

Die Korrespondenz

Helmut Hasse/Harold Edwards

tk Hasse an Edwards 18.3.76–15.2.78

tk Edwards an Hasse 5.3.76–30.6.78

tk Weiteres Material zu Hasse/Edwards

t – fertig transkribiert, *k* – nach Tippfehlern durchgesehen

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Kapitel 1

Die Korrespondenz Helmut Hasse/Harold Edwards

1.1 Vorbemerkung

[...] steht als Platzhalter für Text, der nicht oder nicht eindeutig zu entziffern war.¹

□□□ steht für ausgestrichene, aber lesbare Passagen.²

1. erreichbar mit `\xxx`

2. erreichbar mit `\boxes`

1.2 05.03.1976, Edwards an Hasse

5 March 1976

New York University Courant Institute of Mathematical Sciences

Dear Professor Hasse:

In your article on Hensel in the *Dictionary of Scientific Biography* and in your Hensel bibliography in *Crelle* you do not list any unpublished papers. Do you know of any unpublished papers? I have been studying the history of algebraic number theory. So far I have not gone past 1850, but even here it would be very interesting to me to be able to find the original letters from Kummer to Kronecker which Hensel excerpted in 1910. Also, as I progress beyond 1850 I will become interested in the work of Kronecker. As you may know, there is no known *Nachlass* of Kronecker. Hensel, as the editor of Kronecker's *Werke*, would naturally be the person to turn to for a clue on the disposition of Kronecker's papers.

Any information that you could give me on these matters would be very much appreciated. I hope that you will forgive my importuning you in this way and that you will find the time to send me a brief response.

Yours very respectfully,

Harold M. Edwards

1.3 18.03.1976, Hasse an Edwards

March 18, 1976

Dear Professor Edwards,¹

I obtained your letter of March 5[▶], concerning Hensel's and Kronecker's Nachlass.

As far as I can conclude from my own correspondence in 1941–1943, it was agreed with the Nachlaßverwalter Dr. Schenck, Darmstadt, that both Nachlässe were entrusted to

Kaiserlich–Leopoldinische Akademie der Naturforscher.

Only very things were left to myself as one of his former ph.d. students.

In my possession are:

1. A fairly complete correspondence between Hensel and myself from 1920 to 1941.
2. Some original letters to Hensel from Siegel, Mahnke, and myself.
3. A very extensive collection of letters between the above-named Dr. Schenck (one of Hensel's sons-in-law) and myself, containing also some letters of Hensel's wife, all concerning Hensel's and Kronecker's Nachlaß. From the last one of those I got the above statement. It says exactly:

“Wir sind Ihnen für Ihre Anregung, diesen und auch den Kronecker–Nachlaß an die Deutsche Akademie der Naturforscher zu Halle zur Aufbewahrung zu übergeben, sehr dankbar und gern damit einverstanden, daß Sie die Sachen nach Ihrer Durchsicht und Auswertung dorthin übergeben.”

I have not got, however any document, confirming myself that I acted correspondingly. I was occupied by the German Navy as a scientist at that time, and at my present age of nearly 78, I cannot remember what I actually did 32 years ago.

1. undeutliche Notiz, offenbar von Hasse: *Erl. durch Besuch am 10.6.76*

If you are interested in having a closer look to the above 3 collections of letters, I shall be pleased to let you have the three folders for a few months.

Here the present addresses of the Leopoldina and of Dr. Schenck:

Deutsche Akademie der Naturforscher Leopoldina
DDR 401 Halle, August-Bebel-Str. 50a, Deutsche Demokratische
Republik

Dr. Hans Schenck, Kolonie Trautheim 13, 6100 Darmstadt 2 Land
Bundesrepublik Deutschland.

I am not sure however, whether Dr. Schenck is still alive.

Yours very sincerely,

H. Hasse

1.4 29.03.1976, Edwards an Hasse

29 March 1976

New York University Courant Institute of Mathematical Sciences

Dear Professor Hasse,

Many thanks for your prompt and very informative reply. I will write to the library in Halle and to Dr. Schenck in the near future. I hope you do not mind my mentioning this information to other historians.

Thank you also for the offer of the opportunity to study the correspondence in your possession. I plan to be in Germany in June and July, and I will contact you at that time, if not before. For the moment I am much more interested in the 19th than in the 20th century material, but perhaps the 20th century letters will shed light on the earlier history. Could you give me any idea of the contents of the correspondence that you have? Do you think it might be of interest to me?

Again, thank you very much for your courtesy and your helpfulness.

Yours very respectfully,

Harold M. Edwards

1.5 05.04.1976, Hasse an Edwards

5.4.1976

Dear Professor Edwards,

Thank you for your kind letter of March 29►. I very much hope you will get satisfying answers from the Leopoldina and from Dr. Schenck.

My correspondence with my beloved teacher Kurt Hensel has been chiefly about his and my own investigations in number theory. Of course there will also be a good deal of personal things in it. He has been to me a second father, besides my natural one.

You will be welcomed here in Ahrensburg (16 miles NE of Hamburg). I shall be abroad however two weeks from 14 of June onwards.

Yours very sincerely,

H. Hasse

1.6 15.04.1976, Edwards an Hasse

April 15, 1976

New York University Courant Institute of Mathematical Sciences

Dear Professor Hasse,

Thank you very much for your cordial letter[►]. I would like very much to visit you in Ahrensburg sometime during the first weeks of June. At present I expect to arrive in London on 2 June. I don't know yet exactly how I will be traveling from there to Germany, but I certainly think there is a good chance I could reach Ahrensburg by 10 June, for example, if that would be a suitable day for you.

With sincere best wishes,

Harold Edwards

mjd

1.7 22.04.1976, Hasse an Edwards

April 22, 1976

Dear Professor Edwards,

Thank you for your letter of April 15[►]. Your visit here would be most welcome on June 11, but not later, because I have to leave for Finland on June 13 and shall be busy with preparations on June 12.

From London you reach Hamburg best by air. If you come by boat (night trip Harwich–Hook von Holland), there will be a through train (D–Zug) from Hook von Holland to Hamburg, running from 6.50 to 13.24 (the so-called Skandinavian–Express). There will be a local connection from Hamburg Hauptbahnhof (platform 5 or 6) to Ahrensburg running from 13.45 to 15.11. In case you take that train, I shall meet you at the Ahrensburg station. You will recognize me by looking for an elderly man with almost no hair, having a yellow book from the Springer collection in his hand or under his arm.

It might also be that you hire a car for further traveling in Europe. In that case let me know. I shall give you then directions how to reach my home best.

To take a Hamburg Taxi would be rather expensive (between 30 and 40 Deutsche Mark).

Looking forward to your visit,

sincerely Yours,

H. Hasse

1.8 14.05.1976, Edwards an Hasse

14 May 1976

New York University Courant Institute of Mathematical Sciences

Dear Professor Hasse,¹

I am sorry to report that I have heard from the Leopoldina and they say that they do not have the papers and they have no record that the papers ever were sent or received. My search for them therefore appears to have arrived at a *cul de sac*.

I very much look forward to meeting you. Was it deliberate or accidental that you changed my suggested date of June 10 to June 11? Either day is fine for me, but I thought you might prefer the earlier one. In any event, if I do not hear from you I will plan to come on the 11th, and will arrive on the 13.45–15.11 train from Hamburg that you suggest. Most probably I will arrive in Germany some days before then, so that I will not necessarily be arriving in Hamburg on the train from Holland. I am rather tall, 39 years old, with dark blonde hair and a short beard. I don't think we will have any trouble recognizing one another. I will be looking for the Springer book.

Sincerely yours,

Harold M. Edwards

1. Randvermerk von Hasse: *Dr. H.Schenck, 6101 Darmstadt-[...], Am Klingenteich*
13

1.9 18.05.1976, Hasse an Edwards

May 18, 1976

Dear Professor Edwards,¹

I got your letter of May 14[▶]. I am really sorry to have misled you about the Hensel–Kronecker–Nachlaß. I am surprised myself that I obviously did not do what I proposed to the Nachlaß–Verwalter Dr. Schenck.

I immediately wrote a letter to Dr. Schenck in Darmstadt, asking him whether he still remembers what was actually done.

It struck me also that it might be that the papers were given to the University Library of Göttingen, because, if they really were sent to me during the war, I might have had them sent to my private Göttingen address, and not to Berlin where I served as a scientific officer in the Supreme Command of the German Navy. In that case I would have them found only during the wild after war times, when it was impossible to mail them from the American occupation zone (Göttingen, then) to the Sowjet zone (Halle). With this in my mind, I immediately sent a letter to my former Ph.D. student Wilhelm Grunwald, then Director of the Göttingen Library, asking him whether he remembered having had then care of them.

I hope to have answer to those two letters I wrote very soon.

Now, as to the date of your visit, I am sorry of proposing first June 10 and then June 11; the latter was written only by carelessness. I should prefer the 10th of June. But if now by any chance you have already booked your tickets so that the 11th would suit you better, please do not upset your traveling plan. When you have made your choice, please let me have a short note, so that I can meet you at Ahrensburg station with a yellow book.

Looking forward to meet you,

Very sincerely yours,

H. Hasse

PS. Just in time I discover another carelessness. I obviously have mixed up the times of the Hamburg–Ahrensburg trains. Here the exact times:

1. Notiz von Hasse: *Erledigt durch Besuch am 10.6.76*

Hamburg Hauptbahnhof	13.45	14.05	14.45	15.05
Ahrensburg	14.10	14.31	15.10	15.30

1.10 24.05.1976, Edwards an Hasse

24 May 1976

New York University Courant Institute of Mathematical Sciences

Dear Professor Hasse,

Thank you for your letter of May 18[►]. Unless you hear from me to the contrary, I will plan to be on the 13.45–14.10 train on Thursday, June 10.

Professor Hayman in London has written to say that he received two parcels of letters from you some 10 or 15 years ago. They contained letters both of Hensel and of Kronecker. They are now in the Mathematics Library at the Imperial College and I plan to stop in London to see them on my way to Germany.

I am looking forward to our meeting.

Sincerely yours,

Harold M. Edwards

1.11 24.06.1976, Edwards an Hasse

24 June 1976

Dear Professor Hasse,

I spoke to Professor Kneser today, and he told me that he expected you would return from your trip abroad very soon if, indeed, you have not already returned. Therefore it is not too soon for me to write to thank you for your kind hospitality during my recent visit. It was a very memorable afternoon for me, and I thank you very sincerely for your cordiality and your helpfulness.

I hope you will re-examine your files and do your best to recollect what might have happened to the Hensel–Kronecker papers. Surely the period in question was a difficult and turbulent time—I am sure it is impossible for someone who has been as fortunate as I have been to imagine the difficulty—and the danger that the papers are permanently lost is very great. However, if they or some significant portion of them could be found it would surely be a great boon to the history of modern mathematics. In the Klein papers here in Göttingen there is a letter from Hensel to Klein, dated 1921, stating that Hensel has *all* of Kronecker’s scientific papers. Judging from the letter that you wrote to Halle about the Nachlass, I think it is likely that he still had all of these papers at the time he died.

Next week I plan to visit Frau Haymann in Heidelberg. I doubt that I will learn anything about the papers from her, but it does not take much to persuade me to take a trip to Heidelberg, and I think she will be a very interesting and pleasant person to meet. On the way to Heidelberg I will stop in Marburg on the off chance that the Mathematics Seminar there might retain some of the papers.

In view of the fact that the papers that you sent to Professor Hayman in London were sent in the 1950’s from the Hamburg Mathematics Seminar, it seems to me that that is the most likely place to look for the remaining papers.

I expect to be in Germany for another month and I hope you will feel free to call on me if you think I can help in any way. I plan a trip to Berlin, and in particular to East Berlin, leaving Göttingen about July 9. Do you think that it would be worthwhile for me to check at the Archives of the Academy of Sciences? You can write to me at the Mathematics Institute here until

July 9. After then the Institute may be closed and it would be better for you to write to me at the Akademische Burse, Gosslerstr. 13, Gottingen.

Again, many thanks for your cordial reception. I hope you have had a good trip and are safely returned home.

Sincerely yours,

Harold Edwards

1.12 25.06.1976, Edwards an Hasse

25 June 1976

Dear Professor Hasse,

On rereading your article of 1950 on Hensel's life, I find that you state that some of his papers were lost in a fire in a mineshaft. Do you have any record or any recollection of the basis of that statement? I plan to ask the library officials here to check their records of papers sent to mines for safekeeping, in hopes it will tell us something more about the Hensel-Kronecker papers.

With best wishes,

Harold Edwards

1.13 26.06.1976, Hasse an Edwards

26.6.1976

Lieber Professor Edwards,

Thank you for your two letters ► ► yesterday. I am back from Finnland and Swede already since June 21.

It was a great pleasure also for me to receive you and discuss with you the Hensel–Kronecker–Nachlaß–Problem and other things.

Now you remind me of the catastrophe with the books and documents burned, or rather roasted to dust, in a mine tunnel after the war. I remember well, that in the time between Hensel’s death and the end of the war the University Library of Göttingen asked all Professors to confide them their important manuscripts, reprints and other valuable literary material for being deposited safely in that tunnel. I know for sure that I followed that suggestion, and that all my reprints on number theory and algebra, received since 1921, were under the material destroyed there. It is quite possible that the Hensel–Kronecker–Nachlaß was among that lot. In order to find that out, it would be helpful to me to know the exact dates of

1. the issue of the Library’s circular to the Göttingen professors,
2. the receipt of my lot,
3. the actual displacement of all the literary material.

I am sure that these dates must be known to the University Library. I am not sure, however, whether I kept a list of all the things I committed for that purpose. When I know the above dates, or also only one of them, I can look over my voluminous collection of old letters in the hope of finding a hint or even a list of what I delivered. In case you do not find sufficient readiness to help you in the Library, contact please my former Ph.D. student Prof. Wilhelm Grunwald, Göttingen, Beethovenstr. 58. He has been director of the Göttingen University Library for long years. Now he is retired.

Looking over my recent correspondence, I am aware that I already asked Prof. Grunwald about the Hensel–Nachlaß. He sent me the following answer (6. June 1976):

“Von Hensel und Kronecker befinden sich nur einige Briefe in der hiesigen Handschriften–Abteilung, in den Nachlässen der jeweiligen Korrespondenten. In einem vor ca. 10 Jahren erschienenen Verzeichnis der Nachlässe an deutschen wissenschaftlichen Bibliotheken ließen sich die beiden Nachlässe, bzw. größere Nachlaßanteile, auch nicht nachweisen. Daraufhin hat Dr. Haenel, der Leiter der Handschriften–Abteilung, bei der Staatsbibliothek Preussischer Kulturbesitz angefragt. Dort wird ein vorerst handschriftlicher Nachtrag in dem erwähnten Nachlaß–Verzeichnis geführt. Die Berliner haben noch nicht geantwortet.”

Soviel für heute. Mit herzlichen Grüßen und besten Wünschen für Erfolg bei Ihren Nachforschungen

Ihr

H. Hasse

1.14 08.07.1976, Edwards an Hasse

8 July 1976

Prof. Edwards z.Zt. Akad. Burse, Gosslerstr. 13, Göttingen

Dear Professor Hasse,¹

I fear I have failed to get the information you asked me for. I have phoned Dr. Grunwald, but he is away on a trip and the person who answered the phone did not know when to expect him back. Both Dr. Haenel in the manuscripts section and Dr. Drews, the librarian at the institute, are also away on holiday. The former librarian of the institute, Dr. von Busse, has told me that she compiled a folder on the history of the library during the time that she was there (from 1949), and that this folder begins with a “brief report” on the materials taken into the mineshaft. Unfortunately, in the absence of the regular librarian, no one knows where to find that folder.

I spoke to Prof. Deuring this morning, and he said he would go into the matter with the present librarian when she returns. He also suggested that I speak to your student Prof. Reichardt. Since I will be in Berlin next week I will try to do that.

Of course it begins to sound very possible that the papers were lost in the mine. However, the fact that you sent so many Hensel papers and even some Kronecker papers to Walter Hayman in the 1950's is, I think, a cause for some hope.²

I will return to Gottingen July 19 and start back to America about a week later. You will be able to reach me here at the Akademische Burse³ as before. If you would like any assistance in going over your records I would gladly come to Hamburg, or, if I can help in any other way please let me know.

With best wishes,

Harold Edwards

1. Randnotiz von Hasse: *Am Mo 19.7. anrufen – [...] Do 22.7.[...]*

2. Dieser Satz ist mit einem Fragezeichen am Rand versehen.

3. undeutlich

1.15 20.07.1976, Edwards an Hasse

20 July 1976

Dear Professor Hasse,

I see that there is a fast train from Göttingen to Hamburg which will put me in Hamburg at 12¹⁴. Therefore I should be able to get a room and arrange my luggage in time to catch the same train to Ahrensburg that I took before and arrive in Ahrensburg at 14¹⁰ on Thursday.

I am looking forward to seeing you again.

Sincerely yours,

Harold Edwards

1.16 17.08.1976, Edwards an Grunwald

August 17, 1976

New York University Courant Institute of Mathematical Sciences

Dear Professor Grunwald:

I imagine that Professor Hasse has already contacted you for information about the documents from Göttingen that were lost in the mineshaft in 1945. It now seems, alas, that the Kronecker and Hensel papers were very probably among those documents. In hopes of confirming or refuting this hypothesis, Professor Hasse would like to know, if possible, the exact dates of 1) the issue of the library's circular to Göttingen professors asking for their valuable papers, 2) the receipt of Professor Hasse's lot, and 3) the actual displacement of the material. Of course if there were an inventory list of Professor Hasse's material, that would be of great interest.

I tried to reach you by phone when I was in Göttingen in July, but unfortunately (for me) you were away. Any information you could provide me about these matters or about the loss of the papers in the mineshaft would be very much appreciated.

Please respond in German if you prefer.

Sincerely yours,

Harold Edwards

mjd

1.17 17.08.1976, Edwards an Hasse

August 17, 1976

New York University Courant Institute of Mathematical Sciences

Dear Professor Hasse,

The Brahms Memorial Room was not really worth seeing, but I did learn something about Brahms, and afterward I went to the Museum of the History of Hamburg, which did have a lot of interesting material.

I have written both to Professor Grunwald in Göttingen and to Professor Stellmacher in Maryland (formerly of Göttingen) in hopes of learning more about the mineshaft fire and of getting for you the information you asked for in your letter of 26.6.1976▶. I will let you know what, if anything, I learn.

My trip to Germany was very enjoyable, but, as you know, it is always good to get home. Many thanks for your hospitality and for all your help.

Sincerely yours,

Harold Edwards

1.18 20.09.1976, Edwards an Hasse

September 20, 1976

New York University Courant Institute of Mathematical Sciences

Dear Professor Hasse,

I trust you have received the information which Dr. Haenel sent you. Was this of any help in your search for clues to the fate of the Kronecker–Hensel papers? So far I have not heard from Professor Stellmacher.

With best wishes,

Harold Edwards

HE/mr

1.19 01.10.1976, Hasse an Edwards

1.10.1976

Dear Prof. Edwards,

Thank you for your letter of Sept. 10. I have received Dr. Haenel's letter about the papers deposited in a mine in 1944. I have again searched in my correspondence for details about that action, but without any success. So I believe we must give up all hope of getting certainty about the fate of the Kronecker–Hensel papers.

Kind regards,

Yours sincerely,

H. Hasse

1.20 05.08.1977, Edwards an Hasse

August 5, 1977

New York University Courant Institute of Mathematical Sciences

Dear Professor Hasse,

Enclosed is a copy of an article¹ I have written for *Historia Mathematica* on my search for the Kronecker–Hensel papers. I do not intend to submit it for publication until late September, and I would be very grateful for any corrections, criticisms, or other comments you might wish to make.

Many thanks for your help in this matter, and for your generous hospitality. I hope that we will meet again.

Sincerely yours,

Harold Edwards

mjd

1. vermutlich eine frühe Version von *On the Kronecker Nachlass* ▶

1.21 12.08.1977, Hasse an Edwards

12.8.1977

Dear Professor Edwards,

Thank you for sending me a copy of your article¹ on the Kronecker–Hensel papers. I have read it with great interest. I have not much to remark on it.

One thing is the fact that in the mean–time my memory has continued to get worse, even for things that I said or did the other day.

The second is that also to me it appears most probable that the missed Kronecker–Hensel documents were amongst those which I sent to be deposited in the mine near Göttingen.

On p.4, line 5–6 you mention that I “warned” the authorities that both Kronecker and Hensel were “nicht–arisch”. I do not think that this was meant as a “warning”. My idea must have been, that I left them the liberty to return those papers, if they had to fear that Anti–Jewish authorities would refuse the inclusion of those papers. Is it necessary to stir such unpleasant things up again?

In pleasant memory of your visit, Yours very sincerely,

H. Hasse

1. siehe Fußnote zum Brief vom 5.8.1977►

1.22 01.09.1977, Hasse an Edwards

1.9.1977

Dear Professor Edwards,

Quite accidentally I found to-day in my desk at the Mathematical Institute of the University Hamburg the enclosed folder full with correspondence about the Hensel-Nachlaß, containing also new information about the Kronecker-Nachlaß. I hurry to pass it over into your hands.

With it also lay a folder with 50 letters written by Emil Artin to me between 1923 and 1953, mostly about our common problems in number theory, but also more personal things. If you are interested in them, too, I can let you have them for historical evaluation.

Yours very sincerely,

H. Hasse

1.23 04.10.1977, Edwards an Hasse

October 4, 1977

New York University Courant Institute of Mathematical Sciences

Dear Professor Hasse,

Thank you very much for your letters of 12 August[▶] and 1 September[▶] and for the interesting folder of letters from your files. Unless I am mistaken, you already showed me this folder in July 1976. In any case, the only new information—apart from the minor fact it was in 1956, and not in 1954 as I said in my paper, that you sent the packets to Hayman—was the first paragraph of your letter of 30 November to Hayman. There you mention a “grosse Reihe” of papers you received via Dr. Schenck following Hensel’s death. The letter would seem to say that you are transmitting *all* of the papers you received, but this would contradict facts that are mentioned in your correspondence in the 1940’s with the Leopoldina and would contradict what you say in your Hensel *Nachruf* about papers having been destroyed in the mine. It seems to me that you must have intended here to refer to the *last installment* of the “Reihe” which you received in 1951 (you say “three years ago” on 2 February 1954 and Ruth Haymann’s letter saying the papers were about to be sent is dated 5 October 1951) in connection with the closing of the house in Marburg. I have made copies of those letters that you have marked in red, and I am returning the entire folder, with many thanks.

I would be very interested in seeing your letters from Artin. I am not at all sure of my competence to make a “historical evaluation” of them, but I would be glad to try. Will these papers too eventually go to Göttingen library?

In your letter of 12 August[▶] you object to my use of the word “warn” on page 4 of my article[▶] in connection with Hensel and Kronecker’s being “nichtarisch” and you ask whether it is necessary to stir up such unpleasant things again. I felt that it was important that I make some mention of this aspect of the story lest the intelligent and well-informed reader think that I was overlooking what is obviously an important factor. When I used the word “warn” I meant precisely what I think you say was your purpose to “leave them the opportunity to return those papers if they had reason to fear that the anti-Jewish authorities would refuse the inclusion” of them.

However, some others I have asked also found a negative connotation in the word “warn” and I have changed it in the revised version ▶ to “point out to.”

I was in Germany a few weeks ago—unfortunately nowhere near Hamburg—and I learned some new facts about the mine explosion which are included in the revised version of my article which is enclosed. I hope you will find it interesting and, as before, send me your criticisms of it. In an added few sentences on the last page I have speculated a bit on your inability to remember what became of the papers, saying that I think that as an active mathematician you were perhaps, at least at that time, not inclined to assign great value to historical papers. Please let me know if you think this is wrong and I will delete it.

I was sorry to hear that you are increasingly plagued by forgetfulness, but I hope that in other respects your health is good. I too have very pleasant memories of my visit to Ahrensburg, and I hope I will have the opportunity to see you again before too long. I am very sincerely grateful to you for your helpfulness with my project.

With best wishes,

Harold Edwards

HME/mr
Encls.

1.24 08.02.1978, Edwards an Hasse

February 8, 1978

New York University Courant Institute of Mathematical Sciences

Dear Professor Hasse,

The mail room at our institute, contrary to my wishes, sent my October 4 letter▶ and the accompanying materials to you by sea mail. They did the same with a number of other items that I mailed at the same time, and I know that in the cases of these other items they did not arrive until December, at the soonest. I do hope that the letter to you did ultimately arrive and that I will hear from you soon. If it did not arrive, please let me know and I will send duplicates immediately.

With best wishes for the new year,

Harold Edwards

HME/mr

1.25 15.02.1978, Hasse an Edwards

15.2.1978

Dear Professor Edwards,

In answer to your letter of February 8, 1978►, I can confirm that I received your letter to me of October 4, 1977►. I found it in the Math. Institute in Hamburg in my folder, entitled “Hensel Nachlaß”.

As to “accompanying materials”, I cannot confirm the same, unless you let me have a closer description of what they were. From that letter of last October it seems to me, that this accompanying materials were what had collected in the folder “Hensel Nachlaß”, this folder I found to-day in the Institute.

I am glad you show interest in my letters from Emil Artin. I shall mail them to you within the next days. I overlooked your remark, that you would like to look at them in your latter of Oct. 4, 1977, and rediscovered it to-day in looking again to that old letter of yours.

Yours very sincerely,

H. Hasse

1.26 21.02.1978, Edwards an Hasse

February 21, 1978

New York University Courant Institute of Mathematical Sciences

Dear Professor Hasse,¹

Many thanks for your prompt reply[▶] to my letter. The accompanying materials to my letter of 4 October[▶] were (1) files of your correspondence with Ruth and Walter Haymann and others relating to the Hensel Nachlass and Walter Hayman's visit to Hamburg, and (2) a copy of the latest version of my paper concerning the Kronecker–Hensel papers.

With regard to (1) I enclose a copy of your letter that was sent with the file and a copy of one letter from the file so that you can check to see whether you have again the originals. With regard to (2) I enclose a new copy of the article. Please let me know whether you have any criticisms or objections to the article.

With best wishes and many thanks for all your helpfulness,

Sincerely yours,

Harold Edwards

P.S. And thank you again for the offer of the Artin letters. I would like very much to see them.

1. Randnotiz, wohl von Hasse: *Anlage nur S. 1–13: On the Kronecker Nachlass*

1.27 24.02.1978, Edwards an Hasse

February 24, 1978

New York University Courant Institute of Mathematical Sciences

Dear Professor Hasse,

Many thanks for the Artin letters, which just arrived. I will look them over, make copies, and return them to you relatively soon. Are these letters too destined to go to the Göttingen University Library? ¹

With friendly greetings,

Harold Edwards

HME/mr

1. Randvermerk von Hasse: 4.3.78: „ja“

1.28 23.03.1978, Edwards an Hasse

March 23, 1978

New York University Courant Institute of Mathematical Sciences

Dear Professor Hasse,

Thank you very much for the Artin letters. I have copied them and I will be returning them to you soon.

As you may know, Natascha Artin Brunswick is a colleague of mine here at the Courant Institute. I hope you would have no objection to my showing her the letters. Also, she suggested that Michael Artin and John Tate would probably be interested in seeing them.

I have once again revised my Kronecker Nachlass article, I hope for the last time. The major change is that I recently learned that the Mathematics Institute library suffered much greater losses in the mine explosion than I had previously been led to believe. Also I have deleted the next-to-last paragraph.¹

Many thanks for your help and encouragement.

Sincerely yours,

Harold Edwards

mjd

1. Randnotiz von Hasse: “?”

1.29 04.05.1978, Edwards an Hasse

May 4, 1978

New York University Courant Institute of Mathematical Sciences

Dear Professor Hasse,

Enclosed is the final version of my article on the Kronecker Nachlass. It will be published by *Historia Mathematica* later this year. In view of the fact that I quote directly from a letter you sent me, (see pages 1–2) and from a letter from Dr. Haenel to you (see pages 8–9), the publishers have asked me for written permission from you to publish these quotations. For your convenience I have enclosed a letter of the type they require. If you would sign it and return it I would be very grateful.

I am sending back the Artin letters. Many thanks for sending them to me. And thank you for all your other help and cooperation. I hope we will meet again soon.

Sincerely yours,

Harold Edwards

HME/mrf

Encl.

Bestätigt u. gewünschte Ermächtigung beigelegt (nach Rückkehr v. längerer Reise) –25.6.78

1.30 30.06.1978, Edwards an Hasse

June 30, 1978

New York University Courant Institute of Mathematical Sciences

Dear Professor Hasse,

Many thanks for your note and for your signing of the permission slip. The publication of the article can now proceed, and I hope it will be out some time next fall.

With best wishes,

Harold Edwards

mjd

Kapitel 2

Weiteres Material zu Hasse/Edwards

2.1 03.09.1976, Haenel an Hasse

3.9.1976

Niedersächsische Staats- und Universitätsbibliothek Göttingen

Handschriftenabteilung

34 Göttingen, Prinzenstrasse 1

Az.: V 11-N

Sehr verehrter Herr Professor!

Herr Professor Grunwald übergab mir in der vorigen Woche den in Kopie beigelegten Brief von Herrn Professor Edwards vom 17.8.76►. Die Einsichtnahme in die bei uns erhaltenen Akten über die Auslagerungsaktion, mit deren Durchführung damals unsere Bibliothek betraut war, brachte folgendes Ergebnis:

1. Das Rundschreiben des Kurators der Universität (also nicht der Bibliothek) über die Auslagerung der Bücherbestände von Universitätsbibliothek, Institutsbibliotheken und Privatbibliotheken von Professoren ist vom 24.2.44 datiert.
2. Wann Ihre Bücherkisten übernommen wurden, geht aus den Akten nicht hervor.
3. Von Göttingen abtransportiert wurden Ihre Kisten am 26.4.44.
4. Weder für Ihre Kisten noch für die der wenigen anderen Professoren, die an der Auslagerungsaktion beteiligt waren, gibt es in unseren Unterlagen ein Inventar.

Ich darf bei dieser Gelegenheit vielleicht noch daran erinnern, daß Sie 1953 einmal kurz mit der Bibliothek über den Verlust Ihrer Bücherkisten korrespondiert haben. Mit Schreiben vom 29.7.53 wurde Ihnen damals bestätigt, daß der gesamte in das Bergwerk ausgelagerte Bücherbestand bis auf wenige Exemplare vollständig vernichtet wurde und sich Bücher aus Ihrem Privatbesitz nicht angefundener hätten. Unter diesen Umständen müssen doch wohl auch die vermissten Nachlassmaterialien von Hensel und Kronecker als verloren gelten.

Mit verbindlichen Empfehlungen meinerseits und mit besten Grüßen von
Herrn Professor Grunwald
Ihr sehr ergebener

Dr. Haenel

Durchschlag an Herrn Prof. Edwards
und Herrn Prof. Grunwald

2.2 etwa 1976, *On the Kronecker Nachlass* von Harold Edwards

On the Kronecker Nachlass

Harold M. Edwards

This article is an account of my unsuccessful efforts to find the scientific manuscripts or *Nachlass* of Leopold Kronecker (1823–1891), and of my reasons for believing that these papers survived intact until 1945 but then were accidentally destroyed. In the same accident, I believe, the papers of Kurt Hensel (1861–1941) and many other valuable documents were lost.

Initially my interest was in the work of E. E. Kummer (see [2]). In particular, I hoped that it might be possible to find the originals of the letters from Kummer to Kronecker which Hensel excerpted in his Kummer memorial volume [4]. This led me naturally to Hensel and to Hensel's *Lieblingsschüler* Helmut Hasse (1898–). In the meantime, I had taken note of Pierre Dugac's remark in this journal [1] about the lack of any Kronecker *Nachlass*, and this stimulated my interest in finding any of Kronecker's papers, not merely Kummer's letters to him.

Hasse responded to my inquiry in a letter written March 18, 1976. He said that it had been agreed, sometime not long after Hensel's death in June 1941, between himself and Dr. Hans Schenck, who was Hensel's son-in-law and executor of the estate, that both Hensel's and Kronecker's *Nachlass* would be entrusted to the archives of the Leopoldina Academy in Halle. However, he warned me that he did not have "any document confirming that I acted correspondingly." He went on to say, "I was occupied by the German Navy as a scientist at that time, and at my present age of nearly 78, I cannot remember what I actually did 32 years ago."

Despite Hasse's warning that he could not be sure what had been done with the papers, this was the first indication I had that there was such a thing as a Kronecker *Nachlass*, and since it had existed as recently as 1942, I was guardedly optimistic that it might be found. Unfortunately, the Deutsche Akademie der Naturforscher Leopoldina wrote to me in April, 1976, in response to my inquiry, that, although the Academy had lost some documents in the Second World War and the Hensel and Kronecker papers might have been among them, there was absolutely no indication in their records that such papers had ever been deposited with them. I have since

decided, for reasons described below, that the papers were never sent to Halle.

Hasse also suggested that I contact Walter Hayman, who is Professor of Mathematics at the Imperial College in London and is Hensel's grandson. Hayman wrote to me that "ten or fifteen years ago" Hasse had sent him two parcels of papers belonging to Hensel and to Kronecker. I stopped in London on my way to Germany in early June, 1976, and inspected these papers which are on deposit at the Mathematics Library of the Imperial College of Science and Technology. Although these are by no means the papers that I was looking for, there is material there that may be of interest to historians of mathematics.

The bulk of the papers there are related to Hensel's courses on number theory over the many years that he was Professor in Marburg. These I think are of limited interest. However, there is also a collection of letters written to Kronecker by various mathematicians, including such well-known men as F. Klein, L. Königsberger, F. Luroth, E. Netto, M. Noether, R. Sturm, J.J. Sylvester, and J. Tannery. There is also a brief personal note from Riemann to Kronecker, written in 1866. This is not a large collection of letters—about 35 correspondents, most represented by only one or two letters and none by more than 20—but it might contain a few valuable pieces.

I was Hasse's guest at his house near Hamburg on the afternoon of June 10, 1976. He expressed great interest in the project of finding the lost papers, and he left me alone to study his correspondence with Hensel and his correspondence relating to the Hensel estate.* One thing that became clear from this correspondence was that indeed Hensel did have the complete mathematical *Nachlass* of Kronecker in Marburg at the time he died. Another thing that was clear was that the Hensel-Kronecker papers had not in fact been sent to the Leopoldina. Hasse's last letter to the director of the Leopoldina did confirm that all parties—himself, the Leopoldina, and the Hensel family—were agreed that the papers would eventually go to the Leopoldina, but Hasse wrote that he wanted to go through the papers and put them in order and that he would not be able to do this during wartime. Thus it seems that the papers were in Hasse's own possession at this time, in 1943, and that he intended to keep them until the war's end.

(In connection with the proposed transfer of the papers to the Leopoldina, it should perhaps be mentioned that Hasse did point out to the authorities

*. All of these documents have been willed to the University Library in Göttingen.

there that both Kronecker and Hensel were “nichtarisch”. This at first seemed to pose a very serious obstacle to the idea, but, for reasons that are not clear from the correspondence, it was not mentioned later on. What the more subtle implications of this aspect of the story might have been I am certainly not competent to judge.)

Unfortunately, Hasse simply could not remember what he had done with the papers, and he could find nothing in his files to jog his memory. I mentioned the papers I had seen in London, those which he had sent to Hayman in the 1950’s, but he had no recollection of them and showed no interest in them. I confess I did not know what to make of this memory lapse. On the one hand, it seemed incredible that he could simply have forgotten what he did with the Kronecker–Hensel papers, particularly in view of his great feeling for Hensel and his continuing ties with the Hensel family. On the other hand, he was 78 years old, he had had some serious illnesses, and in the immediate postwar years he had had many more serious concerns than these papers.

In the university library in Göttingen I found further confirmation of the fact that Hensel had all of Kronecker’s papers. In the papers of Felix Klein is a letter from Hensel telling Klein that he is perplexed by his inability to find a particular manuscript of Kronecker’s that Klein had asked to see. “I can’t imagine”, he wrote, “where Kronecker could have kept it, because at that time [when Kronecker died] all of his papers with mathematical content were to be turned over to me.” While I was in Göttingen I also happened to reread Hasse’s memorial article [3] on Hensel, and I noticed this time that in it he refers to papers containing some of Hensel’s later work which “unfortunately, along with much other valuable scientific material of Göttingen University, was burned in a mineshaft after the war.” I had already heard the story of Göttingen papers having been destroyed at the end of the war, and had thought it was a story that should be looked into, but this was the first time that I saw that it might be connected with the Kronecker–Hensel papers.

I heard many conflicting versions of the story both before and since my visit to Germany in 1976. Some versions have it that the papers were burned, some that they were destroyed by water, and some that they were “roasted to dust.” One romantic version even has it that they were deliberately destroyed by a Nazi lieutenant who did not want them to fall into enemy hands. There are also conflicting reports about the losses suffered by the library of the Göttingen mathematics institute in the incident, some saying that the

valuable and irreplaceable collections of lecture notes had been totally lost, and others saying that nothing at all was lost. Some of the most concrete and reliable information I have on the subject comes from a letter written to me by Dr. Klaus Haenel, Director of the Manuscripts Section of the Göttingen University Library. It is dated 21 February 1977:

“In answer to your question as to whether the books which were relocated in the Volpriehausen mine were destroyed by fire or water, I can, after again examining our records of the relocation operation, tell you the following: By far the greatest part of the more than a quarter million relocated volumes (predominantly from the holdings of the libraries of the various institutes at the university) was burned in a mine explosion on 29 September 1945. From what remained, subsequent salvage operations—which were already somewhat hindered by seepage—brought up about 6,000 volumes from the 660 meter deep shaft before it was finally completely flooded with water.”

(My translation from the German.)

Later, in September 1977, when I was again in Göttingen, Dr. Haenel gave to me a clipping from the *Göttinger Tageblatt* newspaper of 2 August 1977 which dealt with the Volpriehausen incident (in connection not with the loss of papers but with the possible loss of treasures of amber). This newspaper article spoke not only of an explosion but of one in which “the mineshaft tower vanished from the face of the earth, and gearwheels and steel girders weighing tons flew more than 300 meters through the air, killing two of the mineworkers.” This article and some further investigations by Georg Striker of Göttingen brought out the following amazing story.

The mine of Volpriehausen (about 20 miles from Göttingen) was not active in 1937 when it was decided to establish a *munitions factory* there, using the abandoned mineshaft as a warehouse. Sometime around 1943 it was decided, incredible as it seems, to use the lowest reaches of the mine, beneath all the storehouses of explosives, to store valuable papers from the University of Göttingen and also from the recently evacuated University of Königsberg. The mine was also used to store field rations, and in the early post-war period refugees were pilfering these and other valuables from the mine and even taking up residence in the mine. This was the situation when an explosion occurred in the early morning hours of 29 September 1945. This

first explosion was followed by a fire with a flame spouting 100 meters out of the mineshaft; the fire burned out of control for 24 hours and then the gigantic explosion described above occurred. Following this explosion the mine rather quickly filled with ground water. It was then capped and it remains capped to this day.

Eyewitness accounts affirm what one would suppose from the above description of the incident, namely, that nothing could have been taken out of the mine after the first explosion. There are indications that removal of the papers had already begun before the explosion occurred, and it seems reasonable to suppose that this, and not salvage operations, accounts for the papers which survived.

As for the losses to the University library and the mathematics institute library, they seem to have been slight. The University library says that its director decided that the mineshaft was not safe—in all likelihood he was aware of the situation in Volpriehausen—and, feeling that he had to send something, he sent only bound volumes of old newspapers. Similarly, the mathematics institute sent bound volumes of journals and lost in this way its complete sets of Crelle and of Liouville's Journal, among others. Fortunately these libraries still have the priceless papers of Gauss and Riemann and the irreplaceable collection of mathematics lecture notes to show for their prudence.

However, individual professors at the university were also offered the opportunity to turn over their valuable papers for "safekeeping" in the mine. Hasse, being away from Göttingen at the time, may have had less reason than others to doubt the security of the mine. In any case, he did send papers to the mine. He has no record of what he sent, but it would appear that he sent his most prized papers because all his reprints in number theory were lost, whereas he still has his reprints in other subjects. Thus it seems most likely that the missing Kronecker–Hensel papers were among those that were sent. On his behalf I made inquiries at the Göttingen library about the disposition of his papers, and he was sent the following information by Dr. Haenel on 3 September 1976:

"Examination of our records of the relocation operation for which our library was then responsible produced the following result:

"1.) The memorandum of the Curator of the University (thus *not* the library) concerning the relocation of the holdings of the

university library, the institute libraries, and private libraries of professors, was dated 24 February 1944.

“2.) The records do not show when custody was taken of your boxes of books and documents (*Bücherkisten*).

“3.) Your boxes were transported out of Göttingen on 26 April 1944.

“4.) Neither for your boxes, nor for those of the few other professors who participated in the relocation operation, do our records contain an inventory.

“Perhaps I may also remind you on this occasion that you had a brief correspondence with the library in 1953 about the loss of your materials. In a letter written to you on 29 July 1953 it was confirmed that the entire collection of books relocated in the mine, except for a few items, were totally annihilated, and none of the books from your private collection were found.” (My translation.)

Thus if the Kronecker–Hensel papers were sent to the mine they are surely lost. Hasse’s files contain correspondence indicating that at least some materials were shipped from Hensel’s study in Marburg to the Mathematics Institute in Göttingen where Hasse, although he was in Berlin doing war work, was on leave as Director and where he returned as frequently as possible to be with his wife and daughter. In view of the fact that Hasse did say in 1949 [3] that some of Hensel’s papers were lost in the mine, and in view of the fact that there is no trace of the papers in Hasse’s very extensive records and papers today, the conclusion that they were lost in the mine seems almost inescapable.

The papers of Hensel and Kronecker that I had seen in London proved that some papers had survived, and for some time I held out hope that others might have escaped destruction. However, this basis for hope was completely removed on my visit to Hasse in July, 1976. He had told me rather excitedly over the telephone that in going over his records of the 1950’s he had found some new information. The “new information” turned out to be the fact that he had sent some documents to Hayman in London. Unlike Hayman, Hasse had complete records of this transaction, and these showed, unfortunately, that the existence of these few papers gave no reason to believe that there were any others.

The fact was that the papers in London were those which had remained in Marburg. (Both Hensel and his wife inherited considerable wealth, and when he became professor in Marburg in 1901 they built a very large and very fine house there, in which he lived for the rest of his life. Surprisingly enough, his widow lived there, though with many difficulties, throughout the Nazi period—leaving only in 1951—despite the fact that both she and her husband were from Jewish families, despite the fact that one of her daughters, Ruth Haymann, had taken refuge in England with her family in the 30's, and even despite the fact that her daughter-in-law, Marie-Louise Hensel, who was not Jewish, was arrested by the Gestapo for trying to help Jews to escape and took her own life in prison shortly after her arrest in August 1942.)

Hasse's records show that when the Hensel house was vacated in 1951 (it now houses an institute of the University of Marburg) the remaining mathematical papers were sent to him in Hamburg. Three years later, in 1954, Hasse sent the executor, Schenck, an inventory of all the papers he had received, including the letters to Kronecker, which he calls "quite interesting for the history of mathematics in the last century." The papers which Hasse sent to Hayman in 1956 and which I saw in London were clearly part of this collection. Thus, far from being an unexplained fragment which might indicate the existence of more papers elsewhere, these papers were fully accounted for. Clearly most of the mathematical papers were removed from the house during the war and the few that were left behind were sent to Hasse, the scientific heir, when the house was closed.

Equally as discouraging to me as the fact that the London papers were fully explained and documented was the fact that Hasse had completely forgotten that I had asked him more than once about these papers during my visit in June, and had even forgotten that it was in response to my questions about them that he had been going over his files for the early 1950's. This failure of memory made it more believable that he had indeed simply forgotten what he did with the Hensel-Kronecker papers and made the conclusion more inescapable that all of the papers were lost in the mine explosion. In fact, on reflection, it seemed to me probable that Hasse, being a mathematician with no great interest in historical matters, simply did not assign the same importance to these papers that I did; in this connection it may be significant that he did mention in print the fact that papers of Hensel containing *unpublished* work were destroyed. In other words, Hasse may have felt that the papers had no mathematical value but only an antiquarian, and

therefore entirely secondary, value.

Naturally it is with reluctance that I have abandoned the search, the more so because my interest in Kronecker's work has been increasing and because I find Kronecker's style of presentation in his published papers obscure and unmotivated. On the other hand, we are fortunate enough to have the complete published works of Kronecker, edited and very carefully annotated by Hensel over many years—the first volume having appeared in 1895 and the last in 1931. Certainly Kronecker could have had no more capable and devoted editor, and the presentation of Kronecker's great contribution to mathematics in these volumes is, for better or worse, the one which Kronecker himself chose to give.

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Kapitel 3

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