

INTRODUCTION
TO
DAVID GANS:
HIS LIFE, BACKGROUND, AND WORKS

Respectfully Submitted in Partial
Fulfillment of the Requirements
for the Degrees of Rabbi and
Master of Hebrew Literature
by

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1937

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INTRODUCTION

Although he is not the brightest star in the galaxy of Jewish scientists and historians of the sixteenth and seventeenth centuries, David Gans must be considered one of the 7170 '7177. His scholarly pursuits are distinguished by their encyclopedic erudition. The intellectual curiosity, sobriety, painstaking detail and orderly treatment which characterize his works, are indicative of an unusually fine mind. Notwithstanding that we may be impressed overmuch by his limitations, we must remember him as a pioneer in his work among German Jews. Were he an unimportant and mediocre figure, he would be important, at least, to know intimately, in order that many lacunae in our knowledge of his times may be filled. But his eminent position in Jewish history cannot be gainsaid.

A great deal can be done in the further study of Gans. Much can be said on the basis of what has already been determined¹ or is apparent at once in the works of his which are extant. But most of it would be beyond the scope of this thesis. Our purpose is simply one of giving an introduction to David Gans, which is, more or less, a compendium of what is presented in widely scattered articles, with the addition of a few minor corrections and a few new details derived from the original sources. The bibliography on Gans which we present in the latter part of this study is, to a great extent, complete. Unquestionably, there are items which we have overlooked or have omitted involuntarily. There

¹ As far as we know, no thorough-going treatment has ever been accorded him. The most that has been done is rather sketchy, or deals at length with only one or two phases.

are, for example, articles written in Russian, Polish and other Slavic tongues with which we could not cope, due to our ignorance of those languages.

CHAPTER I

Very little is known of David Gans himself. In accordance with Jewish tradition his personal life was not permitted to intrude itself into his works. ¹ Nearly everything we know about him must be inferred from what he wrote and the manner in which he wrote it. There are, however, some exceptions. On the one hand, there are a few personal references in his books, which are introduced only to corroborate some point at issue, or by way of dedicating the *717 nm5* to his brother Solomon. On the other hand, there are a few extraneous sources which provide us with some important information.

We know that David Gans was born in Westphalia in 1541. ² Many writers have stated without proof that Gans was born in the city of Lippstadt,

¹ As a rule Jewish books do not emphasize the author. Witness the unusually large number of anonymous Jewish writings.

² למחזור ח"ג ע"כ 1541: "זאת ש"ח חלק תקמ"א לנוכחים היה שנת מולדתי....."
loc. cit. ע"כ 201: "אני הכותב הייתי יושב צמדינה הריא צמדינת וועטשטאלן זאנץ
 מולדתי שנים נשות."

".....זאנץ מולדתי....." *loc. cit.* ע"כ 1555: "צמדינת וועטשטאלן זאנץ מולדתי....."
 Hook, in Lieben's 79-77, p.10, has pointed out that Zuns, in his essay in The Itinerary of R. Beni. of Tudela, edit. Ascher, does not seem to know definitely the year of Gans' birth. For Zuns states there (Vol.II, p.278) that the year of his birth is "c. 1540", around 1540. Concerning which Hook says: "Er sagt bloss „about 1540“, wozu er als Quellen Z. D. II. A.801, 1540, 1556 nennt. Merkwürdigerweise hatte er A. 1541 das. übersehen, wo Gans ausdrücklich מולדתי שנת מולדתי sagt."

Westphalia.¹ From the modest tombstone of David Gans² one can ascertain

¹ Kohut, Gesch. der deutsch. Juden, p.536; Karpeles, Gesch. der jüd. Literatur, Vol.II, p.329; article "Gans" by שלמה זלמן in המזרח, Vol.III, p.233; article "Gans" in Encycl. Jud., Vol.VII; Zuns, Gesammelte Schrift., I, p.185; et al. Grünwald, in Illustrierter israelit. Volkskalender für das Jahr 5650, p.104, attempts a proof; but, according to his own references (Z.D.II pp.178 and 181 of the Warsaw edition of 1878, i.e. referring to the years 1541 and 1556), he succeeds only in showing that Gans was born in Westphalia in 1541. Although Steinschneider does not prove this in Die geschichtsliteratur der Juden, I. Abteil., p.109, § 132, and in Zeitschrift für Mathematik und Physik, 1871, p.252, there are indications that he depends on a Ms. which narrates the story of a R. Seligman Gans, of Lippstadt, whom he believes to be Gans' grandfather. There may be other facts in that Ms. which lead him to state unequivocally that David Gans was born in Lippstadt. Cf. פלאג מסמכות ק"ק פלאג p.69, footnote:

.....אם זקנו של ר' דוד נקרא זעליצמן ואולי הוא תואר ליפשיטט אהרן
האריכו לו את קיומו צעיר הזאת עשר שנים, על אשר כליה את העיר
זאצת אדיסק, עיי' כ"י המצורג צנאימת רמא"ט.....

² Jerábek, Der alter prager Judenfriedhof, p.14: "Bei weitem anspruchsloser als die grosse Denkmal Bezalel Löws ist der einfache, längliche, oben-spits verlaufende Grabstein, unter dem.....der gelehrte David Gans... seine letzte Ruhestätte fand." The epitaph is clearly legible in the photograph of the grave in the Jew. Encycl. V, 566, or in the aforementioned book of Jerábek. V. also פלאג מסמכות ק"ק פלאג p.62, No.9 and 74-75, p.4, No.9.

that he died in Prague on August 22, 1613.¹ Of his father we know nothing

¹ The epitaph reads:

י"ו ה' ה' חול" (a)

ש"ס ל"ק א"ס

החסי

מקד"ו (b)

גנז ז"ל זעל" (c)

נחמ"ו

מקד"ו שלמה

גנז תנ"ס ק"

Zuns in Itinerary of R. Benj. of Tudele, Vol.II, p.278 reads line (a) as follows: The fifth day (of the week), the eighth of Elul. This would correspond to August 25th. But S.11, Ammerk.33, points out: "Zuns.....hat 25. August, dem 8. Elul entsprechend, wir glauben jedoch dass es in der Grabstein חול" ה' heissen muss, weil der dort zugleich angegebene Donnerstag damals auf den 5. Elul fiel." Again: ".....er Donnerstag 22. August 1615 starb." It is not necessary, however, to change the ה' into a ח' . The epitaph can read: the fifth day of the month (ח' - חול") of Elul; since there is no necessity for stating the day of the week, that being implicit in the date of the month. The change of ה' into ח' has, though, some justification. Either the awkwardness of the stone carver or the weather may have cut away the characteristic opening in the letter ח' . This can be seen in line (b) where the ח' in the abbreviation מקד"ו looks like a ה' . The absence of skill in the stone-cutter is apparent in the poor spacing and in the letter at the end of line (c) which seems to be an error of some sort. Perhaps it was left there after the error had been made, to suggest to the reader

except his name, Solomon,¹ and the fact that he probably was a scholar.² His grandfather, Seligman, to whom Steinschneider refers,³ is mentioned only once by Gans⁴ as being a follower of Asher Lämmlein, the pretended

the phrase לְבַל כְּדָקָה, an appropriate sentiment on a tombstone. Jew. Encycl. vol.V (article 'Gans'), Steinschneider, Catal. Bodl (article 'Gans'), Cassel (in Ersch u. Gruber, 1st section, article 'Gans'), article גאנז in שכחל , III, 233, also have the incorrect date August 25, 1613.

¹ X., his epitaph. Also at end of the introduction to כְּמִחָה , p.4. (The Warsaw edition, 1878, is the text we shall refer to unless otherwise indicated.) we read the following:

דוד הוא הקטן מן לאדוננו חזינו כמ שלמה ז"ל ה"ה חנוכה הנקרא דוד גאנז.
(We have corrected the abbreviation which reads in my text as זל"ה.)

² Grünwald, Illustr. isr. Volkskal. für das j. 5650. p.101: "Rabbi"..... ein Attribut, mit welchem im 16. Jahrhundert nur talmudische Gelehrte bezeichnet wurden." Those deceased who had not been scholars in their lifetime were only honored by the title of כ"ה or ז, no matter of how distinguished a lineage, v. גל. 74 . 1.2.

³ X., p. 4, note 1.

⁴

למח דוד ח"ח ה"ח ל"ס (קמ"ה):
ווא"מ [וואדווי' מורי] זקני זעליקמאן גאנז הרם
ונתץ תגור המיוחד למכירות צפצפחותו הגבורה
שלשנה הנאה יאסה מכרות זאקץ הקדושה.

forerunner of the Messiah. In a document described by G. Wolf,¹ we are led to believe that he was not only a scholar² but also a man of some importance in the community. Joshua, an older brother of Gans³, is also known as Seligmann. His epitaph in the same cemetery in which Gans lies, attributes to him the scholarly and authoritative titles מורנו and הגהון.⁴ Both David and Joshua (also called Seligmann) had children. This is known

¹ Grünwald, loc. cit., states that Wolf describes a document (dated Sunday, Dec. 21, 1578) in Steinschneider's Hebräischer Bibliographie, Vol. IV, p. 40 which contains the following information: "...finden wir von Seiten der Ältesten vier Männer gewählt, welche bei der Obrigkeit unterhandeln sollen, damit die „jüdische Ordnung“ erhalten werde, und unter diesen vier Männern befindet sich an erster Stelle R. Seligman Gans."

² He is called נב in the document.

³ In the dedication of his ספר זיו to his brother (p. 5) he says:

הלא הוא אהובי אדוניי חיי חצ"צ' כמזכר יחולץ
המכונה זעליגמאן גנז י"ו.

Also (y. p. 6, note 1) he speaks of himself as:

ידו הוא הקטן בן לאדוננו חצ"צ'.....

⁴ I. X. מספחות ק"ק פראג, p. 62, No. 17. His epitaph reads:

שט"ט, טבת, הגהון מ' זעליגמאן גנז דן דן אחת לפני צ"ת.

This places his death in December, 1608. Grünwald, loc. cit., p. 105 says of this epitaph: "Est ist über jeden Zweifel erhaben, dass dieser Seligman der Bruder unseres David Gans war." This is also probably based on Steinschneider.

not only from his statement in the dedication of *למח דוד* to his brother,¹ but also from epitaphs which specifically state the relationship of the deceased to David Gans.² Grünwald³ claimed to have in his possession a letter sent him from an alleged descendant, the wife of the Obercantor Maron Singer in Neuhydschow. The letter, dated May 18, 1888, reads as follows:

„Der Vater des in Leipa noch lebenden 90 jährigen Herrn
Salomon Gans hieß Moses (משה). Der Vater dieses
R. Moscheh war R. Jehuda, dieser hatte nun drei Söhne

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הקדמת למח דוד, דף 4 :

ואתה עתה צריך ה' אחי.....אמרת לי לחצר לכבודך ספר זכרונות

זו..... ויהיה ספר זה צריית נאמנה.....כאשר נסתר אית

מנצחו וציטצנו יחד צחקץ החיים לזכרון לצנינו אחרינו.....

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".....p.286, quote from the *וועטשטיין*, *ספר היוזל לכבוד נחום מאקאלאו*

in Cracow to prove that David Gans had a son who

died in Cracow (יף צ'ג צ'ג) : *אנשמת הר"ר יואל צמחל'ר דוד בנא משראג*

ציוס הצגת ז' כסליו וקצר למחרתו ציוס א' ח' כסליו שצ"ט.

In Popper, Die Inschriften des alten Prager Judenfriedhofs, p.11, we also find a record of the following epitaph:

„יום ל' י"ז מנחם תמ"ז ל"ק : פ"נ הנעלה הר"ר דוד בן כה"ר מדדני

שמעון קצצ זצ"ל נכד הגאון הגדול כמנהל'ר דוד באנז

זצ"ל צעל למח דוד.

There are many other tombstones in Prague cemetery which bear the name Gans but it is impossible to ascertain their relationship, if any, to David Gans. *י. מאכחות פראג* pp. 41, 62, 69, 191 etc.

³ 1. c. p.108.

u. s. Moses, Simon und David Gans; Seligman Gans ist Ein Enkelsohn einer Tochter des R. Jehuda Gans, derener vier oder fünf hatte, Wie erzählt wird, trug er stets seinen Jichug-Brief [family tree] bei sich."

Grünwald claimed that this last named Jehuda was probably a grandson of David Gans. What the name of the father of this Jehuda was, he was unable to say.¹ Berman² presents us with the information that the family Gans branched off into two divisions in the cities ל"י י"י, with the names ל"י י"י and י"י י"י. As authority for this he gives the references in י"י י"י which we have noted;³ but I cannot see that there is any positive proof that they are descendants of Seligman Gans.⁴⁵

¹ In a footnote to the Volkskalender, p.109, Grünwald gives a diagram representing the descent indicated in the letter. The diagram also shows that this wife of Aaron Singer, named Klara, was the daughter of Rachel (married to Michael Spitzner), who in turn was one of "the four or five daughters" of Jehuda Gans. Klara Singer's son was Benedict Singer, the Obercantor in Jungbunzlau (according to the same diagram). The diagram, of course, does not give the names of any of David Gans' sons whom we have mentioned previously. y. p.8, note 2.

² In י"י י"י, loc. cit.

³ P. 7, note 4.

⁴ There are various theories concerning the origin of the name Gans. The name Hahn, which immediately comes to mind, has a definitely known origin. It is derived from the family house called "Zum rothen Hahn". y., Jew. Encycl., Vol. VI, p.152, article "Hahn, Joseph Yuspa Nordlinger";

⁵ V., Addenda et Corrigenda at end of this paper.

Gans refers to certain kinsmen of his, but he does so for some objective historical purpose, and not from any personal motive. In referring to R. Nathan Spiro of Grodno, the author of *אמרי נש*, he calls him *י"ז*, in other words, his cousin; and in referring to R. Samson Spiro, he calls him *י"ז*.¹ In narrating the havoc caused by the spread of syphi-

Diets, *Stammbuch der Frankfurter Juden*, p.42; Grünwald l. c., p.100.

Both Diets and Grünwald suggest that *Gans* has a similar origin. Possibly David's ancestors kept an inn or *Gasthaus* which bore on the outside the picture of a goose. Grünwald also proposes that because the tombstone of Joshua (or Seligman) has the name Gans written as *גנ*, there is some deeper significance in the name. (Incidentally, David himself refers to his brother as *גנ* in the *הקדמת כמח דוד*.) He believes that *גנ* is an abbreviation of the words *גדולי נ"שטאדט* where formerly a great Jewish persecution had occurred. Though it may be true that the Gans family came from Neustadt, this word *גנ* is hardly a justification for such a belief. The interchange of sibilants is almost a commonplace occurrence in Hebrew writings of that period; and no other explanation seems to be necessary.

The name *חנא* which David Gans uses is obviously an Aramaic translation of *Gans*. *Y.* p.6, note 1.

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כמח דוד ה"ח של"ז: בני נתן מהוראדנא זן דודי ל' שמאון שפירא
 זל.....ועלה אל האלהים זשנת של"ז.....והניח זרכה שני זני"ס גדולים
 זתורה ל' יחזק היה ראש הישיבה זק"ק קאזלא ול' יזשכר היה ראש
 הישיבה זק"ק פיזבך וכעת נצטה ל' ורצ זק"ק וירמיי"א.

In *כמח דוד ה"ח של"ז*, Gans refers again to R. Nathan of Grodno:

„ואני הכותב ראיתי העתק הספר הקטן שז"ל דודי
 מהר"ר נתן מהוראדנא זל"ל.

lis during the wars in Italy in the latter part of the fifteenth century, we are informed by David Gans that a relative by marriage, Samuel Doktor (or Samuel Rofe)¹, was the only one to discover a cure which did not risk the patient's life.² This Samuel Doktor is described as מחותני . R. Man of Nordheim, in whose house he studied ibn Tibbon's translation of Euclid, is also described as מחותני.³ Can we say that the use of the word מחותן is a sufficient basis for assuming that Gans was married twice, and that we have here the only indirect reference to the wives of those marriages.⁴ מחותן has two meanings: (1) either of two men whose children are united in marriage; or (2) a relative by marriage. Why assume that Gans was writing of a father-in-law when he used the word? If he intended to convey that specific idea, why was not the word חתן used? It is just

¹ y. "Gans" in Encycl. Jud.

² במח 177 ח"ז ה"א 1494: "מיס נצים הנשאים לא ידעו למכא כפואה לחלי הנזכר כי לא נמכא נעמת זה החולי..... לא נמכא שידעים לכפואותו צלי סכנת נפא רק מעט מזער ונזם נתרפאו במשיחה המעוררת צכסך חי [quicksilver] שיט צו סכנת נפא אך מחותני שמואל לאקסר הוא יודע צעיב כפואתה צענין אחר צלתי סכנה ולא שמעתי מאחר זולתו צכל מלכות ציהם [Bohemia] ופולין."

³ במח דוד ח"א ה"א ל': יואני הכותב ראוי העתק ספנ אקלידוס זה ולחדתין צמדינת זקסן צעיר נורטם צצית מחותני הר"ר מן ז"ל....."

⁴ Article "Gans" in Encycl. Jud., Vol. VII: "Sein erster Schwiegervater war R. Chen (?), in dessen Hause Gans eine hebr. Übersetzung des Euklid.....gefunden haben will; sein zweiter Schwiegervater war der Arzt Samuel Rofe....."

as possible to assume that he was discussing the fathers-in-law of his children. One other person is known to us as being a relative, vis., פ"י צ"ל ¹ who is called שא"י by David. As far as we know, this is all the information we have of the members of his family who lived in his own day.

Like most Jews who came of cultured families, Gans received a thorough talmudic and rabbinic training. But he obviously never became a rabbi of a community, for he is not given that title on his tombstone. His earliest teacher was probably his grandfather, for he refers to him as ² וא"מ [ואדוני מו"י] זקני זעליקמאן גאון. This suggests that David became an orphan while still a child. It is significant that Solomon, David's father, is not called מו"י or מו"ק, but is referred to in the following ways: ³ וז' לא"ה and ⁴ אדונינו אצ"ל כמ' שלמה ז"ל. Surely David would have made some mention of his father in the dedication of his book, had his father played some part in his formative years. For such mention, and even more is given to his elder brother who became father in fact. Joshua probably became head of the household, either during the senility of R. Seligmann or at his demise⁵. And if we may assume that Joshua continued to support David, it can readily be understood how David was enabled to travel about in order to study under

1 כמ' דוד ח' 3' 158.
 2 ז' ח' א"ה ל"ס.
 3 ז' 7' 4.
 4 ז' 7' 67.
 5 הקדמת ז' 7' 4: ואמת... אחי... תמיד לי כאח לצדק יולד גם
 לכל משפחת בית אצ"ל למחיה שלחן ה' לקיותך
 לנו למעו ולקריית מו"ל."

the tutelage of the intellectual leaders of his day. Such an assumption is reinforced when we realize that Joshua himself was profoundly interested in scholarship.¹ It would be natural for a scholar, such as he was, and a man evidently of some means, to smooth the way for his younger brother who showed such industry in and aptitude for learning.²

It would be interesting to know when Gans studied under the teachers whom he names. Without any revealing personal document — though, of course, the most impersonal creation of man is highly personal — without any contemporary reference to Gans, we could still reconstruct something of his intellectual development; provided we knew his teachers and the years when they taught him. Gans himself supplies the first half of this necessary minimum of information; the second half must be built on the shifting sands of surmise.

In addition to his grandfather,³ we know that his teachers were Eliezer Treves,⁴ Moses Isserles,⁵ Reuben Fulda,⁶ Judah Löw ben Besalel⁷

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- 1 ז"ל דף 3: י'הושע...הלא הוא...ח'י...חכם חדש ונכון דעת איש תבונות.....
- 2 ל.ע. דף 4: ופע אחרך משתתך המתאנק צעט רבלי ת"ח [תלמוד חכם].....
- 3 ל.ע. כל היום גם על משכני צלילות יפנוי כליותי לאחר צמח אכזה.....
ח'ת פני דום משלתך על כל הטובות אשר במלתני.....
- 4 ז"ל ח"א ה"א ל"ס: ווא"ח [ואדוני מורי] זקני.....
- 5 ל.ע. ואני הכתב שמעתי מפי מורי הנקן מוהר"ר אליעזר שריוש רב דק"ק וינקצווס.....
- 6 ז"ל ח"א ג"א כ"ז: כן כתב מורי מוהר"ר משה איסרליס.....
- 7 ל.ע. נ"ו וכתב מורי מוה"ר משה איסרלש.....
- 8 ז"ל ח"צ 1588: ונאמאם מורי הגאון מוהר"ר ראובן פולחא זצ"ל.
- 9 נחמד ונעים דף 8: הפליג צעח מורי הרב הגדול רבי ליווא.....

and R. Sinai.¹ Although we have no sources which tell us when Gans came under their influence,² we know enough about these men to hazard a guess. Furthermore, if we can depend on the very obvious, viz., that his education began with the traditional Biblical and rabbinical studies and ended with studies in world history and Naturwissenschaft, we have a rough guide to assist us in placing his teachers in their proper temporal sequence.

We place Seligmann, his grandfather, and R. Elieser Treves (1495-1567) in Gans' earlier student days. Both were religious mystics, students of the Kabbalah, and belonged to the group which believed in

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"..... חזקתו של רבינו גרשון בן שלמה"

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79-82, p.10; Zuns, Itiner. Benj. Tudela II, 278 and Gesam. Schrift.

I, 185; Grünwald, l.c., p.107 — all state that Gans came to Prague in 1564. All seem to base this opinion on Zuns' statement in Itin. Benj. Tud., l.c., that Gans came to Prague "about 1564". Where did Zuns obtain this information? Certainly Gans does not provide it. All such problems of dates merely inspire idle speculation. Concerning such data in the life of Gans, Jerábek, Der alter Prager Judenfriedhof, p.40, writes simply: "Über seine Schicksale vor seiner Ankunft in Prag im J. 1564 und ebenso über seine Prager Wirksamkeit mangelt es uns an näheren Daten." Aside from the reference to 1564, this is the soundest remark one can make.

Asher Löw's messianic pretensions.¹ Gans speaks quite objectively in describing their mystical enthusiasms. At the time when he was living in Prague and wrote his books, he was above all, a rationalist. Though he was conservative and traditionally minded, there is nothing of the mystic in him. His contact with those men probably occurred many years before. On the other hand, Treves must have had some influence on his youthful personality. We know that Treves, in spite of his mysticism, was a careful student who collected manuscripts and used them in writing his trea-

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כִּד חָח הָאֵל לֹם :רַבִּי לַעֲמֶלֶן הִיּה מַנְשֵׁר עַל נִיחָת מַשִּׁיחַ צֶאֱנִי לֹם
וּכְכַל תַּפּוּסוֹת יִשְׂרָאֵל הָאֲמִינִי לַעֲמִינִי. בֵּחַ בֵּין הַגּוֹשׁ הִיּה הַקָּל הוֹלֵךְ
וְגוֹל. וְרַבִּים מֵהֶם הָאֲמִינִי לַעֲמִינִי וְהָאֵל זָקִינִי זַעֲלִיקֶמֶחֶן זֶאֱנִי זֶל
גַּם וּנְתָץ תַּגּוֹר הַמִּיּוֹחַד לַמַּסּוֹת זֶהֱצַחֲחֻה הַגְּמוּרָה שְׁלֹאֲנָה הַצֶּאֱה
יֵאֱפֶה מַסּוֹת זֶאֱחֶץ הַקְּדוּשָׁה. וְהֵאֱנִי הַכּוֹתֶז שְׁמַעֲתִי מִפִּי מוֹרֵי הַלֶּקֶן
מִוִּהֲלֵר אֱלִיעֶזֶר שְׁרִיּוֹט כִּז דֶּקֶץ וְנִקְצוֹרֶט שֶׁאֲמַר כִּי לֹא דַּבֵּר לִיךְ
כִּיָּה וְשֶׁנֶּתֶן לֹוֹת וּמוֹפֶת וְהָאֵמֶר אֱלִי חֲטָאֲתִינוּ גְּרַמּוּ וְעַכְצוֹהוּ.

Grünwald, l.c., p.105, refers to Nehemiah Brüll, Jahrbücher für jüd. Gesch. u. Literatur, I, 105-106, for a complete account of Eliezer Treves. Brüll points out that Gans is incorrect in making כִּד the date of Treves' death (see קֶדֶשׁ). The date should be אֶלֶף (1567), because in the archives of the Frankfort community there are documents bearing Treves' signature which are dated 1566. Brüll is, of course, correct. Gans himself states that Treves was 72 years old when he died. If Treves was born in 1495, his death must have taken place in 1567.

¹ tises. Some of this interest in original sources must have been transferred to Gans.

His other teachers should be placed in his later student days. Each one of them displayed a keen interest in philosophy and natural science. Each of them interested their students in these studies. They, unquestionably, were the ones who fostered and nurtured Gans' aptitude for astronomy, mathematics and historiography. Reuben Fulda, about whom we know very little, and of whose scholarly interests we know nothing, cannot be grouped with the former. Gans tells us that he was a friend and protégé of Bishop Ernst of Cologne.² Can it be that Gans learned his Latin from Fulda, seeing that Fulda had excellent opportunities for acquiring this language? The least that can be said, is that Fulda had contacts with the gentile world — a fact which may have some bearing on Gans' writing a general history.

Of Moses Isserles' (1520 - 1572) influence there is much more to be said. David Gans must have gone to Cracow when still a youth and attracted the attention of Isserles by his desire for learning.³ In spite of the fact that נח"א was one of the profoundest traditionalists of his

¹ Cf. article "Treves" in J. E., XII, 244.

²

ב"ר ח' 1583: דיוקמאס הגמון וקורפירשט [הזיטצטא] מקוילן דנהר רינוז קבל
עליו דת מרטינג לופר. אשר מפני זה האפיפיור צכנוף כל הגמוני אשכנז
צחקו על פניו להגמון את עונשט דוכס סבייאן אהוזו של הגאון מהר"ר
לאונן פולדא זצ"ל אשר גילו ורממו ונתן לו ספוק ומחון מהאזאיותיו.

³

נחמד ונעים דף 8: והחסיד מורי וכי אשר אומני וגדלני מ' משה
אייסנלש ז"ל גם הוא וכ'.

day, he was unusually interested in philosophy, astronomy and other "secular" learning.¹ The intellectual atmosphere in his Yeshibah, which

¹ Although he wrote such traditional works as the *דרכי משה*, the *מפה*, etc., he also wrote such philosophic treatises as the *מחיר יין* and the *תורת העולה*. A more direct evidence of his interest in non-rabbinic studies is to be found in his Responsa. In the *שאלת מאגרות הרמ"א* (Warsaw ed., 1888), סי' ו', p. 14 Solomon Luria attacks Isserles for using Aristotle as an authority:
והא"כ הראיתי מחכמת אריסטו
העכל האדם שצריך לו לי שיעור לאו נוסף למה שאורי שמו
שעיקר המחקר והבוסס הוא דברי השמא ויהי צפי חכמי ישראל כעין
צוהם לתורה הקדושה רחמנא ליצלן טעמון הגדול.

He attacks him even more bitterly for committing a greater sin, viz., influencing his students to read *השם* :

ועתה אני הגביר חליתי כתוב צתסלות וצפידוי הצחורים בשום צפן
תפלה אריסטו. וזו היא חשמת הנשיא כמותך שנושא להן פנים
מאחר שאתה מעצבן דברי אלהים חיים.

This legendary letter of Aristotle declares that he, Aristotle, is repentant for having written in his works that truth can be ascertained only through reason and investigation. ("לינצער, די געשיכטע")

Zinberg, l. c. פון דער ליטעראטור ציי"ק, כ"א, ו' 417; כ"א, ו' 58) declares that this letter made Aristotle *כא* to the Yeshibah students. It was their justification for studying his works. In replying to *מהרש"ל* justifies his preoccupation with philosophy, etc. in the following way (p. 15, ו'):
שאלת הרמ"א, פ"ו, ו' 15):

תחילה אענה מה שהרעיש אדוני את העולם עלי צהצחי צמכתאי
הואשן דבר חכמת היונים ואש הפילוסופים.....אומר שא מחלוקת
ישנה בין החכמים ולא אצטרך להשיב עליה.....ומי לנו גדול

was a result of his scientific curiosity and rationalistic interests,¹ engendered in Gans an even greater desire than in his teacher to wander off the beaten track of rabbinical scholarship.

In spite of all the legends about him, Judah Löw ben Bezalel was interested in science and defended it where there was no conflict with tradition.² Gans, his student, indirectly reports this interest. He

מחמדים לל שעה ספר המורה שכולו חינו חלל מזה המין.....ומה
חומר שמהדי דמחמדים שכל ימי לא עסקתי בזה רק בשבת וי"ט וח"ה
שעה שצני אדם הולכים לטייל, וכל ימות החול אני עוסק כפי מיצו
השגתי במשנה ונתלמד ונפיקים ונפיקים.....

¹ ח"ה was not altogether free of Kabbalistic influence, for he had faith in the efficacy of גמטריה to work wonders. But, in general, he was temperamentally inclined to rationalism.

² Gudemann, Quellenschriften zur Gesch. des Unterrichts u. der Erziehung bei den deutsch. Juden, p. 58 says of Löw that: "In ihm erscheint seit dem schwarzen Tode zum ersten Male wieder ein durchaus selbständiger Geist, er ist aber zugleich der fruchtbarste und vielseitigste deutsche Rabbiner des Mittelalters und der neueren Zeit. Obwohl in der Mystik der Zeit befangen und dem damals unter den italienischen Juden erwachten Kriticismus feindlich gesinnt, war er doch nicht ohne philosophische Bildung." Also Guido Kisch, Die Prager Universität und die Juden, p. 6: "Man findet in den Schriften der Zeit geschichtliche, naturgeschichtliche, mathematische und andere Probleme behandelt. Bereits dem hohen Rabbi Löwe wird Sinn für jüdische Archäologie und Geschichte nachgerühmt, ja er fühlt sich ver-

makes mention of the fact that his teacher found it necessary to defend the traditional scientific viewpoints which, at first glance, seem unreasonable.¹ In actuality Löw was rationalising that which he knew re-

anlasst, das Studium der Naturwissenschaften zu empfehlen."

That there is some nucleus of truth in the legends which describe his interest in mysticism, is believed by Güdemann, l. c. who cites חסד

בכך concerning an amulet supposed to have been written for
 Rudolph II, by Löw. בכך, an ardent collector of Mss., describes
 one of them in his catalogue: קמיע נפלא ונורא נכתב לקיסר רודולפוס
 "..... שנת ש"ז. Amulet in גס הגדולים (Warsaw ed. 1876),

p. 82 reports: ואני הדל קבלתי מרז אחד אשכנזי מעשה נורא שעה
 על ידי מה שגילו לו מהשמים. ומה נמשך שדכר עם הקיסר ציחור
 כמו שעה וחצי ועשה לו כדך גדול כמו שכתב צפ' כמח דוד.
 In ש"ז ח"א ח"א ח"א we find:

אדוני הקיסר הישר..... רודולפוס י"ה..... שלח וקרא אליו את הגאון מהר"ר
 ליווא צד זכאלאל וקבלו צסצכ פנים יפות ושחקות ודכר צמו פה אל פה לאר
 ידכר איש אל כעשו ומהות ואיכו הדכר סתומים חתומים ועלמים הם."

There is no mention here of an amulet, but there is no reason not to believe that after a discussion of some sort, probably on scientific matters, Löw, in the fashion of the day, wrote an amulet for Rudolph. Legend has merely elaborated on this simple event. The legend of the Golem is merely another ornament with which the naive mind likes to adorn a retiring scholar.

¹ נחמד ונעים דף 8a: גם צמנינו זה הפליג צנה מחרי הרב הגדול כדי ליווא ט'
 צסצכו חזר הגולה צצאד השד על דצרים רשים הנמאחים צצכני כצל חזר צתחלת
 הצקבה נחין נכלאין ותמוהים ורחוקים מן האמת ומן השכל הוא כתוצ עליהן
 פירוש יאצו נחא."

quired explanation. If Gans gives us no more positive proof of Low's love of science, the *שור הגולה*¹ does. Not only the Torah, it tells us, but also science is divine in origin. The contact with views such as this strengthened the scientific predilections of Gans. Of Sinai ben Bezalel's teaching, there is little to say — we can but guess that the two brothers were of one mind in these matters. But even these two had neither the daring nor the interest of their pupil to go so far afield in the study of astronomy, geography, mathematics and world history.

It seems to be fairly obvious that the intellectual pursuits which commanded Gans' attention were unusual in the Jewish world in which he moved. Much of his knowledge must have been acquired by reading and studying on his own. Since he travelled, as we know, to the cities of Frankfurt am Main,² Cracow,³ Bonn,⁴ Grodno,⁵ Nordheim⁶ and Prague; he found it possible to become acquainted with scientific books in the private libraries of distinguished scholars residing in those cities. Thus, it is reported in the *717 mms* that Gans studied Euclid's Elements when he visited his relative R. Man of Nordheim.⁷

¹ Y., p. 19, note 1

² Y., p. 13, note 4

³ Y., l.c., note 5

⁴ Y., l.c., note 6

⁵ Y., p. 10, note 1

⁶ Y., p. 13, note 4

⁷

ולא ח"א הא ל' כנ"י טעם אכן תבין הענין פני אקלידוס מלאך ערבי כלשון ערבי דשנת ה' אלפים ושלשים ט"ה דף נ"ד ואם הזכיר עוד ו' פנים שחזר ובעת לא נמכר צינינו. ואני הכותב לאחי העתק פני אקלידוס זה ולמדתי צמדינת זקס"ן בעד נאטם צבית מחותני ה'לרמן זצ"ל אשר עבדו פניו כתב שהשלים העתקתו צבית שלשים לחלק השני העדני צל ט"ה זצ"ל.

In our emphasis upon his scientific education, it must not be forgotten that, in those same libraries, he was enabled to continue his studies in Hebrew sources. For, even in this study, he went on alone without instruction by others. His formal education was largely confined to Talmud and *מסכתות* with problems illustrated and solutions to those problems corroborated by occasional references to the "wisdom of other nations."¹ There was no emphasis on historical reading *per se*. Yet Gans either read or was familiar with almost the entire field of Jewish historical writing.

By the year 1590, he was already established in Prague.² It was fortunate for him — and, incidently, fortunate for the development of scientific thought — that a number of apparently unrelated events made that city one of the most important intellectual centers of his time. Firstly, there was the fortuitous circumstance that Rudolph II, was Holy Roman Emperor.³ Rudolph maintained the same inconstant friend-

¹ Cf. Zinberg, *l.c.*

2

כ"ד ח"כ ה"א ש"ן: בשנת ש"ן חלף ותקף לנזירים אשר השנה ההיא שנת זכורית היתה
 צמדינה זו מדינת ציהם. ויהי חיש אחד זככס אחד מחוך לעיר קורטים
 חמשה ספואות מפלוג..... גם אני הכותב ראיתי זאת העפר צעיני ולקחת
 ממנה.....

ל-ב: "זחדש אלול בשנת ה"א ש"ן חלף ותקף לנזירים רגזה הארץ ממקומה.....
 ויהי נשע ונעדה בכל גלילת ציהם..... אשר גם אני הכותב עם בני צית הפרגא
 צעכנינו....."

We cannot determine how many years before Gans had settled there. Other references to Prague before the year 1590, do not prove that Gans had been an inhabitant during any previous period.

³ He reigned from 1576 to 1612.

liness towards the Jews which characterized his father's (Maximilian II) reign, and, as a result, gave the Jews a modicum of relief from persecution.¹ Furthermore, in spite of his idiosyncracies, he had a strong interest in scientific knowledge and an inclination for the company of learned men.² Secondly, Tycho Brahe, the Danish astronomer, had quarrelled with certain influential people in Denmark. He feared, as a consequence, that his extensive astronomical notes taken from his own observations, would be confiscated on the grounds that they had been amassed at public expense and were therefore public property.³ He fled Denmark in 1597 and travelled to Germany.⁴ In 1599, he settled in Bohemia, where he was invited by Rudolph to convert the Castle of Benatky into an observatory.⁵ Gans was incorrect, therefore, in stating that Rudolph had sent

¹ Gans, either as a good subject of Rudolph or as a cautious Jew, magnifies that friendship. ז"ל ח"ו ב"ה 1571: הקיסר החסיד מאקסימיליאן ז"ל

להקנותו ולתשוקתו אל היהודים להכרות אליהם חסדו ואמתו צדק הוא צדקו
ובעליו עם אשתו הגבירה מרים בת קיסר קראלוש ועם חסדיו גדולי שריו ויועציו
תוך אמצע רחוב היהודים אשר צעיר פלאג והיה זה בשנת של"א חלף ותקצ"א
לנצרים."

ל. ח"א ש"נ: אדונינו הקיסר הישר המלך הגדול המהולל רודולפוס י"ה נחנך חסדו
ואמתו שלח וקרא אליו וכו'.

² ז"ל ב"ה 82:אדונינו הקיסר המרומם רודולפוס י"ה כאשר מלחה אותו חכמה
ורצה ודיןם מועלג בחכמת התבונה ואוהב את החכמים ומכבד ומפיק' שלח וכו'.

³ Dreyer, Tycho Brahe, p. 252.

⁴ Between December 1598 and the beginning of May 1599 he lived in Wittenberg, in the north of Saxony. Cf. Dreyer, History of Planetary Systems, p. 369.

⁵ Tycho Brahe, p. 287

to Denmark to ask Brahe to come to Benatky.¹ Tycho had in his day a world-renowned reputation not only for his astronomical theories, but also, which is more important, for his keen interest in observation as a basis for astronomical science.² Thirdly, Kepler wanted to obtain more accurate values of the mean distances of the planets from the sun and of their eccentricities, in order to find agreement between the theory and the numerical data of Copernicus. The only one from whom he could obtain this information was Tycho Brahe. If Brahe had been living in Denmark, Kepler might have found it impossible to travel the long distance from Gratz, in Styria (in Austria), where he was teaching until 1600.³ But, just as Brahe had been forced to leave Denmark and had gradually made his way to Prague, so Kepler had been forced to leave Styria because of religious persecution and came to Prague in January 1600. The

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וְנִין ב. 82: צִנְתָּ שֶׁ לֹא הָיָה שָׂדֵי אֲדוֹנֵינוּ הַקִּיסָר כִּדְרֵהֶם פִּסִּים שֶׁלֹּחַ
לְמַדְרֵינֵנוּ דְּעֵינֵנוּ מִדֶּק וְקִיחַ אֶל הַחֶכֶם הַמֻּסָּפֵר הַחֹקֵר הַגָּדוֹל צִנְתָּ מִתְבַּנֵּה מִכָּל
אֲדָר הָיוּ לְפָנָיו הָאֵל אֶחָד מֵאֲדָרֵי הָאָרֶץ צָנִי עָמֵד נִקְחָה (שִׁיחָה צִנְתָּ) וְכוּ'.

2

Burt, Metaphysical Foundations of Modern Physical Science, pp. 49-50:
"....Tycho Brahe, the greatest giant of observational astronomy since Hipparchus, was completing his life-work of compiling a vastly more extensive and incomparably more precise set of data than had been in the possession of any of his predecessors....Tycho, who was the first competent mind in modern astronomy to feel ardently the passion for exact empirical facts."

3

Planetary Systems, p. 379.

following month he became Tycho Brahe's assistant at the Castle of Benatky.¹ Gans, who visited the observatory, was privileged to come in contact with both of these men and with their able assistants, one of whom, Johann Müller of Brandenburg, is mentioned by Gans.² Gans was

¹ L. 2.

² נ"ל, 42, p. 130; ואני הכונה דנשתי על תנועה הנזכרת מהחכם יהנ"ס מולי"ס
[markgraf] לאש החכמים היושבים לפני דוכס מרק ברא"צ
מנחמנדיז ונ"ל

In the face of Gans' own statement that the Johann Müller he knew was from Brandenburg and in face of the fact that Gans lived during the latter part of the sixteenth and the first decade of the seventeenth centuries, it is difficult to see how anyone could confuse this Johann Müller with the Johann Müller who lived a century before. The earlier Johannes Mollerer was born in 1436 in Königsberg (Franconia) and died in 1476 in Rome. From the Latinised name of his birthplace he called himself Johannes de Montereio or Regiomontanus. Cf. Allgemeine Deutsche Biographie; Cassendo (Petro), Tycho Brahe.... Vita. Accessit....Copernici....et Regiomontani....Vita, Hague, 1655. The later Johannes Mollerer came from Brandenburg where he was mathematician to the Elector. He came to Benatky after March 1600 and left in the spring of 1601. Cf. Dreyer, Tycho Brahe, pp. 287, 289; Cimbria Literata. A Johanne Molero, Hafniae, 1744. Yet we find a host of authorities all copying from one another the error of calling the later Johann Müller "Regiomontanus", Y., Kohut, Geschichte der deutsch. Jüd., p. 568; Karpeles, Geschichte der Jüd. Lit., vol. II, p. 329; Wininger, Grosse Jüdische National-Biogr., "Gans", vol. II, p. 386;

thus enabled to gain a first-hand knowledge of the latest advances in physical science, some of which he incorporated into his first Ms. on mathematical geography and astronomy to form his larger text the מגן עזריאל¹. The development of scientific thought was also enhanced by this result of chance. In July or August of 1609, Kepler's book, Astronomia nova ἀντιλογητος; seu Physica Coelestis. tradita commentariis de motibus stellae Martis. Ex observationibus G. V. Tychoonis Brahe, was published.² This book stated for the first time what came to

Encycl. Jud., "Gans", vol. VII; Grünwald, Illustr. israel. Volkskalender für das Jahr 5650, "Rabbi David Gans", p. 118; Grünwald, Mitteilungen des Vereins für Gesch. der Deutschen in Böhmen, 27 Jahrg., p. 279; Jew. Encycl., "Gans", vol. V; ד' גנסיכטע פון דער ליטעוואוויז ציי, p. 60; et al. The competent article by Solomon Berman in מגן עזריאל, vol. III, p. 233, accurately distinguishes this Johann Müller, by stating that he comes from Brandenburg; but he makes no mention of the other Müller.

Dreyer gives the aforementioned non-Jewish references to the Mullers in his bibliography of the correspondence and biographies of those astronomers. V., Dreyer, Tychoonis Brahe Dani, Haumas, 1929; Tycho Brahe, Planetary Systems; also Joannis Kepleri Astronomi Opera Omnia, ed. by Ch. Frisch, Frankfurt and Erlangen, 1858, which gives a detailed index of all correspondence between Kepler and others and the names of men and places mentioned in that correspondence.

¹ V., following chapters.

² Dreyer, Planetary Systems, p. 401: "In the history of astronomy there are only two other works of equal importance, the book De Revolutionibus of Copernicus and the Principia of Newton."

be known as Kepler's first and second law of planetary motion — a direct result of Tycho's remarkably accurate observations and Kepler's mathematical genius.¹

What relations did Gans have with the astronomers in Prague? Outside of Gans' own statements, we have no outside sources of information.²

¹ Another chance factor made possible these two discoveries. Dreyer points out (Planet. Syst., p. 380) that in February 1600, Mars had just been in opposition to the sun and a table of observations of these oppositions since 1580 had been made with great accuracy. The two laws of planetary motion were derived from a study of Mars. Kepler's first law describes the orbit of a planet as an ellipse with the sun at one of the foci. The second law states that the radius vector sweeps out equal areas in equal times. V. Smart, Spherical Astronomy, pp. 98-100, for a mathematical statement of these laws; also Dreyer, I.G., p. 392. The third law of planetary motion was discovered later and published in 1619 in his book Harmonices Mundi libri V.

² Dreyer in Tycho Brahe, p. 303 states: "...but Tycho found other scientific friends at Prague, among whom were Martin Bachazek, Rector of the University, Peter Wok Ursinus of Rosenberg, Baron Johan von Hasenburg (who was an ardent alchemist), the Jewish chronologist, David Gans." But Dreyer does not give the sources of this information about Gans. Can it be that he also derived this from Gans himself or from tradition? Kohut, Gesch. der deutsch. Juden, p. 568, rightly claimed (if we exclude Gans' statements): "Dann liess er Gans sich dauernd in Prag nieder, wo er was aber geschichtlich durchaus nicht feststeht und blos auf mündlicher Ueberlieferung beruht, die persönliche Bekanntschaft der

But there is no reason to doubt Gans' words. He describes the observatory at Benatzky in great detail.¹ He also quotes opinions of Kepler,

größten Astronomen jener Zeit, Keplers, Tycho de Brahes und Johannes Müllers (Regiomontanus) gemacht haben soll." We have not been able to find any mention of Gans in Kepler's Opera Omnia, Hasner's Tycho Brahe und J. Kepler in Prag, Cassendi's Tychonis Brahei Vita, et al. It is more than likely that we have overlooked such references because of the great mass of material at hand.

¹ נ"ל 82: והוא כי הקיסר [The object of the verb is "Brahe."] על
 ארמון המצודת הנקרא זינאטק חמשה מפתחות מעד מלוכה כחל
 והתצודת עם חכמיו ופסק נתן לו מדי שנה ושנה שלשת חלפים עאלר
 גם לחם ויין ושכר וזלת של מתנות ודורנות וצות ושם צמקם הנזכר
 היה יאצ עם שנים עשר אנשים כולם חכמי' וסדיני' מדע עופקים
 וחוקרי' באסטרונומיה' וכלי מחזיהם הגדולים והמופלגים..... וזנה לו
 הקיסר שם שלש עשרה חדשים צטורה אחת אשר צכל חדר וחל'
 היה כלי מחל' אשר צהם מציט' על מצדי' ומהלכי כל כוכב נצאכה
 צכל יומם ויומם היו רואין ומדקדקין וכותצין על ספר.....
 אשר גם חוכי הכות' הייתי שם ג' פעמי' כל פעם ה' ימים נאופי'
 וישצתי עמהם צחרי' חזיונם ונחיתי את המצעה אשר נעשה.....
 כאשר יצא כל כוכב צקו חכי לילה] the transit of a star or a
 planet over the meridian [היה מתמודד מהם ע"י ג' מיני
 כלים אשר חלל כל כלי היו יאצים שני חכמים ותיכף הכל
 נכתבים צספר עת צוא כל כוכב צקו חכי לילה השעה ודקי השעה.....

Tycho Brahe and Müller as given to him directly by word of mouth.¹ No

¹ Gans quotes Kepler in the following places in

פ' רא, דף ט"ז.	פ' ק"ג, דף כ"ח.	פ' יד, דף י"ג.
פ' ר', דף נ"ח.	פ' ר"ב, דף נ"ט.	פ' ז"א, דף ט"ו.
פ' ר"ג, דף נ"ט.	פ' ר"ה, דף ע"ה.	פ' ז"ב, דף כ"ה.
		פ' ק"ח, דף ל"ז.

In all cases the following is typical:

.....תדע כי שהנצתי מצוה זו לפני מתוכןיהניס קאפליר'ס מקשיב לי ואמנ'.....
וכן שמשתי מפי החכםהעפליד'ס.....
ואני הכותב שמשתי מפי.....

Johann Müller is mentioned in the following places in ג' :

פ' ק"ל, דף מ"ג.	פ' ר"ח, דף ט"ט.
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There is a slight modification in פ' ק"ל in reporting the opinion of Müller:

.....ואני הכותב דגשתי על תנועה הנזכרת מהחכם יהניס מליד'ס ראש
 החכמים היושבים לפני דוכס מדק גאח'צ מפראנדיצור'ג אהיב
 לנו.....

Some scholars state without evidence that Gans corresponded with Müller. We can but guess that they base their opinion on this statement of Gans. But we know from what has previously been discussed in this work, that Müller was scarcely a year at Benatky. Is it not reasonable to suppose that he could not honor Müller with the title ראש החכמים but would refer to his place of origin? Furthermore, it seems to be reading too much into the word דגשתי to think that it implies "inquire in writing." Cf. E. J., "Gans", vol. VII; Zuns, Benj. of Tudela, vol. II, p. 278; Zuns, Gesammelte Schrift., vol. I, p. 185; גל-ג, p. 10; Allgemeine Deutsche Biogr., vol. VIII,

information is available as ^{to} the scientific value of the translation which Gans made for Tycho Brahe. According to his own statement, he translated the Alfonsine Tables¹ from Hebrew into German. Yet, it is

p. 360. All these claim that he corresponded with Müller. Zuns claims that he corresponded with both Müller and Kepler. But Cassel, Allgemeine Encykl. der Wissensch. u. Künste (Ersch and Gruber), section I, "Gans", makes no statement of this sort. Y., also ס' ל"ח. The opinions of Tycho Brahe are quoted in the following places in נ"ן:

ס' כ"ה, דף ט"ו, ז"ל. ס' קס"ד, דף נ"א, ז"ל.
ס' ק"ל, דף מ"ז, ז"ל. ס' ר"ט, דף ט"ב, ז"ל.

There is also an anonymous opinion quoted, probably that of Kepler:

.ס' קס"ד, דף נ"א, ז"ל. All this is sound evidence of Gans' personal acquaintanceship with Kepler, Tycho Brahe and Muller.

¹ Sicily became an Aragon pos-] וסיציליא מלך ספרד (אלפונסו ס'). 9a, דף נ"ו. 1282. session] היה מופלג בחכמת התכונה והיה לו בית וועד גדול לחכמים לדיקדק צו על מהלכי המעורות וכתבו עליו שהוציא על זאת החכמה יותר מארבע פעמים מאה אלפים זהובים וגם הוא חרוש וסדור לוחות לחכמת התכונה וזמן חצורו היה בשנת ט"ו לחלף הששי והיה שנת חלף רכ"ה לנוצרים וכתב בספר יוחסין דף קל"ז שר יצחק אבן ש"ד חיצור לוחות התכונה לאלפונסי מלך פורטוגל. בשנת י"ח לחלף הששי אשר על שמו נקרא לוחותיו לוחות אלפונסי עד היום הזה. ואני הכותב ראיתי זאת הספר מופתק בצוות מלך אלפונסי מלשון ספרד ללשון הקדש ע"י הג' יעקב חלקרסי בשנת כ' לחלף הששי ואני העתקתי מן הספר הזה מלשון צרי ללשון אשכנז אל החוקר הגדול השר טיח"ח זצ"ל הי"ד.....

difficult to imagine what interest Brahe would have in such a translation

כִּי הָאֵלֹהִים יֵאָדָה (1251): אֲלֵפוֹנְסִי מֶלֶךְ פֹּרְטִיגָלָה קָם צִשְׁנָה יֵאָדָה אֲלֵי
נֶחֱמִיָּה לְנוֹכְרִים חֲדָשׁ אֲדִירֹר חֲשׁוֹן אַחֵר יְדוּעַ צְלוּחוֹתָיו מִלְּבַד שֶׁגַם
הַחֲכָם הַעֲרָבִי אֲלִבְתִּינִי [Al-Battani-1929] אָסַר זֶה אַחֵר צְטוּלְמִיאוֹשׁ תַּשְׁמֵךְ
שָׁנִים.....

כִּי הָאֵלֹהִים יֵאָדָה: רַבִּי יִלְחֶק אֶלֶן סִיד חֲזַר לִוְחוֹת הַתְּבוּנָה לֵאלֵפוֹנְסִי מֶלֶךְ
פֹּרְטִיגָלָה צִשְׁנָה יֵאָדָה לֵאלֵף הַשֵּׁנִי אֲסַר עַל שְׁמוֹ נִקְחָה לִוְחוֹתָיו לִוְחֵי
אֲלֵפוֹנְסִי עַד הַיּוֹם הַזֶּה יוֹחֶסֶף דָּף קֶלֶט.....

Steinschneider has attempted to prove that the astronomical tables which Gans translated were not the Alfonsine Tables. He claimed that the Ms. to which Gans refers is listed in Catalog der Bücher des Jakob Lewarden, Amsterdam, 1797, f. 35b, no. 34; that יֵאָדָה אֲלֵקָרְסִי, mentioned in the quotation, is Jacob ben Isaac Carsono, who adapted the Don Pedro Charts to be found in Paris and which were made for Pedro IV of Aragon c. 1367 [The Alfonsine Tables were compiled by Isaac ibn Sid, reader at the Toledo synagogue, for Alfonso X of Castille in 1252, in his coronation year. They were translated from Latin into Hebrew for the first time in 1460 by Moses ben Abraham Nimes of Avignon.]; and that Gans did not translate these. V., Steinschneider in Zeitschrift für Mathematik und Physik, 1871, p. 252; Planetary Systems, p. 273; Joseph Jacobs in J. E., vol. I, pp. 377-378. It must be noted that J. E., vol. V, "Gans"; Zinberg, l.c., p. 60; and E. J., vol. VII, "Gans" maintain that Gans translated the Alfonsine Tables. Nehemias Brüll in Ben Chananya, Wochenblatt für jüd. Theologie, vol. VIII, p. 718, strongly opposes the view of Steinschneider: "Ja, Gans leistete Tycho de Brahe einen wesentlichen Dienst, indem er ihm die im Jahre 1258 von

of the "Alfonsine Tables."¹ But, whatever its scientific value, it en-

Isak der Sid verfassten und 1260 von Jakob Alkorsi ins Hebraische übersetzten alphonsinischen Tafeln in einer deutschen Uebersetzung lieferte. Er mag ihm wol noch manches in diese Wissenschaft einschlägige aus dem jüdischen Schriftthume, in dem er wol bewandert war, mitgetheilt haben." And in a footnote to this passage he says: "Gans setzt die Berufung von Astronomen an Alphonse X. Hof in das Jahr 1225, welcher Irrthum gewiss aus einer Verwechslung mit der Zahl 1252 hervorgegangen ist. Juchassin spricht von einem Isaak יצחק, der für Alphons astronomische Tabellen verfertigt hat.....das Datum 1225 das ich berichtige, ist jedenfalls falsch. Dass Jakob Alkorsi mit dem in einem Manuskripte der Bresslauer Seminarbibliothek genannten Jakob Alkorsano (s. Graetz VII. 230, VIII. 415) identisch ist, steht kaum zu vermuthen." Until it is determined who יצחק הכהן was, and when he lived, the matter appears a moot point.

¹ Before their printing in 1483, many Ms. copies had been scattered throughout Europe and were widely studied. By 1542 they were already obsolete; and Erasmus Reinhold published his Tabulae Prutenicae, in 1551, to take their place. In 1600, when Gans first came in contact with Brahe, Tycho Brahe was within one year of his death and had already made compilations which far surpassed the Alfonsine Tables in accuracy. Perhaps Brahe was merely curious about this stray Hebrew fragment as another version of a familiar work. V., Planetary Systems, pp. 273, 345.

ables us to understand more clearly the nature of those scientific deliberations in which Gans took some part. It is also indicative, to some extent, of what Brahe, Kepler, Müller and their colleagues thought of Gans as a scientist. If, in our opinion, he was not gifted with great originality in astronomical science, he was, nevertheless, regarded as competent to discuss with them questions of astronomy and cosmology. We list here the astronomical problems which Gans claimed to have discussed with them:

- (1) The place on the earth where the date changes.¹
- (2) How the heavenly spheres rotate, each one inside the other.²
- (3) Whether the planets and the constellations are fixed and the celestial spheres rotate, or vice versa.³

¹ נ"ן, פ' קס"ח. By a convention, we have, of course, defined the International Date Line (near the 180th meridian from Greenwich) as such a place.

²

נ"ן, פ' י"ז

³ נ"ן, פ' ט"ז, פ' כ"ה. Feldman, Rabbinical Mathematics and Astronomy, pp. 70-73, discusses the same passage from 94b. פ"ח, which Gans quotes in נ"ן, פ' כ"ה. The passage reads as follows:

ת"ר חכמי ישראל אוסרים גלגל קצוצ ומזלות חוזקין וחכמי א"ה אוסרים
גלגל חור ומזלות קצוצין.....

Feldman defines גלגל and מזלות as being "celestial sphere" and "constellations" respectively. Gans enlarges the meaning of מזלות to include כוכבי לכת (planets).

- (4) The time of the greatest eastern elongation of the planets from the standpoint of observers on different places on the earth.¹
- (5) The extent of the Zodiac on either side of the ecliptic.²
- (6) Methods of grouping the constellations of the Zodiac.³
- (7) The necessity of constructing geometrically another epicycle to explain the eccentricity of the lunar orbit.⁴
- (8) The length of the sidereal month.⁵
- (9) Concerning those who did not believe in trepidation,⁶ in deferents or in epicycles.⁷
- (10) Concerning motus trepidans or die sithernde Bewegung.⁸
- (11) The declination of the six planets.⁹

1	.נ"ז, ס' ז'
2	.ל. ס' ק"ח.
3	.ל. ס' ק"ז.
4	.ל. ס' ז'
5	.ל. ס' ז"ג.
6	Feldman, <u>l.c.</u> , pp. 74, 78; Dreyer, <u>Planet. Syst.</u> , p. 276
7	.נ"ז, ס' ק"ח.
8	.ל. ס' ק"ז.
9	.ל. ס' ז"ג.

- (12) The period of the lunar epicycle, the period of the center of the epicycle around the deferent and the length of the lunar month.¹
- (13) A more accurate calculation of the precession of the equinoxes.²
- (14) The length of the solar year.³
- (15) The various distances of the moon from the center of the earth, depending on its position on the epicycle.⁴

Such problems are not the interest of a mere dilettante but the business of a serious student of the science.

The knowledge that the scientists in Prague were not above astrological speculation, and that Brahe rejected on Biblical grounds the fundamental thesis of Copernicus, viz., that the earth was not at the center of the universe and revolved about that center,⁵ is of moment in our understanding of Gans' intellectual background. Kepler was very much the child of his day,⁶ and was interested enough in astrology to write De Fundamentis Astrologiae Certioribus⁷ which gives a philosophical

1
2
3
4
5
6
7

.m' 'v, l.c.
.5' 'v, l.c.
7' 'v, l.c.
.v' 'v, l.c.

Planet. Syst., p. 360

Friedell, Cultural History of the Modern Age, vol. I, p. 285

Opera Omnia, vol. I, pp. 417 ff.

basis for astrology, and the Tertius interveniens.¹ Gans' astrological interests were not an anomaly in the intellectual world of his day.² What is unusual lies in the relatively critical attitude which he adopts towards it.³

Of the man himself, there is little to say. There are but a few hints in his works upon which we base the statement that he was a man of modesty, tolerance, and sobriety — perhaps he was a little too much so. Firstly, his publisher Joseph Jekuthiel Kaufmann found it necessary to urge him to print the למה דיוק.⁴ Over and above the exaggerated modesty, which was characteristic of the age in which he lived, a vein of diffidence and self-abnegation runs throughout his works. Perhaps this is

¹ von Hasner, Tycho Brahe und J. Kepler in Prag, p. 42.

² [נ"ן, פ"י כ"ג.]

³ Cassel, Allgem. Encykl. der Wissen. u. Künste, section I, "Gans":
"Auch von Astrologie hält er weniger, als man aus dem Einflusse, den seine christlichen Lehrer auf ihnen hatten, zu schliessen berichtigt wäre."

⁴ למה דיוק (ווארשא 1878), הקדמה, אל עין הקורא: ".....ואני הנגר תולעת ולא איז
דלותי ציד המחנך י"ץ הספר הזה עם שאר חבוריו חנוגתי האח יקיר לי
מה לך ורדם למה תמנע טוב מצעליו נתן תתן לידי ספר אחד ממפניך
אשר כתבת ואוליאו לאור למען זכות צו את הרבים ויהי מדי דברי צו
יום יום לא היה צדו על כיוצא עתירות צקשתי להשיב את פני ריכם ונתן
הספר הזה לידי ואצתי ולא אחרתי ונתתיו להדפיסו....."

the reason that his activity with *העמח* did not arouse the slightest opposition among his stricter fellow-Jews. At least we have no records of such criticism. Secondly, the unqualified rationalism of Asariah de Rossi did not stir up a spirit of horrified antagonism in David Gans.¹ On the contrary, he attempts to explain away the disturbing thoughts, but, withal, in a spirit of tolerance and patience.² Finally, the sober treatment of all phenomena in the historical and physical worlds, both the commonplace and the unusual, which treatment is typical Gans', speaks well of his self-discipline of mind and emotion.

¹ Baron, Israel Abraham's Memorial Vol. 1927, pp. 12-52

²

וְגַם, הָקְדַּמְתָּ. מִמְּנִין שְׁעוֹת.

וְגַם, הָקְדַּמְתָּ.

Cf also *אמרי אברהם* :

„זכר זאת היה רחוק מקנהאות ולא התנפל צחרופים על האנשים

לדעתם חפזית, ודברי תשובותיו עליהם זנחת ושמעית.”

APPENDIX A

A Translation of the
Introduction to the
First Book of Semah David

PREFACE

[A song in praise of the brother of David Gans precedes this preface. It is an acrostic with the name of Joshua, his brother, indicated by the first letter of each of the five lines of the poem.]

Verily, this [song] refers to my beloved lord, my greatly esteemed and precious brother, my diadem and crown, my early rains and my late rains, who goeth about piously and doeth righteously; who is skilled in secret arts and possesses understanding; a man of intellect with whom I adorn myself; even that eminent gentleman, Master Joshua, sur-named Seligmann Gans, may his Rock and Redeemer watch over him. Pray, my beloved brother, since the days of my prime I longed sorely to know history and the happenings of the days and seasons. I, the miserable, insignificant one, dared, therefore, even with my meagre learning ——— "just as a solitary coin in a bottle makes much noise"¹ ——— to go out and knock upon the doors of scholars; to search out and inquire of books and writers in order to compose this book in your honor, even this book of records from the time of Creation, which speaks of the generations of antiquity, the patriarchs, the judges, the prophets, and the kings whose memory persists in the twenty-four books of the Scriptures, telling when they lived and the dates of most of the events that took place in their life-time. From the books of my predecessors: Seder 'Olam Rabba and Seder 'Olam Zuta, also from Ramban's book, namely, his Introduction to the Order Zera'im, also Sepher ha-Kabbalah by Abraham ibn David, together with Sepher Kerithuth and Halikoth 'Olam, and finally, that much respected book which I shall always bind upon my head as a crown and a wreath of glory. Sepher Yuhasin — from them I derived the date of the destruction of the First Temple, based on the opinion of Rabbi Jose

and those who followed after him; and, likewise, the date of the building of the Second Temple; the date of the miracles of Purim and of Hanukkah; also, in accordance with the Yosiippon, the dates of all the kings of the House of Hasmoneans and the reign of the House of Herod, along with the date of the destruction of the Second Temple, the dates of the generations of the Sages of the Mishnah, the Tannaim, and after them the dates of the Amoraim and our teachers the Saboraim, the dates of the Geonim and the rabbis that came after them. From the extensive book of ibn Yahya, the Shalsheleth ha-Kabbalah, I gathered a little of the history of the latter generations; and to it, I have added the world famous rabbis close to our own time, together with the great men of the world who live in our own days, even unto this very day. This I have done in order that they might be known to another generation; for except for the pen of the scribe, "there is no remembrance of those of former times; neither shall there be any remembrance of them of latter times.....",¹ according to the saying of the Koheleth, THE SON OF DAVID.

As for thee, O wise and learned reader, lest it should occur to thee to say: Of what profit is the first part of this book, seeing that most of these things are to be found in earlier books; and more than in these, in the important book filled with delights, even the Sepher Yuhasin; and as for the last generations, the author of Shalsheleth ha-Kabbalah, mentioned above, has also added them, so that almost none are missing — I answer this here and say that there are many replies in point. One is that there is not one man of all who precede me who counts and lists the years of the world from the beginning of Creation until his own day according to the order used in this book. Even the authors of the books Yuhasin and the Shalsheleth ha-Kabbalah, in particular, skipped

almost entirely the age of the Judges and Kings, and scarcely speak of them at all. Secondly, I have added the order of the dates of the kings of the Second Temple, even that of the House of the Hasmoneans, and, likewise, the order of the dates of the kings of the House of Herod, each man in his proper place and time. Thirdly, I have added and brought forth the order of the Geonim from the Epistle of Rabbi Sherira Gaon, who is more authoritative than the rest of the writers in matters pertaining to the knowledge of their order and time, just as I have explained within, in the year 235 of the fifth millenium. In addition, I changed them from the chronology according to the Seleucidan Era, because the masses do not know how to reckon in it, not being accustomed to it. I arranged them in this my book, each person beside his standard, according to the era Anno Mundi with which we are accustomed today. And besides those things in which the ancients left me place to distinguish myself, I then took pains, and, Blessed is the Lord, I found things which I assembled from various books and scribes; and I added a tiny little bit from my own poor understanding. One must not wonder at this that our teachers, of blessed memory, have already said in the first section of Hullin, and in the Palestinian Talmud, section 2 of Demai: "And ^{did} ~~there~~ no righteous man ~~has~~ existed from Moses to Heseekiah[?]...but ~~that~~ his predecessors left him place in which to excel."¹ Even so has place been left for me by my predecessors in which I can excel. They, likewise, have already likened this matter to a giant who raises up a dwarf and carries him on his shoulder in order that the dwarf may see further than the giant himself² — though one may reply to this comparison that I have never ridden upon the high places of intellectual speculation, even upon the shoulders of the Rabbi, the author of Yuhasin. For even if I were to

jump ten times, with each step one of ten paces, I could not reach the ankles of his intelligence, for "who am I, and what is my life...."¹ — like these words is THE WORD OF DAVID.

Know thou, in addition, that it is not my intention in the first part of this book to deal at length with matters of which the ancients wrote. I come only to abbreviate. For the ancients extended their plowing-grounds and wrote many lovely things, the delight and goodness of which are not in question; and their words have no need of emendation. But because it is known that the large mass of men of our generation desire to learn all the Torah while standing on one foot, therefore, and on account of this, in order that they should not tire and become weary, and use up their time investigating and searching in the books of our predecessors, I intend to fulfill their desire with such an abbreviation as this book, even though in this portion of the harvest left for the poor, the forgotten sheaf is more than the gleaning. Know thou, therefore, that the plan of the first part of this book and its fulfillment, are merely to give a synopsis of the books of our predecessors; and only temporal generalities are considered in it. He who wishes to know the details, let him slake his thirst in the books of these aforementioned predecessors. They, the armour of the mighty men, are turrets like THE TOWER OF DAVID.²

I also intend to translate from the chronicles,³ that is to say, from the books of records of the nations, the dates of the four kingdoms, namely, Babylon, Persia, Greece, and Rome, with all the kings that ruled over them from the time of Nimrod, the son of Kush, who was the first king of Babylon, until the time of Leopold, His Exalted Majesty, and with many happenings that took place in their day. But, in order to

distinguish between the secular and the profane, I will bring them together in a special part of this book; and the words of the Living God shall not mingle with the words of men. The value of those stories and my justification of their translation I shall explain in the second part of this book, with the help of my Rock, THE SHIELD OF DAVID.

Behold, I have composed for you a table of the years from Creation until this year of ours, which is the year 5352. I have written above, with each and every reference, the date, Anno Mundi, of the occurrence of the event or the incident; and this for two reasons. The first: since errors and mistakes which occur in the number itself are due to the scribe, for the apparent reason that the stroke of the scribe's pen may be too short or too long, or that he may repeat even one letter. The result of this would be in error and very incomplete. Therefore, I intend to fix symbols in such manner that even if some error should occur in the number of the years, its companion in the figures of this table which is before thee will indicate it and correct its mistake. The second reason concerns the benefit of the masses. For although the date of an event is written within in the body of the text, nevertheless, the number of the year written without, in the table, act as a symbol for these people, enabling them to find with rapidity the number of any year which they wish to know, without research or toil. May such an addition not be an additional burden for them, but may they give eulogies and PRAISE OF DAVID.

Behold, let my prayer, I beg thee, fall before each reader of this book: that if he will find any error in it, whether on the part of the writer, or from the point of view of calculation or from any other aspect, let him, I pray, forgive me and correct that error with love and

affection, without pride or authors' jealousy. For the poet has already said: "Who can discern errors?"¹ Again, it is known that even Daniel, that man greatly beloved, concerning whom the Biblical text testifies that he was wise in all learning, a man of intellect and a man of science,² erred in reckoning, as it will be explained within, in the year 350 of the fourth millenium. How much more would this apply to a brutish man like me, over whom the storm of time and its unceasing waves have passed, and whom hither and thither a hundred times over it hath appraised. Therefore, sir, do not, I beg thee, annihilate me by seeking an opportunity to write an indictment against me. Judge me only by the scale of merit, because there are many different opposing opinions in chronology, and an infinite number of versions — making impossible my self-justification. Place thy hands upon me in kindness, and in the love of friendship. Mayest thou straighten out my wrong. Do not despise; and DESTROY NOT DAVID.³

However, I can foresee from the beginning that many will lift up their voices against me, saying: "What is the nature of such a person who goes about among things too great and wonderful for him? And why does his heart lead him to compose books in the presence of his superiors, the great and mighty of the earth?" But, since neither that which is unclean nor clean; neither that which is forbidden nor permitted, emanates from this work of mine, I dare to intrude with this book of my authorship. The Lord God knows that it is not my intention in this book to make myself great and to glorify myself in it; for even school-babes can translate and write a book like this. Indeed, I have not composed it for scholars who are filled with Torah as ~~is with~~ ^{are full of seeds} pomegranates. It is only for the average citizen, for insignificant and youthful students

like me and like mine equal today. And even if my book is not acceptable to each and every man, then indeed I am no better than my forefathers, the lords and great men of the earth. In a similar vein, the Rabad,¹ of blessed memory, wrote of the sages of the Midrash; and this is what he said: "One person in a city makes the whole city worthy. It is impossible that there should not be among you one with a hearing ear." Perhaps, at the very least, they will also make right these my words. May this book be to them like pure gold, like pearls, and a LYRIC OF DAVID.

I intend to call this book of records by the familiar words, the SPROUT OF DAVID, and this for three reasons. First, because this composition is the first sprout and is published first, before my other books: Magen David and Migdal David, which deal with arithmetic and geometry; I have called it SEMAH DAVID. Secondly, since I am the first to write all the years Anno Mundi in order, by means of a table of the years, along with the order of the dates of the kings of the Second Temple, and the numerical course of the times of all the kings of the Four Kingdoms, in which matter no man has preceded me, I thought to myself of that which the author of Me'or 'Enayim wrote in chapter 19, of that which is in the book Yosippon; also of that which is in still other books in which the hands of translators have become weak in adding happenings and many other things to them — if so, my strength is no finer than theirs, and a similar fate will also befall me. Therefore, since it is my first sprout, and in order that there be left in this book a name and remnant for me, I have called it the SPROUT OF DAVID. Thirdly, when the reader will read in the second part of this book of the might and strength of the kings and Caesars, while we, in our exile, have neither king nor ruler, let us pray to the Lord to return our judges as in the beginning, and to make flourish

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the SPROUT OF DAVID.

As for thee now, blessed of the Lord, my beloved brother, since your excellency is always on my side, "....as a brother is born for adversity....",¹ also the preserver of the whole family of our father's house, whom the Lord hath sent that thou shouldst be to us a shelter and a strong wall; therefore, my kidneys reprove me always, the whole day long and on my bed by night, saying: With what shall I seek the favor of and bow myself down before the presence of thine exalted majesty, seeing all the goodness with which thou hast redeemed me. Therefore, I intend to write this book of chronicles in ^{thy} your honor, and to give over the greatness and honor of this book unto thine excellency's honor, even as the great rabbi, our teacher, Isaac Israeli, wrote the scholarly book Yesod 'Olam in honor of his teacher the Ra'ash,² of blessed memory, as it will be explained within, in the year 70 of the sixth millenium. May this book be a faithful covenant, a Mispah and a Uilead at the time when a man shall be hidden from his neighbor, and when we shall dwell together in the land of everlasting life, even a memorial unto our children after us, until there shall come the Messiah BEN DAVID. And so I kneel down from afar, face to earth. Mayest thou be blessed of the Lord, God of Heaven, with the blessing of womb and breast. Mayest thou be like a tree planted by the flowing waters; and may He be gracious unto thee with the hidden treasures of the sand and the sea, with gold of Ophir and Parwaim. May thy light burst forth like the dawn and the moon, clean and pure of hand. May He make thee in multitude like the stars of the sky, according to thy desire and the desire of one who loves thee more than life, even thy brother, serving thee and sitting at thy feet, even as before a scholar, even David the

youngest son of our lord, our father, Master Solomon Gans,¹ may his righteous memory be a blessing, he who is known as David Gans.

THE AUTHOR'S OPENING THEME

Before I begin my tract — in order that the beginning and opening theme of this book shall not be bare of any novella — I intend to establish a new arithmetic and geometric fact at the beginning of this book for the one who loves arithmetic and geometry. And now, here is the place to ask why God, be He Blessed, created his world in exactly six days; for can He not create in one hour or even in one instant? Similarly, our Rabbis, of blessed memory, asked the same question in the treatise 'Aboth, where it says: "By ten divine commands the universe was created, but could it not have been created by one command?"² I reply to the two of them with this arithmetical and geometrical answer. I say that the Blessed God chose these two numbers 6 and 10 because these numbers contain more precious wisdom than all the other numbers. We shall explain first the property of 6. Know thou that the ancients investigated and searched for "perfect" numbers,³ namely, those in which the sum of all the divisors of any one of them equals the number itself without any surplus or deficiency. I take, for example, the number 8. Behold its factors are 1, which is the eighth part of it, 2, which is the fourth part of it, and 4 which is one half of it. When thou dost combine these factors, namely, 1, 2, 4, the result is 7 which is not equal to the number 8 because 1 is lacking. Therefore, 8 is not a perfect number. Similarly, this applies to the number 12. Behold, its factors are 1, which is the twelfth part of it, 2, which is the sixth

part of it, 3, which is the fourth part of it, 4, which is the third part of it, 6, which is a half. When thou dost add these factors, namely, 1, 2, 3, 4, 6, the result is 16 which is four more than the number itself. Therefore the number 12 is not a perfect number. But the number 6 is a perfect number with regard to its factors: the sixth part of it is 1, the third part of it is 2, a half of it is 3; combining these factors, namely, 1, 2, 3, we have the total of 6 which equals the number itself exactly, without any surplus or lack. Know thou that there is not to be found any number perfect with regard to its factors except for 6 in the units, 28 in the tens, 196 in the hundreds, 8124 in the thousands, as it is explained in Euclid at the end of the ninth section.¹ Here you have the property of the number 6, even that it is a perfect number with regard to its factors. And thou shouldst know, in addition, that the number 6 embraces all the (geometrical) forms. All the forms which are in the category of things which come into being and pass away are embraced in three shapes; and they are the circle, the quadrangle, and the triangle. All the rest of the forms, both plane and solid, are compounds of these three (the difference between plane and solid shapes is this: on the one hand our intention is merely to know the length and breadth of the plane; on the other hand the cubic shape carries with it the necessity of knowing also the height — from the language of "... and the cubic shall be plane...." in Isaiah 40²). We know already that even before the lines are drawn, the triangular shape is determined by three points, and the quadrangle is determined by four points. Know thou also that the circle is determined by six points; for when thou makest the circle with the compass and thou dost measure the circle with it,³ even its whole circumference, and with every tread of the foot of the

compass thou makest a point, the sum of all the points is 6. And when thou drawest a line from each and every point to the next point nearest it, the measure of the line which lies between the two points will equal the measure of half the diameter of the circle. Thus, six lines will be found, equal to the number of points. The geometers call it a circle hexagon [inscribed hexagon]. In this way we see that the number 6 embraces the triangle, the quadrangle, and the circle.¹ Know thou that all we have said concerns only the plane forms and we must still explain this for solid forms. Although there is no cubic number less than 8, nevertheless I say that the number 6 teaches the cubic form. Know, that in accordance with that which we have already explained, even that the form of the triangle is determined by three points, when you add three more points, that is to say an additional point added between each and every point — and then it will be apparent and discernible that it is a triangle² — and when thou dost draw a line from each point to every point near it, thou wilt observe a remarkable thing: that four triangles like this³ are to be found in the six points. They indicate four solid triangles, even if in the diagram they are plane; because it is obviously impossible to portray a third dimension on a flat surface. Thou shouldst take wax or other material and make four solid triangles, equal in size, so that each one will have four equal faces. Fix three of them together like the three triangles in the diagram and fix the fourth above the three triangles. Thou shalt then see in this form a remarkable thing: the four triangles together have the form of one triangle equal on all four sides.⁴ On whatever side one looks, the triangles will be unchanging in form just like the cube and the ball which, turning on every side, are left in its original form. Behold, the number 6 has marvelous properties!

Incidentally, I say that the number 10, in itself, also has this last peculiarity, even if it is not a perfect square or a perfect cube. For when thou wilt make from wax ten triangles or ten spheres equal in size; and thou wilt place six below like the triangle which is in the diagram¹ only that they cleave together; and thou addest above them still three more spheres; and on the three thou fixest again one more sphere; its form will be that of the triangle. Thus, the two forms we have just mentioned² have the properties of the triangle, of the quadrangle, and of the cube, and also have the property of the circle since it remains in its original form though turned on all sides. Know thou that these two numbers, 6 and 10 have another relation and bond in common. Euclid mentions one of these numbers.³ But the scholar, Rabbi Moses Provinsal,⁴ has already explained this matter, and his words need no emendation. Besides this, they have still another relationship, but I do not wish to prolong matters. This is what I intended to establish at the beginning of my book, though there is scarcely enough place for it here. But if God will be with me and lengthen my days, I will publish the rest of my book dealing with arithmetic and geometry in a manner which will please the understanding mind. From now on we shall return to our book with the help of Him who graciously endows man with knowledge.⁵

P. 7, note 1:

R. Abraham ibn Daud = אברהם דוד

P. 8, note 1:

משה בן יצחק

P. 8, note 2:

Rabbeinu 'Asher ben Jekiel = אפרים בן יעקב

P. 9, note 1:

(V. note on p. 10 of ch. I) ".....הוא ה' אלהים שלמה....."

P. 9, note 2:

פירוש חזקוני

P. 9, note 3:

The school of Pythagoras classified numbers as perfect, deficient and abundant. Gans' definition of perfect numbers is correct except for one divisor or factor (ג'א) which must be excluded, namely, the number itself. A deficient number is greater than the sum of its factors; and an abundant number is less than the sum of its divisors. All this is discussed in many places in great detail in Heath's classic translation of and commentary on Euclid (Cambridge 1926); and references are made there to all the original Greek sources. In Gans' illustrations, the number 8 is deficient and the number 12 is abundant. According to Heath (vol. II, p. 425), Nikomachos of Gerasa (fl. c. 150 C. E.) gives four perfect numbers, viz., 6, 28, 496, 8128. Others which have been calculated are: 33550336, 8589869056, 137438691328, etc. All of these were derived from the general formula $2^n(2^n - 1)$ where $2^n - 1$ is prime.

P. 10, note 1:

Gans' list of perfect numbers is incorrect as can be seen from the previous note. The error does not seem to be a misprint.

We have omitted from our translation the following words of Gans:

".....כמו כאלו שהם חסרי חסר....." He refers to Book IX,

Proposition 36, of the Elements (Heath, vol. II, p. 425):

"If as many numbers as we please beginning from a unit be set out continuously in double proportion, until the sum of all becomes prime, and if the sum multiplied into the last make some number, the product will be perfect."

P. 10, note 2:

".....למשיגו למי שזר: יצאנו מ' ל' We have taken the liberty of translating this phrase in a way which more clearly expresses Gans' apparent intention. 3747, perhaps intended to show

P. 10, note 3:

Gans means that the radius of the circle is to be used to mark off the circumference by subtending equal chords (=radius) under equal arcs. That Gans should think it important to state the obvious that the arcs so drawn are equal to one half the diameter is a possible indication that he did not quite understand the simple proof of the proposition that a regular hexagon can be inscribed in a circle. To paraphrase Aristotle (Metaphysics, Book A, 983a, 19, Ross translation), there is nothing which would surprise a geometer so much as if the radius of a circle did not turn out to equal one half the diameter.

P. 11, note 1:

A typically Pythagorean notion, viz., that numbers are the essence of reality and the causes of all "forms". It is this of which Aristotle speaks when he says (Metaph., Book N, 1092b, 15): "...some people bring numbers into the forms of triangle and square."

Gans has proved his point that the number 6 embraces the circle, but he has not shown how 6 is the cause of the triangle and quadrangle. We can guess at his proof if we note that 3 or 4 of the 6 points on the circumference of the circle can be so chosen as to determine a

triangle or a quadrangle respectively. If by *ysim* he means "square", then he possibly refers to the fact that all sides of the hexagon are equal, as in a square. *I think his ysim is a square & tsim an equilateral triangle*

P. 11, note 2:

He means that the outline of the triangle becomes clearer.

P. 11, note 3:

All editions of the Semah David give a diagram illustrating this simple construction.

P. 11, note 4:

In more accurate language, a regular tetrahedron with equal lateral edges, superimposed upon three other such tetrahedrons according to his instructions, will give a larger regular tetrahedron with all faces equal.

P. 12, note 1:

Instead of merely using three triangles or three spheres as a base for the structure, three more are added so that their bases form a triangle. Then three more are superimposed so that their bases form a triangle, the form of which is outlined by the vertices of the triangles below. Lastly, a single pyramid or sphere tops them all. This makes ten in all.

P. 12, note 2:

Gans fails again to make himself clear. Perhaps he means that the tetrahedron so constructed has the property of a triangle because each face is a triangle; the property of a square (see end of note 1, p. 11, above) because the lateral edges are equal; and the property of a cube because it is the same on all four sides.

P. 12, note 3:

We have omitted a few words from our translation. The complete

text reads:

„ודע שיט לאלו שני מספרים שזה ועשרה עור יחס וקיסור יחד
ואחד מהם זכר הקלירם בלימוד ט' ממחמר י"ג ומציאו צעל
עקרים במחמר ג' פיקה ג' באחרו שחאזר ידוקה שלע המאולט
הקו הפוא נחלק על יחס צעל אחאצי ושת קצוות."

Gans is referring to Book XIII, Proposition 9 of the Elements
(Heath, vol. III, pp. 455-456):

"If the side of the hexagon and that of the decagon inscribed
in the same circle be added together, the whole straight line
has been cut in extreme and mean ratio, and its greater seg-
ment is the side of the hexagon."

What Gans means by "and he mentions one of them", I do not know;
for the proposition does mention both a hexagon (6-sided) and a
decagon (10-sided).

P. 12, note 4:

Moses ben Abraham Provençal = משה פיונינאל

Cf. Zuns, Gesammelte Schriften, pp. 361-362.

P. 12, note 5:

From the daily prayers. V., Singer, Daily Prayer Book, p. 46.

APPENDIX B

A Translation of the
Introduction to the
Second Book of Semah David

PREFACE

David, who is called David Gans, the son of my lord, my father, his honor Rabbi Solomon, of blessed memory, even *Avaza*, said, "It is already known that our rabbis, of blessed memory, counted all the dates of the rule of the nations until the coming of our Redeemer, with reference to the Four Kingdoms, according to the prophecy of Daniel. The Four Kingdoms are Babylonia, Persia, Greece and Edom. The gentile scholars also followed them in their books, but they called them the Four Monarchies,¹ which means "kingdoms". Although there were great powerful kings among other peoples in the days of the Four Kingdoms, nevertheless, the date is only given with reference to the Four Kingdoms just discussed. This is just what the *Ramban*,² of blessed memory, wrote at the end of the section *Balak*.³ The first king that we find in the world is Nimrod, the son of Kush, who ruled over Babylonia, as it is said, "And the beginning of his kingdom was Babel....."⁴ Fifty-one kings ruled after him in Babylonia. The kingdom of Babylonia stood until Belshazzar was slain in the year 3389, *Anno Mundi*. Since we have already promised in the introduction to the first part of this book, to translate all the dates of the Four Kingdoms from their book of records, I come, therefore, to pay my debt. And I shall write for you the succession of their kings and the dates they ruled, even from the time of Nimrod, the first king, throughout the period of all the Four Kingdoms, until the time of that righteous monarch Leopold, may His Majesty be exalted, and may his kingdom be glorified; together with many events and matters that occurred for the first time in their days ——— everything in great brevity; for if we should deal with them at length, one book could not contain them.

As for thee, O intelligent reader, I know that one can differ and

say, "Since our days we have not seen, and we have not heard, and our fathers also have not told us, that there exists among any people or in any tongue under the sky a single book by any chronicler which was composed before the time of the giving of the Torah. If this fact is true, where did it originate; or who told us of the kingdoms and the stories of those events concerning which our Holy Torah does not testify and which took place before this time?" Behold, before I begin to speak and confront this perplexity, I will make it known to thee, sweet reader, why thou shouldst not imagine that it is my opinion that all the words of this book, in this second part, are well founded. This is not my belief; because the sources of the events of this second part are the books of the Greeks, in addition to those of the ancient Roman scribes, both of whom strayed at times from the path of truth. God forbid that they should be to us a root or sprout for our planting. For I acknowledge herewith that the narrator cannot declare that matters are certainly thus and so with all writers of happenings of old who did not write in a spirit of holiness, due to the fact that even an incident which is certain in our eyes today, can be described in different ways by those who see it. If there are both an enemy who censures and a friend who praises, how much more does this apply to things translated from language to language. It is already known that the taste of that which is ^{howled} ~~scanned~~ from pot to pot does not endure. However, do not think even once that, in this book, I have written even one of the many things which are stated without knowing its source to be a scribe of convincing reliability. Thus, thou wilt know that the writers of records brought forth most of the old things from the book of Berossus the Chaldean¹, whom the author of Me'or 'Enayim also mentions in many places and calls him "the ancient scribe"².

And, according to the words of Spangenberg,¹ this Berosus lived after the rebuilding of the Second Temple in the time of Alexander the Macedonian; that he was one of his scribes and known to be a truthful writer. Although he was a Chaldean, he wrote of all the dates and happenings of the Assyrians, in so far as he found them written in the archives, in the ancient historical books of the great kingdoms which dominated the earth. Even if he does not mention them by name, he speaks of them. They also took out many things from other scribes besides him who are also known to be trustworthy. But I have mentioned this Berosus because he is the first scribe of the gentiles known to us by name. Thou also, O reader, dost surely observe both the words of that perfect scholar, Rabbi Abraham Zacuto, which he wrote in Sepher Yuhasin, page 135, that there are sixteen kings in the succession of the kings of Egypt who ruled from the time of Misrayim, the son of Ham, until the time of Moses our teacher, peace be with him, and who told him this. The author of Me'or 'Enayim, section 21, also mentions a great many writers of records who testified concerning the kingdom of Semiramis, who ruled in the time of Terah the father of Abraham — just as thou wilt see within, in the year 2958. Thine eyes will also behold in the book which Yosippon ben Gorion wrote in book 2, section 11, that Kenan, the son of Enosh, ruled over one of the islands of the Sea. Besides this, he wrote in that place of many things which occurred before the time of the giving of our Torah. In addition, know thou that the scribes from whose books I derive most of this second part are Cyriacus Spangenberg,² Hubertus Goltsius,³ Laurentius Faustus,⁴ Georg Cassius,⁵ Martin Borek⁶ and others. I have brought up in this book the things upon which most of the chroniclers agree. For the author of Me'or 'Enayim, section 59, has already written in the name of

Yosippon that it is substantial proof of the veracity of that which is told when we see that different writers, separated from each other by language and country, agree and unwittingly take counsel together. But he who wants to believe most of the stories of what happened will believe; and he who is skeptical will not cause damage. Furthermore, I enter a plea of constraint before the elders of my people, so that wherever our words in these matters are in opposition to the Hagadah of our teachers, of blessed memory, even a difference of a hair's breadth, may those elders wash out our words so that they will be as if they had not been.

However, I see at the outset that many will open wide their mouths and speak strongly against me, and charge me with iniquity because my writings depend on those scribes who are not of the children of Israel; and, added to this, that this second part of my book is in a class with gossip, warlike tales and other innovations. Indeed, these are profane in their eyes; and, at any rate, it is their opinion that it is forbidden to read them on the Sabbath. Nevertheless, I shall neither digress nor lengthen my self-justification, because many great men of Israel will be a buckler and a cuirass for me. For all the divine philosophers have done the same thing, in that they extracted the correct and trustworthy words from the books of Aristotle — digesting the essential part and casting away the shell. Close to our own time, Rabbi Abraham Zacuto, in the book Yuhasin, Rabbi Joseph ha-Cohen, in his book Dibre ha-Yanin le-Malke Sorfath we-Otoman, Rabbi Abraham Provençal¹, in his book 'Oreboth 'Olam, and others, told us of general happenings in the history of the times which were derived from those who wrote about them. Were one to assume that the narration of general news and bellicose oc-

currences are vain things, open thine eyes and see that which the paragon of our times, that perfect righteous man, even our teacher, the master, Rabbi Moses Isserles, hath written in his marginal notes to Shulhan Aruk, in the Tur Eben ha-Ezer, chapter 307, paragraph 1, as follows: "As for the children of Adam, to whom the narration of general news and other novellae are a delight, it is permitted that they tell of them on the Sabbath just as on an ordinary day." There, in the same book, in the marginal note to paragraph 16, he wrote still further in these words: "It appears reasonable that one should be very strict about that which is forbidden to be recited in a profane language. Warlike tales are to be considered in this class if they are written in another language, but they are permissible in the Holy Tongue. We can say this on the basis of what the Tosephoth, in the chapter 'All the Holy Writings¹, wrote. Thus it is customary to favor the more lenient practice in this matter."

I maintain, moreover, that the Biblical text gives us permission to dig in the books of the gentiles and search after happenings and events which have value; just as it is written at the end of the Scroll of Esther:² ".....and the full account of the greatness of Mordecai..... are they not written in the book of chronicles of the kings of Media and Persia." Also, in Jeremiah, chapter 18, it is written: "Ask ye now among the nations....." Also, in the weekly portion "And I besought the Lord....."³ the Biblical text says: "For ask now of the former days which were before thee, since the day that God created man upon the earth...." Therefore, since the souls of many perfect men yearn and pine for knowledge of history, encourage me to insert it in a book. I wrote this part of my book for a generation weary of the exile, in order to

gladden the souls of the grieving, even the private men who procure their bread by the toil of their own hands, and in order that they may rest from their toil after anxiety, labor and weariness, by reading many things, both new and old.

I see much profit in the tales of this book. Firstly, the providence of the Blessed Lord over the flock of his pasture may become known through the tidings disclosed in this book. For, although great powerful kings have risen against other countries and kingdoms, destroyed and cut them down, and taken root after them, thus putting an end to their nationhood so that even remembrance of them is lost, the Blessed Lord, in spite of this, delivered us beneath His wings, did not yield us up as prey, and always kept his promise to us to defend us. If many mighty wars are stirred up as a result of religious change, this is true not only of those who deny their faith but also of those who merely make changes in the ritual. As everyone knows, the difference between the papal sect and the Lutheran sect — just as it will appear within, under the year 6282 — is caused only by changes in ritual. While more than a million Christians have been slain and butchered in our times, that is, within the last fifty years, we dwell in security by the help of Him who dwelleth on high and whose lovingkindness doeth wonders for us. Secondly, a living being may set before his mind that when a man goeth up to greatness and high station, he should, at any rate, be patient and humble in spirit. *Passage about the Caesars omitted* Thirdly, a man may take care and be just as fearful of a little enemy as of a powerful enemy. *omitted here* Fourthly, a man may receive the wisdom not to quarrel with anybody stronger than himself, nor to provoke and oppose someone who the hour favors. Fifthly, the providence of the Blessed Greater,

in whose hands are the scales of reward and punishment, will become known by this narration. Sixthly, many corrective remarks to be found in my words will pass into the ears of the masses when this matter is told to them. Seventhly, proof of many dates and statements in the sayings of our rabbis, of blessed memory, will be taken from these scribes; just as that perfect righteous man, our teacher, the master, Rabbi Isserles wrote in his marginal note in Sepher Yuhasin, page 156, concerning chapter 11 of the book Yesod 'Olam, as follows: "I have also written about the learned philosophers, famous men who are specified by name and date, in order to make known the differences between the generations before and up to this very day — because proof concerning our sages, of blessed memory, will be obtained from these gentile scholars." Eighthly, I intend to make mention of some of the heavenly signs, new stars, and eclipses of the luminaries, which occur at certain times; and of what happened and took place after these events. The value of this lies in the awakening of the reader's mind to that saying of our rabbis, of blessed memory, in the chapter "He who sleeps....."¹ "When the luminaries are eclipsed it is an evil sign for the world"; and to that which the chief of the commentators² wrote in the book Kohleth, in the Biblical verse³ ".....and God hath so made it, that men should fear before h'm.....," as follows: "Whatever the Holy One, Blessed be He, made at creation was fit to exist forever; and when it altered, it was God who commanded and made it change in order that they should fear him." Read there, for he deals with the matter at greater length. Thus, when there is an occurrence like this, we should pray to the Lord to cause the evil astral influence to pass us by. Our rabbis, of blessed memory, stated concerning this: "Israel has no constellation....."⁴ And Rashi explained that the constellation changes by means of

repentance. See within, at the end of this book, in the year 6348. Ninthly, we live among the nations as settlers with them; and when they speak or ask us of the former days of the kingdoms of antiquity, we are silent and know not what to reply. We seem to them like cattle who do not know their right hand from their left; or as if all of us were born the day before yesterday. But by means of this book, the one who wishes to answer can reply and discuss a little concerning each and every period. By this means we can find grace and good favor in their eyes. If such a purpose has no value, I have, at any rate, brought the matter up. Tenthly, I have already revealed in the introduction to the first book that when the reader reads about the power and greatness of the kings and Caesars in this second part, we will pray to the Lord to cause the sprout of David to return and flourish in Jerusalem. So may it be His will. Amen.

The Year 235

The author says: "We have already written in our introduction that one value in the translation of the books containing chronicles is that we derive proof from them of many statements made by our rabbis, of blessed memory. Therefore, at the beginning of these words of mine, I shall not keep hidden from the reader that which I have found in their books of records, at the beginning of Cassius' book, that in the days of Enosh the king, in the year 235, Anno Mundi, the 'western' ¹ sea, which is the same as the Ocean, flooded a third of the world; and that this also happened in the days of Kenan. But it is mentioned above that they took this from Yosippon who had written it in his book, book 2, chapter 11. There is support for this in the sayings of our rabbis, of blessed memory, in here'shith Raba' and other places, where they say that the flood oc-

curred two times, for it is written ¹ '....He that summoneth the waters
of the sea and poureth them out....' which makes it two times that the
sea went up and overflowed the world."²

NOTES TO APPENDIX B

P. 1, note 1:

הרצו מחנ"ר.

P. 1, note 2:

הרמ"ן.

P. 1, note 3:

הרמ"ן.

P. 1, note 4:

הרמ"ן.

P. 2, note 1:

הרמ"ן.

P. 2, note 2:

הרמ"ן.

P. 3, note 1:

V. Chapter II for sources of the second part of Semah David. My edition of Semah David (Warsaw, 1878) prints the name of Spangenberg incorrectly as follows: שפנגן צורק.

P. 3, note 2:

The name Cyriacus Spangenberg is incorrectly printed in my edition as follows: צורק, as if Cyriacus were the name of somebody else.

P. 3, note 3:

should be הוצגו בלש"ן. V., note 1.

P. 3, note 4:

should be V., note 1.

P. 3, note 5:

should be V., note 1.

P. 3, note 6:

should be V., note 1.

P. 4, note 1:

The name ל' אברהם פראזינסקי is incorrect. It should be "R. Abraham ben Mordecai Farissol", author of חננו, born in 1451, in Avignon, Provence. The confusion is understandable when

we realize that Abraham ben David Provençal, born about the time of the former's death bore so similar a name. The latter never wrote any work by the name אמנות וולם. V. Steinschneider, Cat. Libr. Hebr. Bodl.; Jew. Encycl., vol. I, p. 106; Klemperer, in his David Gans' Chronikartige Weltgeschichte in's Deutsche übertragen, Prag, 1890, in a footnote to this part of the translation.

P. 5, note 1:

שנת דף קט"ו, ע"א.

P. 5, note 2:

חמור י' ז'.

P. 5, note 3:

זכרים ל' ל"ז.

P. 7, note 1:

סוכה, דף כ"ט, ע"א: ת"ר צמחן שהחמה לוקה פסחן נע לחומות העולם לצנה לוקה פסחן נע לשונאיהם של ישראל מפני שישראל מוכן לצנה ולחומות העולם לחמה לוקה צמחון פסחן נע ליושצי מזרח צמחון פסחן נע ליושצי מערב צמחון הנקיצ פסחן נע לכל העולם כולו...."

P. 7, note 2:

Rashi, of course.

P. 7, note 3:

קבלת ג' י"ד.

P. 7, note 4:

שנת, דף קט"ו, ע"א:רצ' יוחנן חמור חין מזל לישאל..... שנחמור [Jer.] כה חמור ה' אל דרך הגוים אל תלמדו ומאותות השמים אל תחתו כי יחתו הגוים מהמה....."

And Rashi says:

חין מזל לישאל: דע' תפלה וזכות משתנה מזלן לשונה."

P. 8, note 1:

הים חיקלוד' ינאי.

P. 9, note 1:

צמח ה' ח'.

P. 9, note 2:

דגאטית כזא, פגשה ל"ה, סעיף ז': ז' פעמים כתיב הקורא למי
הים. כנגד ז"פ שהיו המים עולים ומאיפין חוץ בתוך קציהם.

APPENDIX C

I. Bibliography.

[II. System of Transliteration
Used in Translations of
Appendices A and B.

III. Addenda et Corrigenda.]

I. BIBLIOGRAPHY

Manuscripts and Editions of Gans' Works¹

- (1) גזולות הארץ . A geographic work no longer extant. Completed between 1592 and 1612-1613.

According to Zuns (Benj. Tudela, vol.II, p.278; Gesam. Schriften, vol.I, pp.185-6), it is the geographic work promised in נחמה נחמה². It is referred to by name in נחמה נחמה³. Since it is mentioned in the future tense in נחמה נחמה and in the past tense in נחמה נחמה, it was completed between 1592 and 1612-1613.

Zuns, l.c., claims that it is identical with

גזולות הארץ, l.c., no.7 of this list. Steinschneider (Catalog. Libr. Hebr. Bodl., vol.I, p.860) offers no objections to this. Lieben (גזולות הארץ, pp.10-12) agrees with Zuns.

It is not known whether it was ever printed as

גזולות הארץ.

¹ The titles have been alphabetically arranged.

² נחמה נחמה, גל, כ"ה: ואלו כאלו מקום להאריך אך צפון אשר יעלה לחצו
הארץ צנה [the lands where the ten tribes were dispersed] יתג צנ

נחמה נחמה, גל, כ"ה: ואלו כאלו מקום להאריך אם יצרכי צנ הארץ צנה [the "new world"]
[discovered by "Americi"] צמקום אחר.

³ נחמה נחמה, גל, כ"ה: ואלו כאלו מקום להאריך אך צפון אשר יעלה לחצו
in Armenia [the lands where the ten tribes were dispersed] יתג צנ
צמקום אחר.

- (2) מאור הקטן . A work on the calendar no longer extant. Completed after 1592 and before 1612-1613.

Zuns, l.c., claims that it dealt with arithmetic and geometry, and that the work on the calendar which he promised to write was probably never written. Lieben's view, l.c., is opposed to this: "Gans unbegreiflich bleibt uns daher, wie Zuns....sagen kann, מאור הקטן sei ein Traktat über Arithmetik, jenes Werk hingegen wäre gar nie geschrieben worden."

Steinschneider, l.c., agrees with the latter: "Liber de Calendario vero, promissus in op. 3 [referring to למח 717] P.II ad A. 1583, procul dubio est lib. מאור הקטןcontra Zs."

It is cited in many places in the extant works of Gans.¹ From these citations one can ascertain

1

ב"ר, ח"ט, 1583: ח"ט ה' חפץ ב' אחריו בזה [the Gregorian Calendar] במקום אחר....
 דאמר לנו: נחמד ונעים....אשר חזרו...דוד גבן בעל המחבר פסד למח 717
 ופסד מאור הקטן ופ' הפיוט וכו' קל.....
 ב"ר, ד' ז' ע"ג: דאופן שאין לנו לריבין לתקן שנתנו חשבון לחיותינו.....
 שנתבאר בספר מאור הקטן אשר חזרתי....
 ל"ט, ס' כ"ח, ד' ל"ה, ע"ח: וזוהי לתשובת הנעדים להציג לפניך לוח קטן אשר
 מחמו יודע לתלמידים מכלי לרין עין וחשבון כלל חשלת כל כאב
 בכל שעה ושעה.....ועיין הלוח בספרי מאור הקטן."

that the מחזור הקטן had at least two שיעורים :
 מחזור הקטן and שיעור החודש ; that the מחזור
 was something like an almanac containing ex-
 planations of various astronomical phenomena;
 that the work was simple enough to be used by
 youthful students; and that it was written af-
 ter 1592 and before 1612-1613.

H. J. Michael, וזה החיים, p.351, no.782, states
 that it was never printed.

(5) מחזור דוד . A work on arithmetic and geometry no longer extant.

Written before 1592.

Y., Bartolucci, Biblio. Magn. Rabbin., vol.II,
 p.21, no.417.

It is mentioned only once by name in Gans' works,

[concerning the length of the hours] וזה...אשר הוחזקו בו המחזור
 ל. ס' ק', ל' כ"ה, ע"ב.

מספרינו מחזור הקטן שיעור החודש....

[the length of the day] וזה...ענין זה
 ל. ס' ק"ה, ל' כ"ו, ע"ב.

מחזור הקטן.

ל. ס' קפ"ד, ל' כ"ח, ע"ח; וכבר הוחזקו בו חז"ל
 the definition and]

[length of the solar year] מספרינו מחזור הקטן שיעור החודש ממנו....

ל. ס' ר"ב, ל' כ"ט, ע"ח; וזה...זה
 [the solstices and the new moon] קצת שיעור

החודש מספרינו מחזור הקטן....

ל. ס' ר"ג, ל' כ"ט, ע"ח; וזה...אשר הוחזקו בו המחזור
 [length of the lunar month]

מספרינו מחזור הקטן דפי כ"ח אשר הוחזקו בו...

ל. ס' ר"ג, ל' כ"ט, ע"ח; וזה...אשר הוחזקו בו המחזור
 [length of the lunar month]

מחזור הקטן....

ל. ס' רס"ד, ל' ע"ד, ע"ב; וזה...אשר הוחזקו בו המחזור
 [the hours of the day] שיעור החזיון

מספרינו מחזור הקטן.

vis., in the 73¹. We can infer from that reference that it was composed before 1592. Zuns, l.c., identifies it with 717170, q.y., no.6 of this list. If this is correct, the Ms. of 717 170 was lost before 1612-13.² Cf., Steinschneider, l.c., Michael, l.c.

- (4) 717 מגן . An astronomical work. A Ms. copy in the Stadtbibliothek in Hamburg; 48 leaves; 4to; 1598. A printed copy in the Bodleian Library of Oxford; printed by Abraham b. Besalel, Prague; 4to; Elul, 1612.

Michael, l.c., was the first to describe the Hamburg Ms. He claimed that it was a part of the נחמד ומענין . The printed edition was described by many before and after him. V., Bartolucci, l.c. (he incorrectly calls it by 790 790); Oppenheimer, p.246, no.409; זן-אויג, אהרן, p.296, no.498; Steinschneider, l.c.; Fürst, Bibliotheca Jud., vol.I, p.316 ff. Steinschneider, l.c., and in Zeitschrift für Math. u. Phys., 1371, gives the most complete history of the growth of the נחמד ומענין : started in 1592;

¹ הקדמת ז"ד: וראיתי לקרא לספר זכרונות זה.....כמה דוד....יען שחצו זה הוא הנחמד הראשון והוא יאל תחלה לפני שער חצויי מגן דוד ומגדל דוד ספרים מחכמות המספר וחכמות המדינה.

² גוף, סי' כ"ק, ע"ה, ז"ד: וכבר חצונו מזה הספר אורך אשר קראתיו ספר המדעוד אשר הספר הפוא צעונות נאצרה מחני."

finished in 1598; appeared in print in 1612
under the title 717 פנ; enlarged and edited
in 1613.

Stössel, in Ben Chanania, art. "Aus dem Museum
in Brunn", 8 Jahrg., p.601 ff., describes a Ms.
in Gans' own handwriting. The Ms. contains dia-
grams illustrating various problems given in the
book. Stössel claims it is a Ms. of דברי חיים
but completed before 1601. Can this also be a
Ms. copy of 717 פנ?

Cassel, Allgemeine Encycl. der Wissen. u. Künste,
section 1, art. "Gans", correctly points out an
error of Gans: "Magen David...nach der Angabe
in der Vorrede zu Zemach David eine Darstellung
der Arithmetik; nach einer Mittheilung H. J.
Michael's an Zuns bildet es einen Theil des
Nechmad und ist astronomischen Inhalts."

- (5) דברי חיים. On astronomy and mathematical geography, with an intro-
duction giving the history of astronomy and the part
Jews played in it. Printed in Jesnitz by Israel ben
Abraham in 1743; published by Joel b. Jekutiel; 4to;
82 leaves; many copies in public and private libraries.

Y., Roest, Catal. der Hebr. u. Jüd. aus der Rosen-
thal'schen Biblio., p.303 and Anhang. no.1349;
Zedner, Catal. Hebr. Books Brit. Museum, p.222;
Freudenthal, Aus der Heimat Mendelssohns, p.264,
no.87; Fürst, l.g., vol.I, p.317; Michael, l.g.,

not by Gans, but is the one written by Abraham bar Hiyya.

(8) 717 תרנ"ז.

Composed of two books, each with a preface. The first gives a history of the Jews from creation to 1592. The second gives a general history of the world from 235 A.M. to 1592, and is called ספר העולם. Each book is followed by a table of contents. The following are the editions and translations of the work in order of their publication:

(a) Prague, 1592; printed by Solomon ben Mordecai ha-Cohen and Moses b. Joseph Bezalel ha-Cohen; published by Joseph Jekutiel Kaufman b. Jacob Juda; 4to.

V. Roest, l.c.; Zedner, l.c.; ספר העולם, l.c.,
Friedberg, ספר העולם ח"ב, p.526, no.172;
Oppenb., l.c., p.322, no.834; Davidson, ספר העולם,
ח"ב, vol.II, p.425.

Zuns, Zur Gesch., p.277, states that the first book was begun on the first of Sivan (May 12), the second book on the twenty-second of Tam-muz (July 2), and the whole printed on the fifteenth of Heshwan (Oct. 21).

(b) Leyden, 1644; a Latin translation of the first book, to which is appended a translation of the Pirke de Rabbi Eliezer; translated by G. H. Vorstius and called Chronologia Sacra-Profana; 4to.

V. Zedner, l.c., Steinschneider, l.c. calls it a "vers. prava".

(c) Frankfurt a. M., 1692; printed by David b. Moses of Rheindorf who lived in the house of David Tevle Schiff; the contents of both books enlarged to include events up to 1692; a third part added either by David of Rheindorf or David Tevle Schiff. The title page of the second book bears the colophon אחרי כן, which apparently is incorrect. The author of the additions changed Gans' dates in the prefaces. 4to.

Y., Steinschneider, J. q., p. 860, no. 4805;

Roest, J. q.; Zedner, J. q., etc. as with Prague ed.

(d) Frankfurt a. M., 1698; printed by Solomon Hanau; an anonymous translation into Judaeo-German of the 1692 edition; typographically incorrect; 4to.

Y., bibliographers under the foregoing editions.

(e) Offenbach, 1768; printed by Zebi Hirsch Spitz, 4to.

Y., Steinschneider, Geschichtlit. der Juden. part 1, p. 109, 132; Zedner, J. q.; card catalogue of New York Public Library.

(f) Fürth, 1785; printed by Itzig b. Loeb; 4to.

Y., Steinschneider, Bodl., J. q.; catalogue of New York Public Library; Zedner, J. q.

(g) Sudsilkow, 1834.

Y., Steinschneider, Geschichtlit. der Jud., J. q.; Grünwald, Illustr. isr. Volkskalender J. 5650, p. 116.

(h) Lemberg, 1847; printed by Chawe Grossman; additional notes by Abraham Mendel Mohr; 4to.

Steinschneider, Catal. Bodl., l.c. calls this an 8vo volume, while Roest, l.c., describes it as a 4to volume. The Lemberg 1863 ed., q.v., is described as 8vo. Roest seems to be more exact in this point.

(i) Warsaw, 1859; printed by H. E. Bomberg; published by Mendel Mendelssohn.

Y., catalogue of New York Public Library;

Steinschneider, Geschichtlit. der Juden, l.c.

(j) Lemberg, 1863; printed by S. L. Kugel Lewin & Co.; 8vo.

Y., Lemberg 1847 ed.

(k) Warsaw, 1871; printed by G. and P. Lebensohn.

Y., catalogue of New York Public Library.

(l) Lemberg, 1871.

Y., Steinschneider, l.c., in (i) .

(m) Warsaw, 1872.

Y., Friedberg, דברי חיים, p.526, no.172.

(n) Berlin, 1876.

Y., Friedberg, l.c.

(o) Warsaw, 1878; printed by J. E. Edelstein of Bialystok.

A copy of this edition is in my possession.

(p) Warsaw, 1890; printed by J. E. Edelstein.

Y., catalogue of New York Public Library which

states that the Hebrew and Common Era dates
in this edition do not correspond.

(q) Prag, 1890; translation of second book by Gutmann
Klemperer; introduction and notes by M. Grünwald. En-
titled "David Gans' Chronikartige Weltgeschichte."

Y., catalogue of New York Public Library.

A short summary of the ל' טיוק'י , with ל' טיוק'י
ל' טיוק'י , which deals with Sabbatai Zeri, added,
was printed in Offenbach, 1715. It consists of 14 pp;
12mo.

Y. Friedberg, l.g.

(9) A translation of certain astronomical tables from Hebrew into Ger-
man was made by Gans. Not extant.

Y., chapter I, pp.29-31 of this dissertation.

Bibliographical Studies of Gans' Works¹

Bartolucci, de Celleno (D. I.):

Bibliotheca Magna Rabbinica, Rome, 1678.

Buxtorf (Johannes):

Bibliotheca Rabbinica.

Freudenthal (Max):

Aus der Heimat Mendelssohns, Berlin, 1900.

Fürst (Julius):

Bibliotheca Judaica, Leipzig, 1849.

Hartmann'sche Katalog.

Hirt:

Orientalische Bibliothek.

Lewwarden, Catalog der Bücher des Jakob, Amsterdam, 1797.

New York Public Library, article "Zemach David", in card catalogue.

Oppenheimer (David):

Catalogus...Bibliothecae Hebraeae, Hamburg, 1826.

Plantavitius bibliotheca rabbinica, no.595.

Revue des Études Juives, vol.XX, p.152; vol.XXI, p.307.

Roest:

Catalog der Hebraica und Judaica aus der L. Rosenthal'schen Bibliothek, "Gans", Amsterdam, 1875.

Steinschneider (M.):

Catalog der Hebraischen Handschriften in der Stadtbibliothek zu Hamburg, Hamburg, 1878.

¹ V., under Manuscripts and Editions of Gans' Works for other books and articles which are not primarily bibliographies.

Bullettino di Bibliografia e di storia delle sc. matemat. e. fisiche, "Notice sur les tables astronomiques attribuées à Pierre III d'Aragon", Rome, July 1880, vol.XIII, pp.413-36.

Catalogus Librorum Hebraeorum in Bibliotheca Bodleiana, Berlin, 1852-1860.

Hebräische Bibliographie, Berlin, vol.IV, p.40; vol.XI, p.57.

Stössel (M.):

Ben Chanania: Wochenblatt für Jüdische Theologie, "Aus dem Museum in Brunn", 8 Jahrg., p.601.

Wolf (J. Ch.):

Bibliotheca Hebraea, Hamburg, 1715-33.

Zedner:

Catalogue of the Hebrew Books in the Library of the British Museum, London, 1867, "Gans".

ספ (גנזית), גנזית יאנים, Amsterdam, 1680.
 גן-יעקב (יחזק חיידק), חומר הספרים, ווילנא, 1880.
 מיכל (חיים), חומר החיים, Frankfurt a. M., 1891.
 פרידלנד (3), בית עקד ספרים, Antwerp, 1928 - 1931.

Selected List of Books and Articles about Gans

Basnage:

Histoire des Juifs, 1716. Contains a few scattered references to Gans of no importance to this dissertation.

Bergmann (J.):

Jahrbuch für jüdische Geschichte und Literatur, "Wie unsere Familiennamen entstanden sind", Berlin, 1927, vol. XXVIII, p.42.

Berck:

Geschichte der westphälischen Fehmgerichte. Important for proving the authenticity of Gans' history of the vehmische courts in Westphalia.

Bondy and Dworsky:

Zur Geschichte der Juden in Böhmen, Mähren und Schesien von 906 bis 1620, Prague, 1906. Uses the 717 nms as source material.

Böhmische Akten.

Borek (Martin):

Böhmische Chronika, Wittenberg, 1587. One of the main non-Jewish sources which Gans used to write the history of Bohemia in the 717 nms.

Broyde (I.):

Jewish Encyclopedia, "David Gans ben Solomon ben Seligmann"; edited by Joseph Jacobs. Evidently derived from secondary material and inaccurate in some instances.

Brull (H.):

Allgemeine Deutsche Biographie, 1878, "Gans".

Ben Chanania: Wochenblatt für jüdische Theologie. "David Gans als astronom", 8 Jahrg., p.718. An excellent critical article on the subject, with scholarly comments on Hebenstreit's translation of the preface to ד"ר דוד גאנס.

Jahrbüchern für jüdische Geschichte und Literatur, vol.I, pp.105-6.

Pascheles' Illustrierter israelitischer Volkskalender, 1886, p.107.

Cassel (D.):

Allgemeine Encyclopädie der Wissenschaften und Künste, Leipzig, 1851, Ersch u. Gruber, "Gans". Still the best survey on Gans. The errors to be found are understandable, since the article preceded the uncovering of new material.

Cassel (Selig):

Allgemeine Encyklop. der Wissenschaften und Künste, "Juden" (Geschichte), (Ersch u. Gruber), Leipzig, 1851. A study of Jewish chronology which deals incidentally with Gans.

Deutsch (Gotthard):

Art. in Publications of the American Jewish Historical Society, no.28, 1922, pp.65-6.

Diets (Alexander):

Stammbuch der Frankfurter Juden, Frankfurt a. M., 1907.

Dubnow (Simon):

Die Geschichte des jüdischen Volkes, Berlin, 1927.

Enciclopedia Universal Ilustrada, Barcelona, 1924, "Gans".

Encyclopaedia Judaica, "Gans". Based, to some extent, on primary sources; but contains inaccuracies.

Etheridge (J. W.):

Jerusalem and Tiberias; Sora and Cordova: Survey of the Religious and Scholastic Learning of the Jews. London, 1856.

Friedlander (M. H.):

Das Leben und Wirken der hervorragendsten rabbinischen Autoritäten Prag. Wien, 1902.

Die Juden in Böhmen. Wien, 1900.

Geschichtsbilder.

Graetz (H.):

Geschichte der Juden. Contains a superficial criticism of Gans.

Grässe (J. G. T.):

Lehrbuch einer allgemeinen Literaturgeschichte aller bekannten Völker der Welt. Leipzig, 1852.

Grünwald (M.):

Introduction to Gutman Klemperer's transl. of David Gans' Chronikartige Weltgeschichte. with notes; I., Manuscripts and Editions of Gans' Works at the beginning of this bibliography. Adds nothing. Contains errors.

Illustrierter israelitischer Volkskalender für das Jahr 5650. Prague, 1890, "Rabbi David Gans...", p.99 ff. A lengthy article which gives important information about the non-Jewish sources of Gans. In general, it is a romantic treatment.

Mitteilungen des Vereins für Geschichte der Deutschen in Böhmen. "David Gans, ein Prager Chronist des 16. Jahrh.", Prague, 1889, Jahrg. 27, pp.279-282.

Die Laubhütte (Deutsche Israelitische Zeitung), Regensburg,
1888, pp.159 ff.

Hexter (Julius):

Quellenbuch zur jüdischen Geschichte und Literatur, Frankfurt
a. M., 1928.

Jeřábek (Imbomir):

Der Alte Prager Jüdenfriedhof, Prague, 1903.

Jost:

Allgemeine Geschichte des Israelitischen Volkes, Berlin, 1832.
Has little use for Gans as a historian. A very superficial
criticism.

Geschichte des Judenthums und seiner Sekten, Leipzig, 1859.

Karpeles (Gustav):

Geschichte der Jüdischen Literatur, Berlin, 1909.

Kaufmann (D.):

Monatsschrift für Geschichte und Wissenschaft des Judenthums.

"Der Stammbuch des R. Elasar Fleckeles", vol.LXXVII, p.378 ff.

Kisch (Guido):

Die Prager Universität und die Juden 1348 - 1848, Mährisch-
Ostrau, 1935. Important for the more recent bibliography
on Gans and his time.

Kohut (A.):

Der alte Prager jüdische Friedhof, 1897. A short but care-
fully written section on Gans.

Gedelte jüdische Familien, Salzburg, 1891.

Geschichte der deutschen Juden, Berlin, 1898.

Berühmte Kaufleute, Hamburg.

Kohut (Alexander):

Art. in Menorah, vol.XIII, no.6, Dec. 1892, pp.412-14.

Lieben (K.):

Gal-Ed: Grabsteininschriften des prager isr. alten Friedhofs.

Prague, 1856. A basic primary and secondary source.

Margolis and Marx:

History of the Jewish People, 1927.

Meisel (Josef):

Jüdisches Lexikon, "Gans".

Neufeld (Siegbert):

Die halleschen Juden im Mittelalter, Berlin.

Pascheles' Illustrierter Volkskalender, 1881, "Das Rabbinat in Prag".

Podiebrad (David J.):

Alterthümer der Prager Josefstadt, Prague, 1870..

Popper (Leopold M.):

Die Inschriften des alten Prager Jüdenfriedhofes, Braunschweig, 1893. A primary source.

Silber (Mendel):

Publications of the American Jewish Historical Society,
no.22, 1914, pp.15-17.

Simon (Richard):

Universal Lexicon: aller Wissenschaften und Künste, Leipzig,
1734, "Gans".

Stein (A.):

Geschichte der Juden in Böhmen, Brünn, 1904. Valueless—
does not even know the correct names of Gans' works.

Steinherr:

Die Einwanderung der Juden in Böhmen.

Steinschneider (M.):

Allg. Encycl. der Wissen. u. Künste, (Ersch and Gruber)

"Jüdische Literatur". Gives only the briefest reference to Gans.

Geschichtsliteratur der Juden, Frankfurt a. M., 1905.

Gives fairly complete list of editions of נתיבות up to 1871. A good introductory bibliography.

Zeitschrift für Mathematik und Physik, 1871, "Copernicus", pp. 252-3. A brief but scholarly article.

Waxman (M.):

History of Jewish Literature, 1933.

Wininger (S.):

Grosse Jüdische National-Biographie, "Gans".

Winter (J.) and Wünsche (Aug.):

Die Jüdische Litteratur seit Abschluss des Kanons, Berlin, 1897.

Worman (J. H.):

Cyclopedia of Biblical, Theological and Ecclesiastical Literature, "Gans".

Zedner:

Angewahl historischer Stücke, Berlin, 1840. Has a pointed text and German translation of נתיבות, נתיבות, נתיבות, with notes. The passage deals with the vehmic courts.

Zuns:

Gesammelte Schriften. A basic article on Gans, but contains unusual inaccuracies for so great a scholar.

"Essay on the Geographical Literature of the Jews from the Remotest Times to the year 1841," in The Itinerary of Benjamin of Tudela, transl. by A. Asher, New York. All scholars since Zuns' day have referred to and depended on this essay. Nevertheless, it shows that Zuns could sometimes be quite slipshod in the handling of source materials. Zur Geschichte und Literatur, Berlin, 1845.

צערמאין (שלמה), ניו יארק, ניו יארק, 1899.
A scholarly treatment of Gans and his works.

גרעטץ-ראזינאוויץ, דאנציג, 1899.
Y. Graetz in German. Rabinowitz adds nothing new.

האק (סיני), משפחות ק"ק פראג, פרעשבורג, 1892.
Provides primary source material. A sine qua non on the subject of Gans.

וועטשטיין (פ.א.), ספר היוזל הוזל ש' לכבוד נחום סאקאלאו, קראקא.
Gives one item which is primary source material for our thesis.

כהנא, ספרות ההסטוריא הישראלית, גאנז.
ספיץ (יום טוב), חגלות ירושין ל לא פלעקלש, המגיד, 197, X.
פין (שמואל יוסף), כנסת ישראל, ווארשא, 1886.
שטיינשניידער (מ.), ספרות ישראל, ווארשא, 1897. מתרגם תצטק
אן גרונצער.
תוספות יו"ט, מס' כלהים, פ"ג, משנה ח'.

Selected List of Books and Articles
about the Background of Gans' Time

Anschütz (C.):

Ungedruckte Wissenschaftliche Correspondenz zwischen Johann Kepler und Herwart von Hohenburg, Prague, 1886. Well edited; with table of contents giving names and places mentioned in the letters. No mention of Gans, but important for understanding the intellectual atmosphere of Gans.

Berliner (A.):

Persönliche Beziehungen zwischen Christen und Juden im Mittelalter, Halberstadt, 1881, p.21. A secondary source — not basic.

Burt (E. A.):

Metaphysical Foundations of Modern Physical Science, New York, 1927. Excellent for its bibliographies. Explains the ideas underlying the astronomy of Gans' associates in Benatyk.

David (Aloys):

Geographische Länge und Breite von Benatek wo Tycho Brahe vor 203 Jahren beobachtet hat, Prague, 1802.

Delambre (M.):

Histoire de l'Astronomie moderne, Paris, 1821.

Dreyer (J. L. E.):

Tycho Brahe: A Picture of Scientific Life and Work in the Sixteenth Century, Edinburgh, 1890. A classic.

Feldman (W. M.):

Rabbinical Mathematics and Astronomy, 1931. Of great assistance in understanding the technical terms used in the חשבון הקב"ה.

Friedell (Egon):

A Cultural History of the Modern Age, N. Y., 1932, transl. by Chas. Francis Atkinson. Not as detailed as Burt, but deals with a wider intellectual background. A classic.

Cassendo (Petro):

Tychonis Brahe, Equitis Dani, Astronomorum Coryphaei, Vita. Accessit Nicolai Copernici, G. Peurbachii et J. Regiomontani, Astronomorum celebrium Vita, Hagae, 1564, 2nd ed. The most authoritative biographer before Dreyer.

Gudemann (M.):

Quellenschriften zur Geschichte des Unterrichts und der Erziehung bei den deutschen Juden, Berlin, 1891.

Hanschius (M. G.):

Epistolae ad Joannem Kepllerum scriptae, Leipzig, 1718.

Kaufmann (D.):

Zur Geschichte jüdischer Familien, Trier, 1894, "R. Jair Chajjim Bacharach".

Kepleri Opera Omnia, ed. by Chr. Frisch, Frankfurt a. M., 1870. Well edited with table of contents giving all names and places mentioned within. No mention of Gans.

Kracauer (I.):

Die Schicksale der Juden zu Frankfurt a. M. während des Fettmilchischen Aufstandes (Programm der Realschule der isr. Gemeinde), Frankfurt a. M., 1892. This book describes the persecution of the Jews in F. a. M. about which the Megillath Winte was composed. The incidents are mentioned in which of course was not written by David Gans. Even though it took place after his time, a description of these incidents help us to understand the unsettled background of Gans.

Lang (F. A.):

History of Materialism, transl. by E. A. Thomas, New York, 1925.

See Burt above.

Mollero (Joh.):

Cimbria Literata, Hafniae, 1744. A primary source.

Spangenberg (Cyriacus):

Adels-Spiegel, Schmalkalden, 1591. An important non-Jewish source which Gans uses.

Steinschneider (M.):

Zeitschrift der D. M. Gesellschaft, vol. XVIII, p.123.

Tycho Brahe, Lebensbeschreibung des berühmten und Gelährten Danischen Sternsehers, Copenhagen and Leipzig, 1756.

von Hasner (Josef):

Tycho Brahe und J. Kepler in Prag, Prague, 1872.

Wagenseils (I. Ch.):

Belehrung der Jüdisch-Teutschen Red-und Schreibart, Königsberg, 1699. See Kracauer above.

סינאטור (ישראל), די געשיכטע פון דער ליטעראטור ציי יידן, ווילנא, 1935.
Interesting treatment of the intellectual background of Gans, but too general.

רח"ה, שאלות ותשובות, ווארשע, 1888.

Valuable source material.