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TRANSLATION OF
DOCUMENT NI-10551
PROSECUTION EXHIBIT 994

MEMORANDUM OF DEFENDANT VON KNIERIEM TO DEFENDANTS AMBROS, BUETEFISCH, SCHNEIDER, AND OTHERS, 6 JUNE 1944, CONCERNING AND TRANSMITTING A COMMENTARY ON HASLAM'S ARTICLE CONCERNING COOPERATION BETWEEN FARBEN AND STANDARD OIL

1. Memorandum From Defendant von Knieriem, 6 June 1944
6 June 1944 vK/Doe
SECRET!

To:
Geheimrat Dr. Schmitz
Director Dr. Ambros
Director Dr. Buetefisch
Director Dr. Mueller-Cunradi
Director Dr. Schneider
Director Dr. Pier
Director Dr. Goldberg
Dr. Diekmann Heidelberg
Ludwigshafen
Leuna
Oppau
Leuna
Ludwigshafen
Oppau
Berlin

Re: Haslam Article*

Dear Sirs,

Enclosed I am sending you a commentary on the above article, as agreed, and would like you to let me know of any objections, as far as the gentlemen have not already concerned themselves with it.

I think we all agree that we will only make use of our reply to the authorities if we are approached about Haslam's article. It is in any case quite good, however, that we ourselves will get a view of conditions through this.

With regards and Heil Hitler!

yours,

Signed: V. KNIERIEM.

2. Farben's Commentary on the Haslam Article

SECRET!

6 June 1944

Comments on Professor Haslam's Article in the "Petroleum Times" of 25/12/1943

Standard Oil has been repeatedly and violently attacked in America because the cooperation between Standard Oil and I.G. Farbenindustrie A.G. allegedly worked out disadvantageously for America. "The Petroleum Times" published detailed articles on February 18, and May 16, 1942, in which Mr. Farish, President of Standard Oil, defends himself against such attacks levelled against Standard Oil. One realizes on reading the above-mentioned article by Professor Haslam, that it is nothing more than another defense of Standard against the accusation that America had come off badly as a result of the cooperation between Standard Oil and I.G. Farbenindustrie A.G.

The cooperation between IG and Standard, initiated in 1927 and extended in 1929, was laid down in extensive agreements resulting from negotiations over a number of years. The closing of an agreement with Standard was necessary for technical, commercial, and financial reasons: technically, because the specialized experience which was available only in a big oil company was necessary to the further development of our

process, and no such industry existed in Germany; commercially, because in the absence of state economic control in Germany at that time, IG had to avoid a competitive struggle with the great oil powers, who always sold the best gasoline at the lowest price in contested markets; financially, because IG, which had already spent extraordinarily large sums for the development of the process, had to seek financial relief in order to be able to continue development in other new technical fields, such as buna.

The Haslam article now declares that the Americans received processes from IG which were vitally important for the conduct of war, and every reader of the article will ask if this is true, and if so, if IG on its side has acquired information from the Americans which is equally vital for the conduct of war. The following explanations deal particularly with the latter question.

Mr. Haslam mentions the following principal products; iso- [octane]

[iso-] octane, toluol, Oppanol-Paratone, and buna. The following observations may be made on each of these:

1. Iso-octane Mr. Haslam mentions the following principal products: iso-octane. By reason of their decades of work on motor fuels, the Americans were ahead of us in their knowledge of the quality requirements that are called for by the different uses of motor fuels. In particular they had developed, at great expense, a large number of methods of testing gasoline for different uses. On the basis of their experiments they had recognized the good anti-knock quality of iso-octane long before they had any knowledge of our hydrogenation process. This is proved by the single fact that in America fuels are graded in octane numbers, and iso-octane was entered as the best fuel with the number 100. **All this knowledge naturally became ours as a result of the agreement, which saved us much effort and protected us against many errors.**

The next step was to utilize iso-octane as a motor fuel because of its good qualities, and to search for suitable production processes; this was soon achieved in America. Through polymerization of the iso-butene contained in cracked gases, di-isobutylene was produced and changed into iso-octane through hydrogenation. Hydrogenation was at first carried out at low or only slightly increased pressure. It became clear that for this type of hydrogenation the catalytic pressure-hydrogenation developed by us could also be used successfully. Both processes were used simultaneously. After plants were operating in America, they were also introduced, in the years just before the war, in several other countries, as for instance, Roumania and Russia (second stage: low-pressure hydrogenation), Holland, Iran, and Venezuela (high-pressure hydrogenation). Therefore the statement by Mr. Haslam that the production of iso-octane became known in America only through the hydrogenation process is not correct.

Mr. Haslam further declares that the German aircraft industry, in contrast to the American and English, could not have changed over to the use of iso-octane. From this the conclusion might be drawn that either we did not know the process for isooctane production, or that we could not produce it for other reasons; for instance, because of lack of raw materials. However, both reasons are wrong. Obviously our raw materials situation is different from that in America. They could draw on extensive sources of raw material, which were at their disposal in the largely unsaturated butane fractions of natural gases [last 3 words crossed out in original] and the refineries and cracking plants of their petroleum industry. Since our fuel industry depends essentially on coal, these gases were not at first at our disposal in sufficient quantities. For that reason we used other methods to produce iso-octane and chose to proceed by way of isobutyl-alcohol, which is produced from carbon monoxide and hydrogen; that is to say, on a pure coal basis. Apparently this fact is unknown to the Americans. At any rate, we maintained the strictest secrecy in all negotiations about the fact that we produce iso-octane on an industrial scale. When in the process of expanding our hydrogenation plants, we came to have sufficient butane-containing gases at our disposal, these had still to undergo dehydrogenation prior to polymerization. Only then were we in a position to change the unsaturated gases into iso-octane, in the same way that is used in America. This dehydrogenation process has been developed by us.

Especially in the case of iso-octane, it is shown that we owe much to the Americans because in our own work we could draw widely on American information on the behavior of fuels in motors. Moreover, we were also kept currently informed by the Americans on the progress of their production process and its further development.

Shortly before the war, a new method for the production of iso-octane was found in America — alkylation with isomerization as a preliminary step. This process, which Mr. Haslam does not mention at all, originates in fact entirely with the Americans and has become known to us in detail in its separate stages through our agreements with them, and is being used very extensively by us.

As a result of the quite different raw materials situation, we have occupied ourselves with aviation fuels with an iso-octane base, but particularly intensively with high performance fuels containing aromatic substances and with their production. We succeeded in producing high-performance fuels of 100-octane rating, in which aromatic substances are substituted for a large proportion of iso-octane. In its basic features, the production of aromatic gasoline through hydrogenation was known at an early stage. The newer development, the new aromatization-catalysts, and the development of the DHD-process supplementary to hydrogenation (which will be discussed in detail under (2) toluol) were, however, carried out as military developments without anything about them becoming known abroad.

In summary, it can thus be said concerning the production of aviation fuels, that we had to use methods which differed in principle from those of the Americans. The Americans have petroleum at their disposal, and naturally rely on the products that are created in the processing of petroleum. In Germany, we started out on a coal basis and from there proceeded to utilize the hydro- [...genation] [hydro...] generation of coal for the production of aviation fuel. As mentioned above, however, specialized information was not turned over to the Americans. Therefore, in contrast to Professor Haslam's assertions, hydrogenation proper was used in Germany, though not in America, for the production of aviation fuels. Beyond that, it must be noted that **particularly in the case of the production of aviation gasoline on an iso-octane basis, hardly anything was given to the Americans, while we gained a lot.**

2. Toluol

In the case of toluol the facts are somewhat different, insofar as the IG was the first to realize that, as already mentioned, through the process of hydrogenation, aromatics, and among them toluol, could be obtained. The production of aromatics through hydrogenation, the so-called aromatization, was technically carried out here as well as in the U.S.A. As a result of the poor yield the process, in the original form, was suitable only for valuable specialized products. For instance, solvents were manufactured through aromatization in America.

It has been known since the First World War, before the development of the above-mentioned aromatization process, that it is quite generally possible to extract the individual aromatics from aromatic gasolines. Meantime, the extraction processes, particularly the internationally known Edeleanu process,* have been considerably improved. These extraction processes were at the disposal of the Americans and us for the isolation of toluol.

In Germany, then, the IG technically so improved the aromatization through the discovery of new catalysts that the production of aromatic fuels became possible on a large scale.

The Americans learned nothing from us about this. Immediately after the outbreak of war, IG suggested isolating toluol from the aromatic mixtures. The fact that this suggestion was not followed was due principally to raw material considerations. In particular, it was desired to utilize hydrogenation at first only for the production of fuels, and not to draw off certain quantities of hydrogenation products for the manufacture of toluol, especially as other suitable sources of toluol were at our disposal (low-temperature carbonization of

coal; synthesis from benzene and methanol). Moreover, it was of decisive importance that the manufacture of high-pressure vessels necessary in hydrogenation caused for a long time quite a bottleneck in German production circles. For some time, however, toluol has been produced in Germany also by way of hydrogenation.

In this, however, the above-mentioned aromatization developed by us is not being used any more, but instead the so-called DHD-process, a benzene-dehydrogenating process which was discovered and technically developed by us in a similar way to the hydroforming process, which was developed in America and became known to us from there. The fact that we operated on a large scale by this process is unknown to the Americans, so far as we know. With the Americans, as far as we know, the hydroforming process — in which petroleum gasoline is treated under heat and low pressure in the presence of hydrogen over a regenerable catalyst — furnishes the raw material for toluol production. In other words, actual hydrogenation is not employed for the production of toluol. Besides, a number of other processes are at the disposal of the Americans, as for instance, the isomerization process of heptane and catalytic cracking of certain crude oil fractions; for instance, the Houdry process. The Americans have used this last process in Italy especially, as far as we know.

[Editor's note: The two preceding sentences have been crossed out in the original.]

Therefore when Mr. Haslam, in connection with toluol, talks of a "miracle" which has fallen to the Americans through the hydrogenation process, his statement is not correct, for toluol, as can be seen from the above, can be produced without hydrogenation and is not produced by hydrogenation in America.

[Editor's note: Last 8 words crossed out in original.]

3. Oppanol

In the case of Oppanol, Mr. Haslam's statement is incomplete. When we gave Mr. Howard an Oppanol specimen in 1932, we had already recognized its effect with regard to the improvement of lubricating oils. It now became apparent, however, that the flattening of the viscosity curve was an intensively investigated problem for the Americans to which a solution was reached through our Oppanol. Its introduction into practical use was pushed ahead very quickly by the Americans, thanks to their large-scale installations, so that we also reached clear results regarding the applicability of Oppanol to the improvement of oil considerably more quickly than could have been done without the Americans.

The statement by Mr. Haslam about the Russian campaign, which is supposed to show that we had no Oppanol in our possession, in contrast to the Russians, is incorrect. On the contrary, immediately after the discovery of Oppanol we worked in very close cooperation with the Army Ordnance Office. Out of this was developed first of all the Oppanol-containing army motor oil, in fact in the year 1936. Even today up to 0.7 percent Oppanol is added to our army motor oil. It is evident here too, that the Americans are not properly informed about developments here, which is explained by the fact that we left them in ignorance of the fact that, using coal as a base, we ourselves produce the raw materials for Oppanol production.

4. Buna

The conditions in the buna field are such that we never gave technical information to the Americans, nor did technical cooperation in the buna field take place. On the basis of the contractual agreements, the Americans had only the right to reach a technical cooperation with IG at some undetermined date. Even the agreement reached in September 1939 and mentioned by Mr. Haslam, did not give the Americans any technical information, but only that which was contractually their due, that is, a share in the patents. Moreover, at that time a different division of the patents was decided upon, which seemed to be in the interests of both partners. The Americans did not at that time receive anything important to war economy; besides, they could have

procured the patents without our agreements in wartime, for, during war a state will never be kept from production by enemy patents.

A further fact must be taken into account, which for obvious reasons did not appear in Haslam's article. **As a consequence of our contracts with the Americans, we received from them, above and beyond the agreement, many very valuable contributions for the synthesis and improvement of motor fuels and lubricating oils, which just now during the war are most useful to us; and we also received other advantages from them.**

Primarily, the following may be mentioned:

(1) Above all, improvement of fuels through the addition of tetraethyl-lead and the manufacture of this product.* **It need not be especially mentioned that without tetraethyl-lead the present method of warfare would be impossible.** The fact that since the beginning of the war we could produce tetraethyl-lead is entirely due to the circumstances that, shortly before, the Americans had presented us with the production plans, complete with their know-how.

Thus, the difficult work of development (one need only recall the poisonous property of tetra-ethyl-lead which caused many deaths in the U.S.A.) was spared us, since we could take up the manufacture of this product together with all the experience that the Americans had gathered over long years.

It was, moreover, the first time that the Americans decided to give a license on this process in a foreign country (besides communication of unprotected secrets) and this only on our urgent requests to Standard Oil to fulfill our wish. Contractually we could not demand it, and we found out later that the War Department in Washington gave its permission only after long deliberation.

(2) Conversion of low-molecular unsaturates into usable gasoline (polymerization). Much work in this field has been done here as well as in America. But the Americans were the first to carry the process through on a large scale, which suggested to us also to develop the process on a large technical scale. But above and beyond that, plants built according to American processes are functioning in Germany.

(3) In the field of lubricating oils as well, Germany, through the contract with America, learned of experience which is extraordinarily important for present day warfare. One may recall the improvement of lubricating oils through dewaxing and deasphaltization by means of propane, for which we first received from America the experience necessary for large-scale application. We further received information about the pour-point depressants, such as Paraflow. Here it is apparent how advantageously the agreement with America turned out for Germany when one considers that the product was found in Germany, while its important application as pour-point depressant was first discovered by the Americans. Finally, it should be mentioned that our knowledge of certain materials which prevent the oxidation of unsaturated parts of motor fuels and oils, as well as sludge formation and piston pitch formation is of American origin. Altogether we were quite thoroughly informed on a large scale of the behavior of lubricating oils in auto and aircraft motors, and thereby it became possible for us to develop our synthetic lubricating materials immediately according to practical standards, so that at the beginning of the war we were technically fully prepared. **In this connection, we obtained not only the experience of Standard, but, through Standard, the experience of General Motors and other large American motor companies as well.**

(4) As a further remarkable example of the advantageous effect for us of the contract between IG and Standard Oil, the following should be mentioned: in the years 1934/1935 our government had the greatest interest in gathering from abroad a stock of especially valuable mineral oil products (in particular, aviation gasoline and aviation lubricating oil), and holding it in re- [...serve]

[re...] serve to an amount approximately equal to 20 million dollars at market value. The German

Government asked IG if it were not possible on the basis of its friendly relations with Standard Oil, to buy this amount in Farben's name actually, however, as trustee of the German Government.

The fact that we actually succeeded by means of the most difficult negotiations in buying the quantity desired by our government from the American Standard Oil Company and the Dutch-English Royal-Dutch-Shell Group and in transporting it to Germany, **was made possible only through the aid of the Standard Oil Co.**¹

[In handwriting]

Distributed to:

Geheimrat Dr. Schmitz
Dir. Dr. Ambros
Dir. Dr. Bueteffisch
Dir. Dr. Mueller-Cunradi
Dir. Dr. Schneider
Dir. Dr. Pier
Dir. Dr. Goldberg
Dr. Diekmann

DR. BORNEMANN: Could you explain to me more in detail in what field I.G. Farben cooperated with the United States firms, and what important contracts there were?

DEFENDANT TER MEER: My counsel has introduced, under Document ter Meer 102, ter Meer Defense Exhibit 174,* an affidavit of Dr. Loehr on agreements made between IG. Farben and American firms. On pages 4, 5, 6, 7, 8 — no, 6-a, 6-b, and so on, — 7, 8 — are enumerated all those agreements which have been made between I.G. Farben on the one side and American concerns on the other side. By these agreements I mean only such agreements where technical cooperation and an exchange of know-how was provided for. This was in the broadest possible way the case for dyestuffs and intermediates.

The contract between IG. Farben and the Grasselli Chemical Corporation of Cleveland, which I mentioned already yesterday; agreements in the pharmaceutical field with American group of pharmaceuticals — the Sterling Products Corporation, at Wheeling; an agreement on insecticides and fungicides between IG and the du Pont Corporation; agreements in the photographic field with Agfa Ansco Corporation, Binghamton; the broad agreements which have been mentioned by Dr. von Knieriem with Standard Oil of New Jersey in the oil fields and in the Jasco field; and then the agreements on magnesium metal and magnesium alloys with the Aluminum Company of America.

Those are very broad agreements which do not simply cover one specific patent or one specific product, but which cover either a whole class of products like dyestuffs, pharmaceuticals, the oil field, and so on; or in the case of magnesium, cover a broad field in such a way that not only the manufacture of magnesium was in this case important but, even much more, the application and use of magnesium alloys in the various methods of application of such light metals, in which field IG had the largest experience, I may say, in the world, and paid special attention to developing special processes.

Besides the before-mentioned agreements where, in every case, a broad exchange of experience and know-how and the transfer of patent rights was provided for, Dr. Loehr mentions not less than forty agreements in all fields of chemistry, among them some important ones like styrene, polystyrene, with the du Pont Company; urea resins with the Ellis-Foster Company; an agreement on acetylcellulose with the Hercules Powder Company in Wilmington; an agreement on synthetic detergents, which serve as soap substitutes, with Lever Brothers at Boston; and even themous Perchloron with the Pennsylvania Salt Company, famous because that is the base for Losantin.

This cooperation with all these American concerns was continued until the day the war broke out, and even in some cases beyond. Alone in 1938 and the following years, not less than sixteen new agreements were concluded which are contained in the before-mentioned forty.

In these agreements which have been made in 1938-39, in the so-called crisis years in Europe, are some which are really very important; for instance, one which covers the manufacture of phosphorus. Now everybody knows what phosphorus is, or the value of phosphorus in wartime.

Not included in these agreements are a comparatively large number of agreements of small importance by which interferences in the patent field between IG and an American concern were eliminated by a simple exchange of patent rights. These are not included here.

I must say that being a technical analyst with a certain knowledge in the chemical field, I could not tell where else we could have cooperated in America in the technical field. This is the broadest cooperation in the field of chemical industry with a specific country in the world I have ever heard about, and I don't think that there exists an American concern or an English concern which has a comparable amount of agreements with foreign concerns in the chemical industry.

Q. It would be correct for me to deduce from your statements that I.G. Farben in no country in the world had concluded as many and as important contracts as with the United States of America?

A. That is certainly true. And the reason is a very simple one. America is a very big country. It is rich in raw materials of all kinds. It has a large population with a high purchasing power, and has an industry which is, since the end of World War I, progressing very quickly, quite specifically in the field of applied chemistry.

Q. Was the cooperation with IG. Farben liked and supported by American firms; can you give me any examples there?

A. Well, I should say so. The cooperation from American concerns with I.G. Farben was very much liked, and the reason was this, that the American concerns knew exactly that we carried on scientific and development work on a very large scale; they knew at the same time that IG dealt within the field of chemistry in by far the largest number of important fields of new development....

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