institute of Technology
1201 East California Street
Pasadena 4, California

Dear Dr. DuBridge:

I am enclosing a draft of a statement on the respective roles of the Control District and the Foundation. This is, of course, a recurrent question but one which is more pertinent than ever, now that the District research budget and research staff are increasing, with $1,100,000 for a new research laboratory in addition.

Our plan is to make this statement a report from me to the trustees as one of our current series so that it can be sent out to our select mailing list of about 800 with a covering note signed by one of our trustees.

In final form it will be on two pages. Because of its unusual importance, I would appreciate your comments, and those of each (listed below) who are receiving copies. To meet our schedule, we need this back by Monday, July 9.

Sincerely yours,

Lauren

L. B. Hitchcock

LBH:mek
Enclosure

cc: F. M. Banks
Walter Braunschweiger
Asa V. Call
John A. McCone
Franklin S. Wade

To the Board of Trustees of the Air Pollution Foundation

Gentlemen:

We are frequently asked whether our work overlaps that of the Los Angeles County Air Pollution Control District. With full knowledge of their program, I can say "definitely not." Mr. S. Smith Griswold, Control Officer of the District, with full knowledge of our program, confirms this. He said, in a joint statement with me issued over a year ago:

"The work of the one agency complements the work of the other, with no duplication of effort or overlapping of activity.

"The single objective of both the Control District and the Foundation is the elimination of smog as it is known in the Los Angeles Basin."

Dr. Leslie A. Chambers, director of Research for the District (and formerly director of air pollution research for the U. S. Public Health Service), is a member of the Technical Advisory Committee which examines the Foundation's research projects to assure that they are worthwhile and do not duplicate. With full knowledge of resources of the Control District and the Foundation, Dr. Chambers concurs in the importance to Los Angeles of the Foundation's program.

The relation of the District and the Foundation is clear and simple: (1) two heads are better than one, and (2) two can solve the problem in less time. These truisms have been repeatedly confirmed in our joint attack on the complex smog problem with the Control District. In a battle which is demanding the latest scientific and engineering knowledge and skills, and literally extending the front lines of man's knowledge, team effort is essential between our scientific resources and the District's applications in achieving improved and economic controls.

Despite the unity of purpose and the close teamwork, and despite certain similarities, the two organizations have necessary dissimilarities.

BASIC VERSUS APPLIED RESEARCH

Both organizations have research programs. Because of the vital necesstty of solving the Los Angeles problem with the least delay, and therefore the best use of all our resources, the District and the Foundation are working closely together so that each does the part it can do best, so that there is no duplication, so that each has the benefit of the other's findings. Planning of work ahead receives equal joint attention.

Each has essential functions which it is best equipped to perform -- which the other cannot or should not attempt. Thus, the District's research program is essentially applied in character: monitoring the atmosphere, analyses, weather and smog correlation, testing stacks, zoning studies, examining auto exhaust devices and other inventions, and a continuing pollution survey.

The Foundation's research program is essentially basic in character: studies of photochemical and other reactions of the atmosphere, wind-flow studies, hydrocarbon-nitrogen oxide reactions, development of new and improved instruments and methods for atmospheric analysis, formation of smog from auto exhaust, basic data for development of auto exhaust control devices and other remedies. The Foundation program complements and supplements the District's program.

The concept of a privately supported institution integrating its efforts, on behalf of public welfare, with a publicly financed body is not new. Millions of dollars are subscribed for research on cancer, polio, infantile paralysis. These

organizations operate freely to develop remedies. In turn, their findings are given to the U. S. Public Health Service, as well as state and county health agencies to be applied in the public interest.

The APF relationship to APCD is much the same.

The Foundation has pioneered methods which have been adopted by the District and is continuing to take the initiative in directions and by means difficult for the District to take. We are free to contract with the best laboratories in the nation. We have a small staff of highly trained scientists. We do not have the personnel and training problems of a large civil service organization. We hire capable technicians for our specific jobs for limited periods of time. We can make decisions promptly without red tape. These are some of the reasons why the Foundation is flexible, why it is fast on its feet, and so can be of help to the public agency which must retain personnel on a permanent basis for use in applied research, control testing, and inspection. Through our close contacts with the scientific and engineering leaders in this country and abroad, we can reach out quickly as we have many times to bring expert knowledge to bear on facets of the Los Angeles problem.

There are some jobs which government just cannot do as well as private enterprise.

Certification of the Foundation program is found in the integrity of its trustees and supporters who have shaped its policies and followed its progress for two and one-half years. Our contributors who gave over $400,000 in 1954 have renewed in 1955 and 1956 in many cases for increased sums, and with new contributors will exceed $600,000 this year. The confidence placed in the Foundation by these citizens and organizations is evidence of accomplishment.

Our program offers these responsible citizens leadership in the battle against smog. We believe it to be of equal importance that our supporters also aid the growing research program of the District, since its research and engineering personnel, from directors to engineering aides, are facilitating progress toward our common objective. The District's work has been most helpful to us, and we believe our work has exerted a beneficial influence on them. That is one of the Foundation's basic purposes.

Very truly yours,

L. B. Hitchcock

June 27, 1956

Dr. Lauren B. Hitchcock
Air Pollution Foundation
704 South Spring Street
Los Angeles 14, California

Dear Lauren:

This is in response to your request to give you comments on the proposed letter on the relation between the Air Pollution Foundation and the Air Pollution Control District. I think, on the whole, it is a very good letter and that what it says will help very greatly in clearing up misunderstandings on this question.

I would suggest that in the last paragraph on the first page the relation of the District to the Foundation be stated slightly differently. As I see it, it is not only that "two heads are better than one" and "two can solve the problem in less time", but it is also that the field is so big that two agencies can work different parts of the field simultaneously without overlapping. You bring this out later on in the discussion of the basic versus the applied research but it seems to me that it would be desirable to make this clear at the very start. The point is that the Air Pollution Foundation is doing certain things that the Air Pollution Control District cannot very well do and vice versa. Maybe the situation could be stated by saying "The relation of the District and the Foundation is clear and simple: the air pollution problem is so large and complex that two different agencies are required to tackle in different ways the different aspects of it."

In the next to the last paragraph on page 2, the basic nature of the Foundation's research program is described. This is fine, but I think it could be more forceful. I have heard it said, for example, that the Foundation's work is likely to be too academic and too far in the future. Therefore, I would suggest that in the last sentence, instead of saying that the Foundation program "complements and supplements the District's program", I would say "the Foundation's program seeks the basic knowledge without which the District cannot carry through with its applied program and its program of enforcement. Until we know what the components of smog are and how they are formed, it is impossible to design equipment to reduce their emission."

On page 3 you mention the fact that "We are free to contract with the best laboratories in the nation." Why not at this point insert a statement of the limitations on the Air Pollution Control District. As I understand it, the District must use only its own facilities or at least is free to use only facilities in the Los Angeles County. I think it is quite important that the Foundation has been able to bring in the best brains and facilities of other agencies throughout the nation. Similarly, after the next sentence referring to our "small staff of highly trained scientists," one might go on to say "men who could not be employed under a County Civil Service procedure". Possibly you do not wish to rub this in too much but these are two items which might be made more specific.

You will recognize that these are merely suggestions of points which might strengthen the case as it is set forth in the letter. Please do not feel obligated to make these changes if you do not think they are necessary.

Sincerely yours,

L. A. DuBridge

LAD:il

JUL 16 1956

AIR POLLUTION FOUNDATION

704 SOUTH SPRING STREET

LOS ANGELES 14, CALIFORNIA

Tel.: MAdison 6-9441

LAUREN B. HITCHCOCK
President and Managing Director

July 13, 1956

Mr. John K. Northrop
4410 Via Esperanza
Santa Barbara, California

Dear Mr. Northrop:

Just before leaving for a trip east on May 12, I had prepared the enclosed correspondence to you in order to follow through with our conversation at the California Club. Later the same day I received word from the Executive Committee of the Foundation that they felt it would be the part of wisdom if we could add a second industrial man so that the committee would be more representative of both education and industry. Accordingly, I thought it best to hold up until the fifth member of your committee was designated.

On my return I found that the trustees had not yet concluded their selection of the fifth man, and I have been actively following up on this in the meantime. I am assured now that he will be appointed in the next few days. However, rather than delay this further, it now seems wise to me to send the enclosed material on to you.

I have also checked with the three academic members of the committee and find that they all expect to be in Los Angeles during the rest of this month. Fisher and Young expect to be in town through August also, but Lindvall will be gone the entire month of August.

This leads me to the suggestion that we might line up the first meeting of the committee in the next two weeks. Even if the new man is not appointed in time to attend this first meeting, it seems to me you might like to get the ball rolling and we could always bring the new man up to date rather quickly. However, I feel the chances are good that we will have him in time.

I don't know how this suggestion will fit your convenience, but hope you will give me a call. We are very grateful for your indulgence and your willingness to serve.

Sincerely yours,

Original signed by

L. B. Hitchcock

L. B. Hitchcock

LBH:mek
Enclosures

cc: L. A. DuBridge
Robert D. Fisher
F. C. Lindvall
W. G. Young

Biographical Sketches[1/]
of the
Evaluation Committee

FISHER, Robert Dean **Telephone: RIchmond 8-2311 extension 311**

Financial, vice president; born at Warsaw, N.Y., July 22, 1903; son Addison Washburn and Pearl Ellen (Nettleton)F; A.B. Oberlin Coll, 1926; student U. of Mich. 1927-28; LLB, Western Reserve, U., 1931; m. Elizabeth Gould Woodruff, Dec. 23, 1929; children - Martha Joan, Rowland Addison, John Woodruff. Began statistician New York Bell Telephone Co., 1926; in practice of law, Painesville, Ohio, 1931-34; office counsel Western Reserve University, 1934-36, secretary, 1936-43, vice pres. 1940-43; sec. Cleveland-Cliffs Iron. Co., Cliffs Corp. and affiliated cos. 1943-46; financial v.p. U. So. Cal. since 1946. Los Angeles Athletic. Home 17 Portuguese Bend, Rolling Hills, Calif. Office: 3518 University Ave., Los Angeles 7.

LINDVALL, Frederick Charles **Telephone: RYan 1-7171 extension 37**

Prof. engring; b. Moline, Ill., May 29, 1903; s. Gustav and Alma (Freeberg) L.; student U. of Calif, 1920-22; B.S., U. of Ill., 1924; PhD., Calif. Inst. of Tech., Pasadena, 1928; m. Janet Smith, Aug. 27, 1928; children - Charles, Eric, Martha Joan, John Robert. Elec. insp. Los Angeles Ry., 1924-25; teaching fellow, Calif. Inst. of Tech., 1925-28; engr. Gen. Electric Co., 1928-30; instr. Calif. Inst. of Tech., 1930-31; asst. prof. elec. engring., 1931-37, asso. prof. elec. and mech. engring., 1937-42, prof. since 1942, chairman division of engineering since 1945. Dir. and cons. Preco, Inc., Los Angeles; dir. Consol. Engring Corp. Dir. Stanford Research Institute, Lt. USNR 1935-53. Awarded Presidential Certificate of Merit. Registered professional engr., Calif. Fellow Am. Inst. E.E.; mem. Assn. of Univ. Profs., Soc. for Promotion of Engineering, Edn., Am. Soc. M.E. Tau Beta Pi, Sigma Xi, Mason. Clubs: Twilight (Pasadena, Calif.); University(Chgo.). Home 2006 Skyview Drive, Altadena

1/ Who's Who in America, vol. 28, 1954-55

NORTHROP, John Knudsen

Telephone: GLadstone 4-4031
@ June 1, 1956, Santa Barbara
WOodland 5-5556

Aeronautical engr.; b. Newark, N.J., Nov. 10, 1895; s. Charles Wheeler and Helen C. (Knudsen) N.; ed. pub. schs. of Santa Barbara, California; married Inez M. Harmer, January 30, 1918 (divorced 1948); children - Bette (Mrs. Paul G. Johansing), John H., Ynez S. (Mrs. Robert W. Koch); m. Margaret Bateman, Dec. 23, 1950. Designer Loughead Aircraft Company, Santa Barbara, Calif., 1916-17; 1919-20; designer, project engr., Douglas Aircraft, Santa Monica, Calif., 1923-26; co-founder Lockheed Aircraft, Los Angeles, Calif., 1927, served as chief engr., 1927-28; vice pres. and chief engr. Northrop Aircraft Co. (div. United Aircraft), Burbank, Calif., 1929-31, The Northrop Corp. (now El Segundo div., Douglas Aircraft), 1932-37; dir. Douglas Aircraft, 1934-37; co-founder, pres. and dir, Northrop Aircraft, Inc., Hawthorne, Calif., since 1939; co-founder Normac, Inc., Los Angeles, Calif. 1946; chrm. bd. since 1946; trustee of Occidental College, Los Angeles. Served in Signal Corps., U.S. Army, 1918. Fellow Inst. Aeronaut. Scis. (pres. 1948), Royal Aeronautical Society (London); member Society of Automotive Engineers. Designer: Lockheed Vega, 1927; co-designer Northrop Alpha, 1929; Gamma, Delta, 1932; BT-1, 1935; A-17, A-17A, 1945; N3PB, 1939; P-61, 1941; Northrop Flying-Wing Airplanes, 1940-45. Office: care Northrop Aircraft, Inc., Hawthorne, California

YOUNG, William Gould*

Telephone: BRadshaw 2-6161
extension 805

educator; b. Colorado Springs, Colo., July 30, 1902; s. Henry A. and Mary Ella (Salisbury)Y; A.B. Coll. Coll, 1924, M.A. 1935; Ph.D. Calif. Inst. Tech. (Am. Petroleum Inst. fellow and duPont fellow), 1929; m. Helen Graybeal, June 4, 1926. Research asst. Coastal lab. Carnegie Instn. of Washington, 1925-27; Nat. Research Council fellow Stanford, 1929-30; instr. U. of Calif. at Los Angeles, 1930-31; asst. prof., 1931-38, asso. prof., 1938-43, prof. chemistry since 1943, chmn. dept. chemistry, 1940-48, dean div. phys. sci. since 1946, faculty research lectr., 1947. Civilian consultant Nat. Def. Research Com., 1941-45. Mem. Am. Chem. Soc. (councilor 1939-53), Nat. Acad. Scis., Sigma Xi, Kappa Sigma, Alpha Chi Sigma, Delta Upsilon, Phi Lambda Upsilon. Home 955 Harvard St., Santa Monica, Calif.

*Associate Dean, Letters & Sciences, U. of Calif. at Los Angeles, 1947-

FOUNDATION Staff

President's Report - 1955, pp. 5-6.

JUL 12 1956

AIR POLLUTION FOUNDATION

704 SOUTH SPRING STREET

LOS ANGELES 14, CALIFORNIA

Tel.: MAdison 6-9441

July 11, 1956

W. L. FAITH
Vice President and Chief Engineer

To the Board of Trustees of the Air Pollution Foundation

Gentlemen:

The scientific staff of the Foundation is with increasing frequency being asked five questions about oxides of nitrogen.

Because a major portion of our current research dollar is being spent on developing new information about these peculiar contaminants and how to control them, it occurs to me that you will be interested in our answers to these questions:

Why are oxides of nitrogen important? Where do they come from? How are they formed? How may they be controlled? To what degree must they be controlled to reduce smog?

Satisfactory answers are not to be found in text books, not even the best ones. An average person, for example, who took a year of chemistry when he was in school, will have little recollection of the few paragraphs devoted to these gases.

But oxides of nitrogen are important because they play a key role in Los Angeles smog. Under sunlight, they react with hydrocarbons to form ozone. In fact, no other method of forming significant amounts of ozone is known, and the only way of duplicating typical smog damage to vegetation is by allowing ozone in turn to react with olefinic hydrocarbons.

Moreover, eye irritation from the photochemical (sunshine) reaction of nitrogen oxides with hydrocarbons has been demonstrated by experiments in large chambers. And in addition, nitrogen oxides will react with hydrocarbons, even in the dark, to form a visibility-reducing aerosol of particulate matter.

Where do these oxides of nitrogen in our atmosphere come from? Chiefly from motor vehicles, and to a lesser degree from the burning of fuel oil and natural gas. The Control District estimates that emissions of nitrogen oxides total 1,045 tons a day, including 770 tons from motor vehicles, 142 tons from burning of fuel oil, and 113 from natural gas consumption.

How are oxides of nitrogen formed? By combustion. Our air is approximately 20% oxygen and 80% nitrogen. Whenever anything is burned, some of the nitrogen (N) in the air combines with some of the oxygen (O) to form nitric oxide (NO). This gas in turn combines with more oxygen and forms still another gas -- nitrogen dioxide (NO_2).

How may oxides of nitrogen (NO and NO_2) be controlled? This is a smog question which presents a tremendous challenge to chemical engineers. Several methods of attack have been suggested, including what chemical engineers call "decomposition," "reduction," and "inhibition." Another proposal contemplates forcing a more-rapid-than-normal oxidation of NO to NO_2 -- to be followed by removal of the latter from auto exhausts and stacks, possibly by absorption in a chemical reagent.

In laymen's language, "decomposition" would involve splitting nitric oxide back into oxygen and nitrogen, before the NO can pick up more oxygen and become NO_2. "Reduction" would involve adding a reducing gas (hydrogen, carbon monoxide, methane or ammonia, for example) to NO to force it to form innocuous gases, rather than NO_2. And "inhibition" would involve adding a small amount of some chemical to our fuels to prevent the nitrogen and oxygen from combining during combustion into NO.

As you can see, the problem is highly technical and extremely complex. Indeed, the final solution may entail none of the possibilities described above. This is why we say that here is today's biggest single challenge to the chemical engineering profession.

Now for the final question -- to what degree must oxides of nitrogen be controlled to reduce smog?

This is precisely what the Foundation hopes to find out. We know that the 1,045-or-so tons a day of nitrogen oxides being emitted into our atmosphere result in concentrations ranging from 0.1 parts per million to 0.4 parts per million. Obviously, if we are able to achieve a 50% reduction in the emissions, we will reduce the concentration of nitrogen oxides to a range of 0.05 to 0.2 parts per million.

Our study boils down to this -- what is the allowable concentration? Or put it this way -- how much must the nitrogen oxide concentration in the air be reduced to eliminate eye irritation? Must other pollutants be controlled simultaneously?

The scientific staff of the Foundation has an obligation to you, the trustees, to all of the Foundation's contributors, and to the public at large, to produce the answers...to produce them as quickly as possible (though we know it is going to take time) and as economically as possible (though we know it is going to take a lot of money).

With your continued understanding and support, we <u>will</u> produce those answers!

Sincerely yours,

W L Faith

W. L. Faith
Vice President and Chief Engineer

JUL 27 1956

AIR POLLUTION FOUNDATION

704 SOUTH SPRING STREET
LOS ANGELES 14, CALIFORNIA
Tel.: MAdison 6-9441

LAUREN B. HITCHCOCK
President and Managing Director

July 26, 1956

To: Members of the Executive Committee

Asa V. Call, Chairman

Raymond B. Allen
F. M. Banks
Arnold O. Beckman
Walter Braunschweiger
L. A. DuBridge
A. J. Gock
James E. Shelton
Reese H. Taylor

Gentlemen:

Mr. S. Smith Griswold, Air Pollution Control Officer, Los Angeles County, has accepted our invitation to meet with the Executive Committee at its regularly scheduled meeting on Wednesday, August 15, 1956. Mr. Griswold is prepared to discuss the cooperative functions of the County District and the Foundation, and to explore ways in which both organizations can be of increasing mutual benefit to the community. This will provide an opportunity for questions to Mr. Griswold and informal discussion which we hope will further promote the mutual understanding and objectivity of the two agencies.

The meeting will be held in the Board Room on the sixth floor of the Pacific Mutual Life Insurance Company, 523 West Sixth Street, at 3 o'clock in the afternoon.

Sincerely yours,

Original signed by

L. B. Hitchcock

LBH:rs

cc: W. L. Faith
Gerald G. Kelly
Murray S. Marvin
J. B. Russell

JUL 25 1956

AIR POLLUTION FOUNDATION

704 SOUTH SPRING STREET
LOS ANGELES 14, CALIFORNIA
Tel.: MAdison 6-9441

LAUREN B. HITCHCOCK
President and Managing Director

July 24, 1956

Mr. Vance R. Nabors
Manager of Personnel & Public Relations
Ducommun Metals and Supply Co.
4890 South Alameda Street
Los Angeles 58, California

Dear Mr. Nabors:

I sincerely hope this letter and the attachments will answer your questions, and those of your committee, concerning the Foundation.

Enclosed are three papers: (1) a brochure describing the Foundation's purposes; (2) an article by Dr. DuBridge explaining the smog problem, and, (3) an advance copy of a letter we will be directing to our trustees and supporters next week.

I particularly direct your attention to the second page of that newsletter because it best describes our research program and the funds necessary in 1956 for that purpose. I believe you will find the entire letter interesting in that it explains the need for the Foundation's basic research, in addition to the necessity for work by the Air Pollution Control District.

The Foundation's research committee has adopted a program this year which will cost in excess of $600,000. In order to finance these projects, the finance committee adopted a formula for contributions so that each firm might bear an equitable share.

Dr. DuBridge is out of the city at the moment, but our records show that he contacted your firm by telephone. The amount figured out in accordance with the "equal share" formula was $1,205.

I know that I speak, not only for Dr. DuBridge, but for several other members of the Foundation's Board, when I express gratitude for your interest and support. We are encouraged that Ducommun, with its pioneering interest in Los Angeles Basin, is joining others who favor an aggressive attack on smog.

Sincerely,

Original signed by
Burt Leiper

Burt Leiper
Public Information Officer

BL:njd
Enclosures
bc: R. B. Allen
G. A. Beckett
E. W. Carter
L. A. DuBridge
A. J. Gock
L. B. Hitchcock
K. T. Norris
A. G. Roach
J. Russell

AUG 6 1956

AIR POLLUTION FOUNDATION

704 SOUTH SPRING STREET

LOS ANGELES 14, CALIFORNIA

Tel.: MAdison 6-9441

LAUREN B. HITCHCOCK
President and Managing Director

August 3, 1956

Dr. Lee A. DuBridge, President
California Institute of Technology
1201 East California Street
Pasadena 4, California

Dear Lee:

Earlier this year you were kind enough to agree to solicit contributions from a few companies you selected from a list that our Finance Committee had prepared with some care. Your help has been productive.

I am attaching a list of the companies remaining on your list from whom we have received no contribution. Please note the suggested amount in each case has been calculated by the formula which the Finance Committee feels is a "fair share". We have found that most contributors are glad to know what is expected of them.

Many new contributors this year have been secured as a result of a personal telephone call from one of our trustees. Two sample letters are enclosed if you prefer to write. We have important work waiting for funds and every check helps to shorten the time.

Sincerely yours,

L. B. Hitchcock

L. B. Hitchcock

LBH:rs
cc: A. J. Gock
J. B. Russell

L. A. DuBridge

Company	Amount Requested	Received
Calif. Hardware Co. Shannon Crandall, Jr., Pres. 500 E. First St. Los Angeles 54, Calif. MA 9-2411 Wholesale Hardware	$ 775.00	$ 500.00 3/28/56
Carnation Company Elbridge H. Stuart, Pres. 5045 Wilshire Blvd. Los Angeles 36, Calif. WE 1-1911 Dairy Products, Cereals, Feeds	$ 2,895,00	$ 2,500.00 4/9/56
Ducommun Metals & Supply Co. Charles E. Ducommun, Pres. 4890 S. Alameda St. Los Angeles 54, Calif. LU 8-0161 Metals & Supplies	$ 1,205.00	
Gilfillan Bros. S. W. Gilfillan, Pres. 1815 Venice Blvd. Los Angeles 6, Calif. DU 1-3441 Radar Aids & Air craft Parts	$ 6,270.00	$ 6,200.00 4/6/56
Kelman Electric & Mfg. Co. J. N. Kelman, Pres. 1667 N. Main St. Los Angeles 12, Calif. CA 5-1251 High Voltage Circuit Breakers	$ 675.00	(unable to contribute)
Pacific Airmotive Corp. Mr. Myers, Pres. 2940 N. Hollywood Way Burbank, Calif. XXXXXXXX VI 9-3481 Engine & Airframe Overhaul	$ 2,700.00	$ 100.00 6/14/56
Pereira and Luckman W. L. Pereira and Chas Luckman 9220 Sunset Blvd. Los Angeles 46, Calif. CR 6-2073 Architecture & Engineering	$ 965.00	
Plomb Tool Co. M. B. Pendleton, Pres. 2209 Santa Fe Avenue Los Angeles 58, Calif. LU 9-3311 Hand Service Tools	$ 995.00	

_____

_____

_____

Dear _____:

It is now beyond doubt that Air Pollution in the Los Angeles basin is a problem in which every citizen is involved. He is involved as a sufferer, and should be as a contributor toward a solution.

Smog is a blight which must be overcome regardless of effort and regardless of cost. Otherwise this community is facing serious economic consequences.

The Air Pollution Foundation is in a unique position in seeking solutions. It prevents overlapping of research programs of the different agencies concerned.

Through a very small but qualified staff it can objectively define, contract for, and evaluate scientific research. Funds are needed to proceed with contracts for pending studies.

As a trustee of the Foundation, I am appealing to you, an interested businessman and citizen, to join with other firms in providing needed additional financial support.

It is only through prompt and united action that solutions to Smog can be found in time to prevent serious harm to the growth of our city and county.

Very truly yours,

_____

P. G. Winnett

The subscription assigned to

_____

is $_____.

Dear ----------:

As I explained to you today, I have been serving as a trustee of the Air Pollution Foundation. This organization is supported by private industry and is conducting a large number of research projects in an effort to definitely establish the cause and the potential cure for our smog problem. I would not be serving as a trustee if I did not have confidence in the work being done by the organization.

You agreed to contribute $____. Your check should be made to Air Pollution Foundation and either mailed direct to -

704 South Spring Street
Los Angeles 14, California

or you may return it to me for transmittal to the Foundation office.

I could give you ample evidence of the good work being done by the organization, but you were honest enough to tell me you would not read it, so you will just have to take my word for the fact that this group is diligently working on our No. 1 community problem and merits your financial support.

Best regards,

K. T. Norris
President

LBH:mek

#1

AIR POLLUTION FOUNDATION

August 15, 1956

MEMORANDUM

To: L. A. DuBridge

From: L. B. Hitchcock

Subject: Introductions at Board Meeting

You may wish to announce at the start of the board meeting that Mr. Tolles of Musick, Peeler, and Garrett, is representing Mr. Gerald Kelly as Secretary; that Mr. Leiper, Public Information Officer, and Mr. Russell, Business Manager, of the Foundation are present by invitation.

In introducing Mr. Griswold as Air Pollution Control Officer of Los Angeles County, you may wish to add a word or two by way of courtesy to the general effect that he has been in county service for about twenty years. Prior to his present appointment, he was Assistant Administrative Officer under Arthur Will. He was an honor graduate from Stanford University and has been a Commander in the Navy, both in World War II and the Korean Campaign.

Dr. Leslie Chambers, Director of Research of the Air Pollution Control District, has had a long career in public service, in both the U. S. Public Health Service and the Chemical Corps. He comes to Los Angeles from Cinn., where he directed the federal air pollution research program. Mr. Griswold has kindly accepted our invitation to meet with us today and tell us about the activities of the District in relation to those of the Foundation.

LBH:mek

If a committee of the Board is to be appointed as a result of Item 4 on Agenda, I suggest DuBridge, Beckman, Cale, & Norris.

AUG 20 1956

AIR POLLUTION FOUNDATION

704 SOUTH SPRING STREET
LOS ANGELES 14, CALIFORNIA
Tel.: MAdison 6-9441

LAUREN B. HITCHCOCK
President and Managing Director

August 17, 1956

Dr. Lee A. DuBridge, President
California Institute of Technology
1201 East California Street
Pasadena 4, California

Dear Lee:

With further reference to my letter to you of August 3, reviewing the list of new contributors with which you were kind enough to help, note that the Board of Trustees at its meeting on August 15, established "contributing memberships." This greatly simplifies the approach to possible new contributors, in that you can just invite them to take out a membership in the Foundation, suggesting that they get in touch directly with me (MA 6-9441) for details of our membership plan.

You might find this suggestion helpful in connection with any of your present prospects, or others who may occur to you.

Many thanks for your continued interest and help.

Sincerely,

Lauren

L. B. Hitchcock

LBH:lk

AIR POLLUTION FOUNDATION

August 30, 1956

MEMORANDUM

To: W. L. Faith
M. Neiburger
N. A. Renzetti
L. H. Rogers
J. B. Leiper

From: L. B. Hitchcock

Subject: 1956 Technical Progress Report

In 1955 we published our Second Technical Progress Report at the time of the second annual meeting on November 10. To do this, a lead time of approximately two months was required, which meant that little, if any, research results after August 31, 1955, were included in that report.

Inasmuch as our research projects are scheduled and budgeted on a calendar-year basis, and since a portion of our data collected during the so-called smog season (August 1- November 30) is of particular interest, it has been concluded that publication of an annual report based on results available in early September has a number of disadvantages. Essential information for the president's annual report at the annual meeting scheduled for November 14, 1956, can be accumulated by other means.

Accordingly, it has been decided to publish our Third Technical Progress Report as soon after January 1, 1957, as possible, covering all data unpublished up to that time. Manuscript should be ready for final typing, February 1, 1957, and publication of the report scheduled for March 1, 1957.

Each team member is requested to summarize essential findings as currently as possible by October 15, 1956, to serve as the basis of the president's report on November 14, 1956.

LBH:mek
cc: L. A. DuBridge
Research Committee
R. B. Allen, Chairman
J. L. Atwood
F. M. Banks
A. O. Beckman
L. K. Firestone