

DR. JEKUTHIEL GINSBURG:  
SCHOLAR, EDUCATOR, AND MATHEMATICIAN

BY

DAVID SEFF

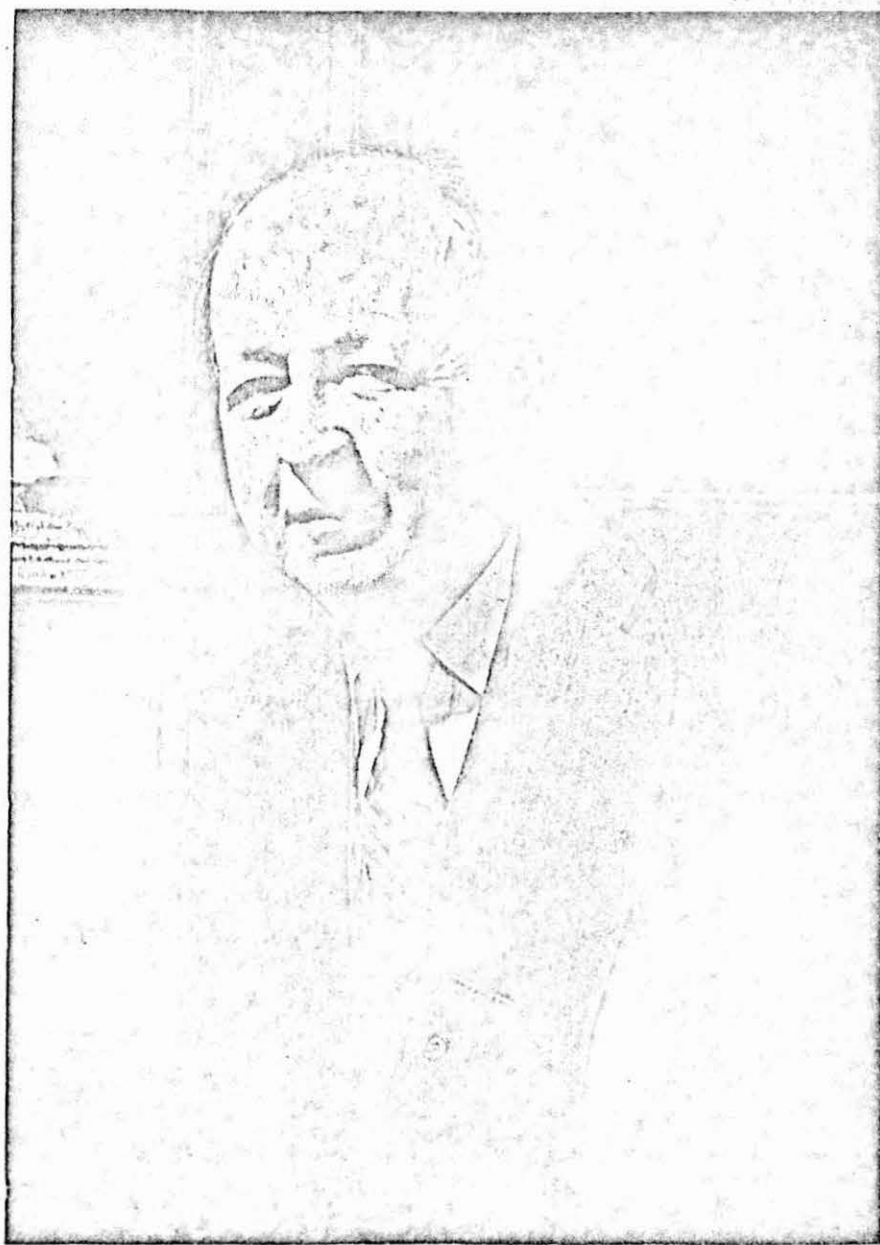
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פרופ' יקותיאל גינצבורג ז"ל (תרמ"ט—תשי"ח)  
Prof. JEKUTHIEL GINSBURG (1889—1957)

## PREFACE

Professor Jekuthiel Ginsburg was a modest man with many friends. His modesty prevented him from publishing much under his own name, thus obscuring much of his work from the public, or even the researcher. In addition, one could safely conclude that his modesty was a major factor in his not becoming one of those public figures about whom many biographies or other works are written. Indeed, his main claim to fame is not his mathematical works, nor his scholarly works--nor even his contribution as an educator--but rather his contribution as an educator par excellence wherein he gained popularity not so much through the creation and propagation of new theories, but through his own deep and personal dedication to his students and to his work.

Dr. Henry Lisman, colleague and successor to Professor Ginsburg as chairman of the mathematics department at Yeshiva University, admits he has hung Dr. Ginsburg's picture in his office among other purposes, hoping that a visitor to the office might ask whose picture bedecks the wall, in order to give Dr. Lisman an excuse to extoll the warm personality traits of this great man.

All of Professor Ginsburg's colleagues, associates,

students, and friends remember him fondly. Their willingness to aid in the preparation of this thesis serves as a tribute to the memory of Dr. Ginsburg and helps to some extent, to make up for the lack and/or untraceableness of written material. Nevertheless, as happy and willing as a mind may be, the human memory still errs; it is not as accurate as the written word. Many of those interviewed, after expressing a great willingness to assist, had to confess that they could not remember specific facts, but that what they had termed a "good" memory of Professor Ginsburg was really a "fond" memory. It was on such scant and indefinite material that the author had to rely in preparation of this thesis.

The author wishes to thank the numerous people who aided him in this work. In particular, special acknowledgement is due Mr. Sam Hartstein, director of Public Relations of Yeshiva University; Dr. Carl Boyer of Brooklyn College; and Dr. Charles Patt and Dr. Abe Gelbart of Belfer; and Mrs. Haya Freedman, Professor Ginsburg's sister for the co-operation they extended in willingness, in time, and in making available special source material.

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<sup>1</sup>The frontispiece appeared in Riveon Lematimatica, a quarterly mathematics journal published in Hebrew, by the Technion and Hebrew University, Vol. XII, p. 1.

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<sup>1</sup>All these illustrations have appeared in Scripta Mathematica, the mathematical journal founded and edited for twenty-five years by Professor Ginsburg.

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## CHAPTER I

### BIOGRAPHY

Amidst the seemingly endless forests<sup>1</sup> of the province Volhnia<sup>2</sup> of the Ukraine<sup>3</sup>, in the small village of Lipniki, lived Arie Hillel<sup>4</sup> (or just Hillel)<sup>5</sup> Ginsburg. He had married Beilah Freedman, daughter of a wealthy landowner, Abraham Freedman, and his wife Gittel. Hillel Ginsburg lived comfortably for a number of years with his father-in-law, who was much pleased with the first son born in the family, as he had been blessed with much financial success, but no sons, only three daughters.

Jekuthiel Ginsburg, born August 15, 1889,<sup>6</sup> later world-famous as a scholar and educator, was the cause of great jubi-

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<sup>1</sup>Haya Ginsburg-Freedman, "Biographical Lines from the Life of Jekuthiel Ginsburg," Selected Writings, (Tel Aviv, Jerusalem; M. Newman Ltd., 1961, Hebrew), p. 5.

<sup>2</sup>"Jekuthiel Ginsburg," Who's Who in American Jewry, 1938-1939 (New York: National News Association), p. 330.

<sup>3</sup>Statement by Beinish Epstein, personal interview.

<sup>4</sup>Who's Who, op. cit.

<sup>5</sup>Freedman, op. cit.

<sup>6</sup>Vita of Dr. Ginsburg, on file in Office of the Dean of Yeshiva College.

lation in the joint household. He was the eldest of the five Ginsburg children. The youngest, a daughter, Haya,<sup>7</sup> in her own right<sup>8</sup> became a Hebrew writer. Likewise, Jekuthiel's younger brothers, Shimon and Pesach, became famous through their Hebrew literary contributions, Shimon being a teacher and poet,<sup>9</sup> and Pesach, a writer and editor in Tel Aviv<sup>10</sup>.

Since the birth of Shimon followed closely after the birth of Jekuthiel, the two brothers were very close, growing up, being educated, and traveling like twins.<sup>11</sup> The wealth and love of the grandparents provided for an artificial world for the "twins," who received the best of everything, especially an education.<sup>12</sup>

At the age of four Jekuthiel, already renown in his community for unusual knowledge and sharpness of mind, began studying the Bible. The prominent teachers awaited the opportunity to be called upon by the father to teach young Jekuthiel. The father, both a religious Jew and a maskil (an enlightened and well-educated man), did, indeed invite teachers for secular studies of all types to tutor the children. The

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<sup>7</sup>Letter from Mrs. Haya Freedman, January 12, 1973.

<sup>8</sup>Hadoar, index to Vol. IV, 1925.

<sup>9</sup>Abraham Fraenkel, "Jekuthiel Ginsburg, Z"L," Riveon Lematimatica (Israel: Hebrew University and Technion, Hebrew), XII, 1957, p. 2.

<sup>10</sup>Ibid.

<sup>11</sup>Freedman, Selected Writings, op. cit.

<sup>12</sup>Ibid.

grandparents, particularly the grandmother Gittel, who insisted that her genius of a grandson must study to become a Rabbi, and nothing else, protested strongly against the secularization of the brothers. Soon an open controversy developed between the "enlightened" Hillel Ginsburg and his more traditional in-laws concerning the education and general development of his children.<sup>13</sup> Thus, the adult Jekuthiel Ginsburg, in his writings and activities, showed dual knowledge of and achievement in both secular and Jewish fields.

For the first nine years the father somewhat willingly allowed the son's development to follow the course planned by the grandparents, but in 1897<sup>14</sup>, Hillel Ginsburg took his family and moved from his in-laws' house to Zhitomir, the provincial capital<sup>15</sup>, located approximately eighty miles west of Kiev. For a while, all went well as the father proceeded to direct his son's education along secular lines. In the large city they were able to receive a well-rounded education, quickly absorbing such subjects as Russian, writing, world literature, and other general topics. At the age of eleven and twelve, Jekuthiel became attracted to the physical sciences, while Shimon studied more poetry and literature. The boys even published a newspaper in Hebrew

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<sup>13</sup> ibid.

<sup>14</sup> Getzel Kressel, Lexicon of Hebrew Literature (Israel: Kibbutz Shomair HaTza'ir, 1965, Hebrew), Vol. I, p. 474.

<sup>15</sup> Freedman, op. cit.

as a project for the Hebrew club in their school.<sup>16</sup>

Soon, however, the controversy developed into a storm as the grandmother, insistent upon her dreams that Jekuthiel be a Rabbi, demanded that the father give the children a more thorough religious-Jewish education which was typical of the life of those times. In a compromise that was reached, the grandmother prevailed upon the father to send the boys to study the Talmud under the tutelege of their uncle (one of her sons-in-law), who was recognized as a learned man, residing in a village close to Lipniki, where he was the worthy shochet, or ritual slaughterer, for that community. In turn, the grandmother promised to desist from her complaints.<sup>17</sup>

After an intensive training period in Talmud with their uncle, lasting about three or four years, the boys proceeded to Luhini to continue their Jewish studies there. In Luhini both boys became teachers of modern Hebrew and general studies, establishing fine reputations during the two years they stayed there. Having developed their own theories about teaching, Jekuthiel and Shimon wished to experiment in this field, so they soon set out for Zhitomir, with hopes of ultimately entering the university.<sup>18</sup>

Jekuthiel studied on his own in order to gain a matriculation certificate to enter the university. He

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<sup>16</sup>Ibid.

<sup>17</sup>Ibid., pp. 5-6.

<sup>18</sup>Ibid., p. 6.

gained fame as an outstanding mathematician while still a teenager, but was denied entry to the University due to Jewish quotas. His fame did not help him gain entrance, but it did enable him to set up classes where he taught mathematics so that his students were able to pass the university's entrance examination. Also, he published his first mathematical work at the age of eighteen,<sup>19</sup> in Russian, on which he spent much time<sup>20</sup>.

When Jekuthiel realized that his dream of entering the university could not be realized in Russia, he decided to immigrate to America, which he did with Shimon in 1912, having delayed until the authorities cleared him from the Russian draft, being afraid that leaving without clearance could result in unpleasant retaliation against his father.<sup>21</sup> This devotion to his father, even at the self-sacrifice of giving up his own dreams, is typical of his warm personality and his desire to help others. Many years later, while chairman of the mathematics department at Yeshiva University, he spent many long hours working, even with failing health, in order to alleviate some of the burden from the other members of the mathematics faculty.<sup>22</sup>

The details of the brothers' lives when they first came to America are not clear. Through their activities in the Jewish community by writing and teaching Hebrew, they

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<sup>19</sup>Ibid.

<sup>20</sup>Fraenkel, op. cit., p. 1.

<sup>21</sup>Freedman, op. cit.

<sup>22</sup>Statement by Dr. Henry Lisman, personal interview.

came into contact with important figures. In 1913 Jekuthiel Ginsburg was accepted to the Baron Hirsch School, a trade school, to study printing.<sup>23</sup> While a printer, he wrote an article on printing, an endeavor typical of his ambition.<sup>24</sup> He attended Cooper Union<sup>25</sup> from 1913-1915<sup>26</sup> as an engineering student, as preparation for entering Columbia--seemingly the ideal school to the young Russian immigrant.<sup>27</sup> Shimon, in turn, went to Eron Preparatory School in 1914, and later, through connections with the Bureau of Education, held a number of teaching positions, including principal of a Hebrew school in Saskatchewan, Canada around 1917 or 1918<sup>28</sup>.

During World War I the brothers sent money to their parents through the Public Bank of New York City<sup>29</sup>. The family was always close; indeed, two or all three of the brothers often lived together in some of the seven

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<sup>23</sup>Freedman, op. cit.

<sup>24</sup>Statement by Dr. Abe Gelbart, personal interview.

<sup>25</sup>In his vita, Dr. Ginsburg calls the school "Cooper University."

<sup>26</sup>Among the papers belonging to Dr. Abe Gelbart's private collection of Professor Ginsburg's letters and papers are the geometry and algebra tests which were part of the entrance examination for September, 1912. (They were no more advanced than a sophomore level in high school.) Perhaps, Jekuthiel Ginsburg entered then, and in a typically forgetful fashion, recorded the date as 1913 on his vita.

<sup>27</sup>Freedman, op. cit.

<sup>28</sup>Gelbart's collection.

<sup>29</sup>Ibid.

addresses they had their first ten years in America,<sup>30</sup> and the mother<sup>31</sup>, who came to America in 1921 with Haya, nearly always stayed at the home of Jekuthiel or another of her sons, of whom she was very proud.<sup>32</sup>

Initially enrolled as an undergraduate at Columbia in 1916, the talented Jekuthiel Ginsburg was soon "discovered" by the famous mathematical historian, David Eugene Smith, who took the young Ginsburg under his wing.<sup>33</sup> As Smith himself<sup>34</sup> wrote, "When I came to investigate his [Jekuthiel's] work, I was convinced that he ought to be in the graduate department because he has done such a large amount of work in a Hebrew school in Russia and showed such promise for graduate study."<sup>35</sup> Thus, Smith took the matter up with proper authorities, and after due investigation, Jekuthiel Ginsburg was admitted to candidacy for a master's degree in 1917, which he received in 1918.<sup>36</sup>

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<sup>30</sup>Ibid.

<sup>31</sup>She died sometime after 1940 when she was over ninety, according to Dr. Gelbart.

<sup>32</sup>Gelbart, interview. See Appendix A.

<sup>33</sup>Freedman, op. cit., pp. 6-7.

<sup>34</sup>This is a conjecture, as the letter is unsigned; from the context of the letter, however, there is no doubt that it was authored by Smith.

<sup>35</sup>Letter to Dean George H. Ling, University of Saskatchewan, Saskatoon, Saskatchewan, Canada, February 21, 1918; Gelbart collection.

<sup>36</sup>Ibid., but a number of sources give the date of

Smith was so impressed with Ginsburg that not only did the professor guide the student, and later collaborate with him as a colleague on a number of scholarly undertakings, but he also assisted his brother Shimon as well:

Mr. Ginsburg [Jekuthiel] informs me that his brother had even better preparation for scholastic work than he had. If this is the case, I feel certain that you would be abundantly justified in pushing him as far ahead as possible in case he applies for admission to the University.

If he has any of the spirit of his brother I can assure you that you will make no mistake by doing everything possible to help him.<sup>37</sup>

Together, Professors Smith and Ginsburg wrote Numbers and Numerals in 1934, and A History of Mathematics in America Before 1900, in 1938<sup>38</sup>, a Carus monograph<sup>39</sup>. These two books were essentially projects of Dr. Smith, Ginsburg's name only appearing on the latter as an assistant, and his name not appearing at all on the former. We have only to take his

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the degree as 1916, the same year Jekuthiel Ginsburg was admitted to Columbia, meaning he attained the degree with unusual alacrity. This date is also difficult because he did not start working as an assistant to Smith until 1918, leaving two years unaccounted for. The discrepancy between the dates for the degree may be explained by the fact that Professor Ginsburg, in a vita mentioned the date "1916" in connection with Columbia, but in context, it is not clear if that is the date of admission or of awarding of the master's degree. A number of other sources are also somewhat ambiguous, and yet still other sources, probably based on the vita, say he received the degree in 1916. Smith's letter, though, certainly clarifies the issue.

<sup>37</sup>Smith, op. cit.

<sup>38</sup>Freedman, op. cit. p. 7.

<sup>39</sup>Published by the Mathematical Association of America.



word for it that he coauthored the work.<sup>40</sup>

Dr. Ginsburg's major mathematical-literary undertaking was the publication of the journal, Scripta Mathematica, founded in 1932, with him as the editor-in-chief, and Dr. Smith as an associate editor.<sup>41</sup> After 1932 Dr. Ginsburg spent most of his time working on Scripta Mathematica or its associated projects, such as its publications or lecture series. One noted publication of Scripta Mathematica was Pictorial Mathematics, a series of portfolios, which he, in conjunction with David Eugene Smith (and others), published. It contained the biographies and pictures of famous mathematicians.<sup>42</sup>

It is not clear from what source Dr. Ginsburg gained his sustenance when he first came to America, but he certainly did hold a number of teaching positions of Hebrew, as the doors in the general intellectual community, such as teaching in college, were closed to Jews.<sup>43</sup> The earliest documented one is a position teaching Hebrew which he held for about five years (including 1918 or 1919) at the Jewish Teacher's Seminary. Although later it was combined with Herzliah, it was a general Hebrew and Jewish cultural school which was an outgrowth of the Shalom Aleichem Schools, which

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<sup>40</sup>Vita.

<sup>41</sup>Fraenkel, op. cit.

<sup>42</sup>"Jekuthiel Ginsburg," Who's Who in World Jewry, 1955 (New York: Monde Publishing Co.), p. 250.

<sup>43</sup>Churgin, interview. See Appendix A.

in turn developed from the Yiddish Natural Culture Schools.

Ginsburg was most popular as a teacher at the Seminary, as he was throughout his entire career; indeed, the older girls flirted with him.<sup>44</sup> Yet, Jekuthiel managed to remain unmarried until the age of forty-five, when he married the former Anna Brodsky, daughter of Israel W. Brodsky<sup>45</sup>, on August 13, 1934.<sup>46</sup> To his friends he was considered the "old bachelor"<sup>47</sup>, often playing the part of an "uncle" to their children<sup>48</sup>.

It would appear that Jekuthiel Ginsburg also had a side-line in tutoring mathematics for among his letters<sup>49</sup> is one from Stephen S. Wise, thanking him for tutoring his son, and one inquiring about his tutoring rates.<sup>50</sup>

From 1918-1928 he was<sup>51</sup> principal of a Talmud-Torah<sup>52</sup> in Bensonhurst, and was saluted for his good work there in

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<sup>44</sup>Anonymous, interview.

<sup>45</sup>Who's Who in World Jewry, 1955, op. cit.

<sup>46</sup>ibid.

<sup>47</sup>Statements by David Epstein and Beinish Epstein, personal interviews.

<sup>48</sup>D. Epstein, interview.

<sup>49</sup>Letter from Stephen S. Wise, belonging to Dr. Abe Gelbart.

<sup>50</sup>Gelbart's collection.

<sup>51</sup>"Jekuthiel Ginsburg," American Men of Science (9th ed. Lancaster, Pa.: The Science Press, 1955), Vol. I. p. 690.

<sup>52</sup>Churgin, interview. See Appendix A.

Hadoar in 1924<sup>53</sup>. He got along well with the other teachers, and, indeed, was considered such a master at organizing the faculty (due to his expertise in human relations) and the curriculum, that his school was considered the ideal model.<sup>54</sup> Yeshiva University's Teachers Institute for Men, now Erna Michael College, sent some of its pupils there as observers and student-teachers. It was there that David Epstein, then a student at Teachers Institute and later an editor of Hadoar, first came into contact with Dr. Ginsburg.<sup>55</sup>

It was during this period that Dr. Ginsburg was most active on the Jewish scene. In the 1920's, as well as the decade that followed, Dr. Ginsburg contributed articles to Hadoar and other Hebrew periodicals,<sup>56</sup> was engaged in Jewish education, and participated in the spread of Hebrew culture.<sup>57</sup> As he became more active in mathematics, particularly in his endeavors with Scripta, with which he spent eight to ten hours a day for five or six days a week,<sup>58</sup> he gradually contributed less to Jewish culture and education. Due to a heavy schedule and poor health, the advent of the 1940's saw

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<sup>53</sup>Hadoar, November 15, 1924, Vol. IV, issue 1, p. 15.

<sup>54</sup>Churgin, interview.

<sup>55</sup>D. Epstein, interview.

<sup>56</sup>"Professor Jekuthiel Ginsburg, R.I.P.," obituary, Hadoar, October 25, 1957.

<sup>57</sup>B. Epstein, interview.

<sup>58</sup>Churgin, interview.

little or no contribution from Dr. Ginsburg to Hebrew literature.<sup>59</sup>

During this same period of the late twenties and early thirties in which Dr. Ginsburg reached his height of achievement in Jewish contributions, his star first began to shine in mathematics. After receiving his master/ of arts degree in 1916 from Columbia, he became an assistant to David Eugene Smith in 1918-1919.<sup>60</sup> In 1920 he was promoted to Associate in Columbia's Teachers College, a position he held until 1940<sup>61</sup>. In 1928 Ginsburg joined the first faculty as associate professor of mathematics of Yeshiva College upon the invitation of Bernard Revel<sup>62</sup>. In 1933 Jekuthiel Ginsburg was promoted to full professor.<sup>63</sup> Nine years later, in 1942, President Nicholas Murray Butler of Columbia conferred upon Professor Ginsburg the honorary degree of Doctor of Science, making him officially Dr. Ginsburg. He received no other doctorate<sup>64</sup> although he had the title of professor. In 1949, Dr. Ginsburg

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<sup>59</sup>Obituary, Hadoar, op. cit.

<sup>60</sup>Vita.

<sup>61</sup>Vita; but release from Public Relations Department of Yeshiva University, October 7, 1957, Fraenkel, and Who's Who in World Jewry, 1955 give the date as 1939, and American Men of Science, op. cit. says 1941.

<sup>62</sup>Public Relations release of October 7, 1957, Fraenkel, op. cit.; but Kressel gives the date as 1927, and Ginsburg gives the date as 1929 in vita, October 17, 1937.

<sup>63</sup>Vita, but Public Relation's release, October 7, 1957, and Fraenkel give the date as 1940.

<sup>64</sup>Lisman, interview.

was appointed Chairman of the Division of Natural Sciences.<sup>65, 66</sup>

In 1940<sup>67</sup> he established the Institute of Mathematics, which ultimately developed into the graduate school of mathematics, and then the Belfer Graduate School of Mathematics and Science. The Institute of Mathematics sponsored lectures, showed slides, and, in general, presented mathematics to the public on a popular level; thus, it was a forerunner of an entire revision of the mathematics educational system in America.<sup>68</sup>

The Institute of Mathematics lecture series, given at Joan of Arc High School, often attracted retired people or people interested in mathematics although not formally involved in the field. Lectures were delivered on such topics as the nature of solids and the number of facis, Forier series, vector analysis, theory of numbers, algebra, art in mathematics, geometric designs, magic squares, and novelties. The motivating idea was to make mathematics beautiful and interesting to the general public.<sup>69</sup>

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<sup>65</sup>Vita.

<sup>66</sup>According to Dr. Patt, Yeshiva College and Stern College are still run according to divisions, rather than departments, although the department exists as a separate entiry. A division, for example, the natural science division, consisting of the mathematics, physics, chemistry, and biology departments--determines new majors, new course and departmental regulations (for the departments included in the divisions) in general.

<sup>67</sup>Vita, but release of Public Relations, October 10, 1957 gives the date as 1945.

<sup>68</sup>Lisman, interview.

<sup>69</sup>Ibid.

The Institute, to some extent, grew out of the Forum of Monthly and Weekly Lectures, started in 1934. This, in turn, was an outgrowth of the Society of Friends of Scripta Mathematica, which was started by Dr. Ginsburg initially to raise funds for Scripta.<sup>70</sup> Friends and subscribers to Scripta included Albert Einstein, Eamon de Valera, Herbert H. Lehman, and Clifton Fadiman.<sup>71</sup> Einstein himself was directly involved as the Chairman of the Honorary Advisory Board of the Society of Friends of Scripta Mathematica. In a fund-raising attempt, he expressed his support, "Scripta Mathematica is unique in that while it bears the imprint of a Jewish University devoted to the arts and sciences, it continually encourages and has always enjoyed the active participation in its contributions and in its editorship of distinguished scholars representing various denominations and draws from many countries."<sup>72</sup>

Two obvious conclusions may be drawn. Firstly, a number of famous people (Einstein being only one example) were involved. Famous persons on the Scripta staff included Carl Boyer, Altshiller Court, Otto Neugebauer, Eric Bell, Raymond Archibald, Edward Kasner, and Gino Lauria. This

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<sup>70</sup>Statement by Sam Hartstein, personal interview.

<sup>71</sup>Public Relations release, October 10, 1957.

<sup>72</sup>Dr. David Fleisher, "A Contribution to American Culture," reprinted from The Synagogue Light, Rabbi Joseph Hager, editor (New York), February, 1943.

unusual collection of famed mathematical personages working on a project sponsored by Yeshiva College (now Yeshiva University) made that institution famous.<sup>73</sup> Sam Hartstein, present director of the Public Relations department of Yeshiva University, feels that Dr. Ginsburg, through his efforts with Scripta, is directly responsible for "putting the name of Yeshiva on the map."<sup>74</sup> Hartstein believes this contribution was most significant to the growth and development of Yeshiva since there was neither state nor federal funding of colleges at the time. The entire burden was upon the American Jewish community. A large segment of orthodoxy was against the combination of secular and religious studies perpetrated by Yeshiva College, and a large segment of the irreligious population, including famous and influential people such as Louis Marshall, were against the dual program also, but on the grounds that Jews in America should sever their Jewish ties in the sense of doing away with traditional Jewish education--a standard "American, liberal" education should suffice. It is most unusual that within the orthodox circle there arose the strength to embark upon an enterprise of this nature--building a university with a full program of studies in traditional Jewish endeavors and a full program of standard liberal arts coursework. Ginsburg was considered the backbone of the financial

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<sup>73</sup>Lisman, interview.

<sup>74</sup>Hartstein, interview.

support in that through his scholarly efforts he publicized the name of the institution and attracted famous names, such as Einstein, who carefully emphasized both aspects of the new institution, to aid in arousing public interest and support.<sup>75</sup>

The second significant conclusion that may be drawn is that Ginsburg had great personal charm which he set to work for the benefit of Yeshiva College, Scripta Mathematica, and whatever causes for which he was working. He was such a likable man that it is said of him that whenever he walked into the bank (where he was well-known), he was immediately given whatever funds he requested for Scripta Mathematica.<sup>76</sup> As a teacher he had charisma--there was not a student who did not like him; as a person he exhibited such modesty, kindness, a sense of humor, a sense of propriety, and a love for his work that he made many friends and admirers and no enemies.<sup>77</sup> No one had an unkind word to say about Dr. Ginsburg and no one can remember him saying anything unkind about anyone else or ever being angry.<sup>78</sup>

Dr. Ginsburg was "a scholar from the roots of his hair to the tips of his toes"<sup>79</sup>--he even wrote articles for Ency-

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<sup>75</sup>Ibid.

<sup>76</sup>Lisman, interview.

<sup>77</sup>Unanimous opinion of all those interviewed.

<sup>78</sup>Unanimous opinion of all those interviewed.

<sup>79</sup>Gelbart, interview.



clopaedia Britannica<sup>80</sup> --yet he was never dogmatic or pedantic. In the naive and beautiful sense of the absent-minded professor that he was, he always found time for everyone, often arriving late for dinner as a result. In this respect he drove his wife to distraction,<sup>81</sup> in spite of their otherwise positive relationship wherein she encouraged him in pursuing his objectives.<sup>82</sup> She often had to telephone him to remind him to perform such simple tasks as to remove his rubbers, as he was wont to forget personal details.<sup>83</sup>

Modesty is a rare quality; the degree of perfection of modesty Dr. Ginsburg attained is even rarer. His students once asked him to tell them their shortcomings; his reply was, "Your shortcomings are mine."<sup>84</sup> Very seldom did he want to make a speech, claiming that the clapping for an artist is for an encore, but the clapping for a speaker is because he is finished.<sup>85</sup> Even many of Ginsburg's works were published under a pseudonym in Hebrew,<sup>86</sup> and in mathematics, he confined himself to anonymous editorial notes, allowing himself the luxury of only one bona-fide article in his name in

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<sup>80</sup>Vita.

<sup>81</sup>Gelbart, interview.

<sup>82</sup>Freedman, op. cit.

<sup>83</sup>Statement by Dr. Charles Patt, personal interview.

<sup>84</sup>Churgin, interview.

<sup>85</sup>Ibid.

<sup>86</sup>D. Epstein, interview.

Scripta Mathematica, the journal he founded and edited, during his entire career; yet, approximately one-half the anonymous articles were authored by him.<sup>87</sup>

Professor Ginsburg was much at home with children-- he got along with great and small alike. Once, after the birth of David Epstein's son, Dr. Ginsburg, while walking with Epstein and his young daughter, asked the daughter, who was older, her brother or her father. The child replied that her brother was older. When questioned on how a son could be older than a father, she replied, "Ask a silly question, get a silly answer." Her father was infuriated and confessed he would have punished her for the insult to his older friend, had it not been that Dr. Ginsburg himself laughed and commended the young girl for her sharpness.<sup>88</sup>

Dr. Ginsburg's kindness seemingly knew no bounds. He found time for everyone.<sup>89</sup> Students often visited his home. There he would feed them as he discussed mathematics, politics, or personal problems with them.<sup>90</sup> He even gave students loans which often went unpaid.<sup>91</sup> Once in 1922 he met a youngster in the public library looking through the history

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<sup>87</sup>Statement by Dr. Carl Boyer, personal interview.

<sup>88</sup>D. Epstein, personal interview.

<sup>89</sup>Gelbart, personal interview.

<sup>90</sup>Churgin and Gelbart, interviews.

<sup>91</sup>Churgin, interview.

of mathematics section. Not only did he help the youth in his search, but he also gave him problems to solve. Soon, after he entered high-school, that student became a weekly visitor at the Ginsburg home where Ginsburg discussed ideas with him over some tea and cake. The weekly meeting was educational as well as social--the college professor assigned readings and problems from Wilson's Advanced Calculus and other works then regarded as classics. This student, Abe Gelbart, soon received his doctorate from M.I.T. and, at the invitation from the master, the protégé, while at Syracuse, outlined plans for the Institute of Mathematics to start a program leading to a graduate degree, and soon came himself to head the new school.<sup>92</sup>

Even as editor of Scripta, Dr. Ginsburg had a warm and personal touch. When people wrote in trying to solve impossible problems such as squaring a circle, or trisecting an angle, he did not discard the letter, as is the case with other journals, but either answered it himself, or asked a student to do so. Thus he simultaneously showed respect to the subscriber, and to the student, whom he always encouraged to gain independence mathematically.<sup>93</sup> This procedure of corresponding with subscribers is so rare that it is no wonder that Scripta Mathematica was exceedingly popular and

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<sup>92</sup>Gelbart, interview.

<sup>93</sup>Lisman, interview.

famous. Approximately four hundred colleges and universities around the world, as well as high-schools and libraries, were subscribers at the time of Dr. Ginsburg's demise.<sup>94</sup>

Never dogmatic, never raising his voice, Dr. Ginsburg was at peace with the world.<sup>95</sup> Dr. Belkin, President of Yeshiva University, likened his friend, Dr. Ginsburg, to Belkin's Rabbi, the sainted Chofetz Chaim (may his memory be a blessing!), in a funeral oration that the president delivered on behalf of his friend; he never "uttered a bad word or slightest insinuation." He always had something complimentary to say about everyone; moreover, if someone else would utter a bad remark, "one could actually see him consciously close his mind to the conversation and mentally remove himself from the company in which he was physically present."<sup>96</sup> Indeed, Dr. Belkin claims that if the conversation ever became negative, Ginsburg would use his fine sense of humor to alleviate the strain and improve the mood.<sup>97</sup>

His humor made him a fine conversationist and a popular writer. He could criticize without offending, and this talent was the secret to his success as the organizer of a

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<sup>94</sup>Fleisher, op. cit.

<sup>95</sup>Address by Dr. Samuel Belkin, President of Yeshiva University, at the Ginsburg Memorial Service in Yeshiva University Auditorium, October 7, 1957, and later reprinted as an article, "Dr. Jekuthiel Ginsburg: An Appreciation," Scripta Mathematica, 1957, Vol. XXIII, pp. 7-9.

<sup>96</sup>Ibid.

<sup>97</sup>Ibid.

Talmud Torah and of the Yeshiva College mathematics department.<sup>98</sup> He used his humor to make friends, and to enlighten any conversation. It was penetrating and in good taste.<sup>99</sup>

Ginsburg frequently told funny stories and jokes, making him pleasant to have around. Yet Dr. Ginsburg, always the gracious host, made others feel as if their company were a pleasure. Once, while on vacation, he called David Epstein of Hadoar to join him, saying he missed his company. Indeed, although Epstein was much younger than Ginsburg, meeting him first as a student teacher, he became so close to his elderly mentor that during the last ten years of the professor's life hardly a day passed when they did not see or speak to each other.<sup>100</sup>

Another property that made Dr. Ginsburg so popular was his sense of propriety.<sup>101</sup> He was a gentleman in every way--the tip of his hat, his sympathy for the less fortunate, and even his facial expression.<sup>102</sup> He was very careful not to smoke in class, presumably because he did not feel it was proper. He would take his last puff before entering, and rush for a cigarette after he stepped over the threshold--

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<sup>98</sup> Churgin, interview.

<sup>99</sup> D. Epstein, interview.

<sup>100</sup> Ibid.

<sup>101</sup> Patt, interview.

<sup>102</sup> Belkin, op. cit.

since he was a heavy smoker--but never smoked in class.<sup>103</sup> Even his letters showed a certain formal approach, his diction, spelling, grammar, and style being impeccable.<sup>104</sup> Dr. Ginsburg was extremely meticulous. He never dictated items to his secretary, but wrote all out long-hand, describing the minutest detail of what he wanted.<sup>105</sup> When a certain review was submitted for Scripta that had not been requested and could not be printed due to its attacking an author, Ginsburg took the greatest efforts not to insult either the reviewer nor the reviewed in the ensuing struggle.<sup>106</sup>

A love of his work went to the depths of Dr. Ginsburg's soul. He loved to teach, to convey knowledge to others;<sup>107</sup> his greatness was his ability to inspire them.<sup>108</sup> He spent many happy hours with his work--he even refused to allow someone to assist him in carrying his briefcase, since he insisted that it bore no weight on him, as only burdens are heavy, but the manuscripts and documents on which he was working constituted pleasure.<sup>109</sup> He was totally involved in the Institute, referring to it as "my institute." With his love

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<sup>103</sup>Patt, interview.

<sup>104</sup>Author's observation based on reading letters sent by Dr. Ginsburg to Dr. Boyer from 1945-1957.

<sup>105</sup>Patt, interview.

<sup>106</sup>Boyer, interview.

<sup>107</sup>D. Epstein, interview.

<sup>108</sup>Gelbart, interview.

<sup>109</sup>Patt, interview.

of work he forged ahead, knowing what he wanted, achieving it with tremendous energy and persistence.<sup>110</sup> He was always striving to improve, but always in a way harmonious with others. Thus, the mathematics department was the best department at Yeshiva--in fact, the only real department.<sup>111</sup>

With a pixie-like charm, Dr. Ginsburg fully portrayed the typical absent-minded professor. It was once reported that upon disembarking from a bus and after carefully removing his rubbers and placing them and his umbrella neatly on the side-walk, he marched innocently off to his office.<sup>112</sup> The story cannot be verified for authenticity, but his students report that nevertheless it is rather typical of him.<sup>113</sup> Indeed, in the vita submitted in his own handwriting to the dean's office, he gives conflicting dates as to his start of teaching at Yeshiva College and as to promotions. He even asserts that he wrote articles for Encyclopaedia Britannica that he did not write.<sup>114</sup> The claim is not false altogether--

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<sup>110</sup>Lisman, interview.

<sup>111</sup>Churgin, interview.

<sup>112</sup>Hartstein, interview.

<sup>113</sup>Patt, interview.

<sup>114</sup>He claims to have written one on Bernoulli numbers. We must assume that he erred in that the Encyclopaedia lists under his name an article on Euler numbers, which his vita omits, not Bernoulli numbers. At the time of his death he was working on a project on Bernoulli numbers, wherein he had, according to an article in Scripta Mathematica, published shortly after his death, collected over 1,000 references to the topic. (The article was never completed, and, according to Dr. Gelbart, after months of work on it, Dr. Fryde, too, passed away before being able to bring the work to fruition,

that would be too much out of character with the cherubic man-- he obviously confused, in a fashion typical of absent-minded professors, the article with one on another topic, Euler numbers, which he did indeed write, but neglected to mention.<sup>115</sup>

So oblivious was he to details of personal life that he often only erased a small area of the blackboard upon entering the classroom. He would then write in that small box, erase, and continue to write in the same box. Even when the students erased a larger area before he arrived, he may have started with large print for his lecture, but he soon dwindled to small print and wrote all in a small box. Such was his nature.<sup>116</sup>

Dr. Ginsburg made the classroom material attractive and pleasant.<sup>117</sup> Convinced that anyone could appreciate mathematics, to some degree, just as anyone can appreciate

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as the successor of Dr. Ginsburg in this project. The unfinished manuscript of Dr. Ginsburg now lies in the office of Dr. Patt of Belfer.) Moreover, in the beginning of his article on Euler numbers, he immediately mentions that they are similar to, but not as well-known as, nor as useful as Bernoulli numbers. Thus, we may conclude that they were on his mind, obviously a source of confusion for the professor, but that he did not write an article on them--if the Encyclopaedia is to be relied on.

He also claims to have written an article in Encyclopaedia Britannica on Stirling numbers, but I did not discover this claim until after the particular edition of the Encyclopaedia was no longer available to me, and hence I did not check it.

<sup>115</sup>Vita.

<sup>116</sup>Patt, interview.

<sup>117</sup>Lisman, interview.



art or music, Dr. Ginsburg tried to develop each student's talents. He once remarked:

I am convinced that every student has potential talent for getting genuine pleasure from mathematics. My problem is to introduce the subject in a way that will prepare him not only to like it, but to go ahead with enthusiasm. This attitude, making mathematics a source of pleasure, is far more important to me than to apply it to making bombs.<sup>118</sup>

Every mathematical equation is a picture, and every one of these pictures has some beauty in it. The really great mathematician sees the picture as he looks at the equation; to others it is revealed as they work it out. In these days, when mathematics is the basis of so many other sciences bearing on every phase of our modern life we should know what is going on in that field, as we should keep intelligently informed on other scientific developments. Any cultured person can become intelligent about mathematics without becoming a mathematician.<sup>119</sup>

Nevertheless, Dr. Ginsburg himself believed that a good Talmud student is most likely to be a good mathematics student, and conversely.<sup>120</sup>

This relationship between Talmud and mathematics which Dr. Ginsburg observed is very typical of his mental process. He was frequently connecting the life he experienced with related Jewish topics. He was a folklorist, a philosopher, drawing connections between different things, trying to experience life in every dimension. Indeed, if it may be said that the man had any faults, it was his love of life and

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<sup>118</sup>Sally MacDougall, "Takes Duncecap Off Mathematics," World Telegram, September 20, 1949.

<sup>119</sup>Hugh Scott, "Stimulation of Mathematics," The Philadelphia Inquirer, in Public Relation's files between items dated 1943 and 1949.

<sup>120</sup>Lisman, interview.

pleasure.<sup>121</sup>

He loved eating<sup>122</sup>, especially ice cream,<sup>123</sup> and smoking<sup>124</sup>. By his own admission, he thoroughly enjoyed all the pleasures of life. In spite of obesity and failing health, he refused to stop smoking or refrain from making Kiddush<sup>125</sup> on wine, contrary to doctor's orders.<sup>126</sup>

As his years declined, the activities of the cherubic professor proportionally increased. In 1950 he took steps to open a graduate school, requesting his old protege, Dr. Gelbart, to suggest a curriculum. The program was drawn and accepted, the Institute of Mathematics blossoming into the Graduate School of Mathematics in 1952, with the first degree to be awarded in 1954.<sup>127</sup> There, Professor Ginsburg taught a number of the mathematics education and history courses, in addition to his full load at the college.<sup>128</sup> Initially, he

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<sup>121</sup>Churgin, interview.

<sup>122</sup>Ibid.

<sup>123</sup>Gelbart, interview.

<sup>124</sup>Churgin, interview.

<sup>125</sup>Orthodox Jewish prayer sanctifying the Sabbath at the onset of the Friday evening meal; said over wine, grape-juice, or bread, but traditionally said over wine.

<sup>126</sup>Churgin, interview.

<sup>127</sup>Advertisement describing the Institute of Mathematics, on file in the Public Relations Department of Yeshiva University.

<sup>128</sup>An undated vita completed sometime after 1942 lists his instructional load as twelve hours.

was the only instructor in the undergraduate mathematics department. Later he was joined by Daniel Block and Dr. Henry Lisman in the undergraduate division, and by a number of others, some famous, in the graduate division.

Although he ceased publishing literary pieces in Hebrew, he remained interested in Jewish causes, maintaining membership in Congregation Agudath Achim,<sup>129</sup> located in what was then a Jewish neighborhood, in Harlem, near Broadway and 137 Street,<sup>130</sup> and Mizrachi<sup>131</sup> (but was not active<sup>132</sup>). In 1950 he was named Chairman of the Academic Conference for Israel,<sup>133</sup> and visited that country in 1951<sup>134</sup>.

For the academic year of 1950-51, Ginsburg was named Librarian of the American Mathematical Society<sup>135</sup>, the position being an honorary one given to a prominent mathematician. The position had been previously held by David Eugene Smith of Columbia, Raymond C. Archibald of Brown, and Solomon Lefschitz of Princeton<sup>136</sup>. He was also named a fellow in

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<sup>129</sup>Who's Who in World Jewry, 1955, op. cit.

<sup>130</sup>Churgin, interview.

<sup>131</sup>Who's Who in World Jewry, 1955, op. cit.

<sup>132</sup>B. Epstein, interview.

<sup>133</sup>Who's Who in World Jewry, 1955, op. cit.

<sup>134</sup>Freedman, op. cit.

<sup>135</sup>Vita.

<sup>136</sup>Public Relations release, March 7, 1951, written March 5, 1951.

the New York Academy of Science in 1952.<sup>137</sup> In addition to these two organizations, he belonged to the History of Science Society, American Mathematics Association, American Academy for the Advancement of Science, Academy of Political Science, French Mathematical Society, and Academy of the History of Science<sup>138</sup>. In addition, he was written up in Who's Who in the East, American Men of Science, the Universal Jewish Encyclopedia, and others.<sup>139</sup>

During his lifetime the ideas and activities of Dr. Ginsburg were described in Life, Christian Science Monitor, The New York Times, The New York Telegraph, The Philadelphia Inquirer, London Illustrated,<sup>140</sup> Amerika,<sup>141, 142</sup> and over seventy-five others.<sup>143</sup>

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<sup>137</sup>Letter from Mary C. Driscoll of the New York Academy of Science to Public Relations, in the Public Relations files; and Public Relations release, October 7, 1957.

<sup>138</sup>Vita.

<sup>139</sup>Vita.

<sup>140</sup>ibid.

<sup>141</sup>A publication in Russian for Russians published in the United States.

<sup>142</sup>Public Relations Department's files.

<sup>143</sup>Vita; the statement "over seventy-five others" occurs in the vita, but the color of ink and handwriting is different from most of the other material. Dr. Patt believes the handwriting to be that of Professor Silverman, Registrar of Yeshiva College.

The government commended Professor Ginsburg's methods of teaching mathematics on a number of occasions<sup>144</sup>, and the American Office<sup>of</sup> Information, in its broadcasts to countries behind the Iron Curtain, hailed the methods of teaching mathematics as advocated in Scripta and practiced at Yeshiva College as examples of the recent American achievements in this field.<sup>145</sup>

In a letter to his friend Dr. Boyer, editor of the book review section of Scripta Mathematica, in April, 1954, Ginsburg complained of the backlog of work involved with Scripta<sup>146</sup> and that the work was too much. This is the first time the merry professor let it known that his seemingly unlimited source of energy was only finite, and the only documented time he complained so explicitly.<sup>147</sup> His health declined rapidly, and he suffered a number of heart attacks; the university moved his office from the third floor of the main building to a special room on the first floor of another building<sup>148</sup> so that he would not have to walk stairs. He soon looked far older than he was.<sup>149</sup> The doctors warned

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<sup>144</sup>Public Relations Department's files.

<sup>145</sup>Vita.

<sup>146</sup>It often appeared late.

<sup>147</sup>Letter to Dr. Boyer, April 6, 1954.

<sup>148</sup>Patt, interview.

<sup>149</sup>Statement by Dr. Churgin in a personal interview, during which he suggested that Dr. Ginsburg really was older, but falsified statements in his vita. Dr. Churgin explains this deceit was standard practice, especially among older

Professor Ginsburg about his diet and other health habits, suspecting a weak heart, but, true to spirit, undaunted, Dr. Ginsburg refused to curtail any activities.<sup>150</sup> At three o'clock A.M. Monday morning, October 7, 1957<sup>151</sup> at the age of sixty-eight, he succumbed to heart attack caused by fasting against doctor's orders<sup>152</sup> on Yom Kippur, the Day of Atonement<sup>153</sup>. The day was the opening day of registration at the graduate school of mathematics of Yeshiva University; it closed in memory of its founder.<sup>154</sup> The entire University observed a day of mourning for the beloved professor, and held a eulogy attended by friends, Jewish and non-Jewish alike, at which Dr. Samuel Belkin, president of Yeshiva University and personal friend of Dr. Ginsburg, spoke.

The undergraduate mathematics department continued to function in the able hands of its surviving faculty, Daniel Block<sup>155</sup> and Dr. Lisman.<sup>156</sup> The graduate school of mathema-

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immigrants, for fear they would not find employment, due to rampant discrimination against the elderly and middle-aged in those times.

<sup>150</sup>Churgin, interview.

<sup>151</sup>Public Relation's release, October 7, 1957.

<sup>152</sup>According to Dr. Gelbart, Professor Ginsburg could not accept the fact that he was ill.

<sup>153</sup>Churgin, interview.

<sup>154</sup>Gelbart, interview.

<sup>155</sup>Daniel Block died six months later, leaving the entire department to Dr. Lisman, who, single-handed, managed to run the department and maintain its fine reputation.

<sup>156</sup>Lisman, interview.

tics soon became the Belfer Graduate School of Science and achieved world fame under the guidance of Dr. Gelbart,<sup>157</sup> who initially took over on a part-time basis at the request of Dr. Samuel Belkin, President of Yeshiva University<sup>158</sup>. Scripta Mathematica published a memorial volume to Professor Ginsburg, who had been working on a special silver anniversary edition at the time of his death<sup>159</sup>. It appeared only sporadically after that, partially due to a controversy among the editors as to its exact nature as an expository or research mathematics journal, thus dying, but only in a de facto sense, as technically it is still being published although it has not appeared in years.<sup>160</sup> Also at the time of death he was working on two books, The Jewish Contribution to Mathematics,<sup>161</sup> his lifelong ambition<sup>162</sup> and Mathematics in Nature<sup>163</sup>. Unfortunately, these three projects died along with their progenitor, Professor Jekuthiel Ginsburg, a real gentleman and a scholar.<sup>164</sup>

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<sup>157</sup>Gelbart, interview.

<sup>158</sup>Public Relation's Memorandum, November 7, 1957.

<sup>159</sup>Public Relation's release, October 7, 1957.

<sup>160</sup>Statements by Drs. Boyer, Gelbart, and Patt; independent personal interviews.

<sup>161</sup>A few chapters appeared in various periodicals in Hebrew and are collected in Selected Writings.

<sup>162</sup>Lisman, interview.

<sup>163</sup>Public Relation's release, October 7, 1957.

<sup>164</sup>The application of this standard phrase to Dr. Ginsburg is Boyer's, given in a personal interview; Boyer carefully insists that the description is appropriate and true in every way.

## CHAPTER II

### CONTRIBUTION TO JEWISH SCHOLARSHIP

All the Ginsburg brothers received an excellent Jewish education while still in Russia. When they came to America, they remained active in Jewish interests in the Jewish community, and each, on his own, made a name for himself. They were Yiddishists and Hebraists interested in the spread and strength of Hebrew culture and language in the United States.<sup>1</sup>

Each brother branched into his own field, the field of writing belonging to Shimon, but not exclusively to him--for Jekuthiel wrote as well, for a number of Hebrew periodicals. Indeed, they all did, for during 1924-1925 all brothers and the sister contributed articles to Hadoar<sup>2</sup>, possibly constituting some sort of record. Jekuthiel Ginsburg was not known for his contribution to Hebrew literature as a writer, but as a commentator, often sharp and witty, writing feuilletons<sup>3</sup> or scholarly articles on the Jewish contribution to mathematics.

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<sup>1</sup>D. Epstein, Churgin, interviews.

<sup>2</sup>Hadoar, indices to Volumes IV and V.

<sup>3</sup>Kressel, op. cit.; D. Epstein, interview.



More, though, than an author, Dr. Ginsburg was totally involved in the Jewish field. His work as a Hebrew teacher or principal, his writings, his letters in Hebrew to his friends, his clubs, and even the Jewish jokes he told--all testify to love of all things Jewish<sup>4</sup>. His private collection of Hebrew letters<sup>5</sup> and notes are graced by numerous organizations and causes (some defunct)--the letterheads are like a chapter from American Jewish history, including <sup>the</sup>Bureau of Education, The Jewish Teachers Association, Hebrew Writers Association of America, Saskatoon [Saskatchewan, Canada] Zion Hertzal Society, Techiyah, Sholom Aleichem Foundation, Palestine Hebrew culture fund<sup>6</sup>, Committee to Strengthen Jewish Education in the Land of Israel, Die Zukunft, Dos Yiddishe Folk, The Jewish Daily News, Hatoran, Ma'aznayim, Hadoar, the Hebrew Gymnasium in Kovno, Encyclopaedia Judaica, Bezalel, Jewish Institute of Religion, Jewish Theological Seminary, and Yeshiva College Building Fund, among others.<sup>7</sup>

Although he always moved within the circle of Jewish intellectuals, when he moved to 610 West 139 Street<sup>8</sup> shortly after he accepted a position at Yeshiva College,<sup>9</sup> he moved

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<sup>4</sup>Churgin, interview.

<sup>5</sup>Many of which were sent to his brothers.

<sup>6</sup>Jekuthiel Ginsburg was on the executive board, and Shimon was the executive director.

<sup>7</sup>Gelbart's collection.

<sup>8</sup>Vita.

<sup>9</sup>Gelbart, interview.

into an outstanding Jewish neighborhood, thereby placing himself at the center of Jewish intellectual activity in New York (and to some extent, in America) at that time. The neighborhood was between 136 and 145 Streets, facing the Hudson, in Harlem. Dr. Alexander Freed<sup>10</sup>, Pinchas Churgin, and Rav Tzair lived there.<sup>11</sup> One could often meet in Ginsburg's home Jewish intellectuals, and Hebrew poets, writers, and scholars. Just off Broadway was a small synagogue, led by a Russian Rabbi from Baltimore, Md., an intellectual, loved by his congregants. There the scholars met for their Sabbath prayers, but often visiting each other's homes on the Sabbath day, or during the week as well.<sup>12</sup>

Ginsburg was active in the Histadrut Ivrit of America<sup>13</sup>, <sup>14</sup> and Chavrusah<sup>15</sup>, the latter of which he helped found and perpetuate while he was alive. The group, which thrived during the late twenties and early thirties, consisted of European Jewish intellectuals, such as Moshe Stoll and Peretz Wiernick, editor of the Morgan Journal<sup>16</sup>.

The Chavrusah met once a month in the homes of the

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<sup>10</sup> Statement by Dr. Hyman B. Grinstein, personal interview.

<sup>11</sup> Churgin, interview.

<sup>12</sup> Ibid.

<sup>13</sup> Hebrew Organization of America.

<sup>14</sup> Churgin, interview.

<sup>15</sup> Group of friends.

<sup>16</sup> B. Epstein, interview.

members, discussing current topics of Jewish interest<sup>17</sup>, often over dinner<sup>18</sup>. The topics varied from a textual study of variant texts in the Medrash to religious education and the liberal synagogue. The correspondence submitted for the Chavrusah yearbook (Sefer Zicharon) of 1930 is in Hebrew, Yiddish, German, and English, representing the wide selection of countries and organizations of the speakers invited to participate in a Chavrusah dinner; they came from seminaries in America, the Bezalel school for art in Jerusalem, a gymnasium in Kovno, and individuals in Brazil, France, and Germany. The list of famous personages includes Chaim Tchernowitz and Nachum Goldmann.<sup>19</sup>

In addition to his activities amidst the intellectual circle of friends, Ginsburg wrote for Hatekufah, Hatoran, Hamiklat, and others.<sup>20</sup> He was even invited to contribute to the first issue of Hadoar, an organ of the Histadrut, in 1921.<sup>21, 22</sup> Most, but not all, of these articles were on

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<sup>17</sup>Ibid.

<sup>18</sup>Inference drawn from content of letter from H. Sliosberg to Jekuthiel Ginsburg, April 2, 1930, belonging to Gelbart's collection of letters and papers.

<sup>19</sup>Gelbart's collection.

<sup>20</sup>Ibid.; Kressel, op. cit.; and Hadoar's Jubilee Volume (Hebrew: Sefer HaYovel).

<sup>21</sup>Gelbart's collection.

<sup>22</sup>Similarly, a letter in the collection invites the recipient to write for the opening issue of Panas, but as the salutation gives no name, it is not clear for which of the Ginsburg brothers it was intended--letters for Shimon probably

mathematics or Jewish scientists, and are signed by his own name. A majority of them with slight changes<sup>23</sup> are collected in Selected Writings.<sup>24</sup> Indeed, when he wrote for Hadoar, he only signed his name to scholarly articles on the Jewish contribution to mathematics. Other scientific articles went under the penname of G. Jekuthiel,<sup>25</sup> and general notes and comments on just about anything were penned under the pseudonym of J. L. Gog<sup>26, 27</sup>.

It is not known why Ginsburg did not always write under his own name, but to guess that his extremely modest nature is the cause is not unreasonable. Similarly, there is no definitive source for the selection, but a tenable conjecture would be that the initials, "J. L." come from the first

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outnumber those for Jekuthiel. Many letters, though, such as those from the Hebrew Writers Association, or Hatoran, indicate that the recipient was a member of the governing board or editorial board. Since there is no other record that Jekuthiel was a member of these boards, it may be assumed the letters were intended for Shimon. Still, the business letters often have such warm phrases, in Hebrew, as "send regards to your brother," indicating Jekuthiel Ginsburg's familiarity with the literary crowd.

<sup>23</sup>Such as in spelling.

<sup>24</sup>Kressel, op. cit.

<sup>25</sup>Author's conjecture based on similarity to his real name; similarity of style; and the attribution to him, in Sefer Hayovel, a series written under that penname.

<sup>26</sup>In Hebrew, Yud Lamed Gog.

<sup>27</sup>D. Epstein, interview; Kressel, op. cit.

and last letters of Jekuthiel, and, similarly, the two "g's" in "Gog" come from the first and last letters in "Ginsburg," the "o," being the transliteration of the Hebrew letter vav (which in "Ginsburg" produces the "u" sound), which is the only vowel standing approximately in the middle of his name, in Hebrew. This conjecture, of course, adds credence to the assumption that "G. Jekuthiel"--another pun on his own name--is merely another penname for J. Ginsburg.

The writings under the name "J.L. Gog" are witty and humorous. Though not deep, they cover all topics, showing a love of all things Jewish.<sup>28</sup> He advocates the study of the Hebrew language as opposed to Yiddish.<sup>29</sup> The writings are also strongly pro-Zionist.<sup>30</sup> In one article<sup>31</sup>, under the title "Tavim V'Tagim,"<sup>32</sup> he attacked<sup>33</sup> the New York Hebrew Teachers Conference as not being constructive, but confessional.

Dr. Ginsburg wrote a number of articles on the Jewish contribution to mathematics, in general, or on Jewish mathematicians. They are well annotated and show a truly vast knowledge of both secular sources relating to the history of

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<sup>28</sup>D. Epstein, interview.

<sup>29</sup>Y. L. Gog, "Tavim V'Tagim," Hadoar, Vol. XI, no. 22, April 24, 1931.

<sup>30</sup>Gog, "Tavim V'Tagim" Hadoar, Vol. XI. no. 26, May 29, 1931.

<sup>31</sup>Ibid.

<sup>32</sup>Loosely translated as "notes and comments."

<sup>33</sup>In a humorous vein, as all his attacks were such.

mathematics and of traditional Jewish sources, such as the Talmud, Mishneh Torah, Medrash, and kaballistic works. He must have been familiar with Aramaic, Hebrew, Yiddish, German, French, and Russian--and possibly Greek and Latin as well, judging from the sources quoted. He gleaned information for his magnum opus<sup>34</sup> from every corner, especially from sources not directly related to the topic which often contained indirect references. Such is the mark of a great scholar.

In a series entitled "Secular Lectures in the World of Science,"<sup>35</sup> written under the name G. Jekuthiel, Ginsburg reveals his vast knowledge of the secular, and draws sermons from it. He claimed that there are now Jews in the category of Aristotle and Newton, and he wrote about such persons as Weiner<sup>36</sup> and Jules Verne. Ginsburg took the adage, "I am a man, and no human endeavor is foreign to me," and claimed it should be changed to read, "I am a Jew and nothing in the world is foreign to me."<sup>37</sup> It is with this combination of Jewishness and a worldly view that he accepted the offer at Yeshiva College as a chov kadosh, a holy obligation.<sup>38</sup>

In one of the series entitled "Secular Lectures in the

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<sup>34</sup>The History of Jewish Mathematics, never completed.

<sup>35</sup>in Hebrew, "Sichus Chulin B'Olam HaMada."

<sup>36</sup>A famous mathematician.

<sup>37</sup>G. Jekuthiel, "Sichus Chulin B'Olam HaMada," Hadoar, Vol. V, no. 34, July 26, 1925, pp. 4-5.

<sup>38</sup>Lisman, interview.

World of Science" Ginsburg wrote about the Scopes monkey trial. There his wit, satire, and humor are at their best, and the reader can discover his liberal attitude as well. He said the trial put the United States back in the middle ages and made the United States the laughing-stock of intellectual Europe. In a somewhat laughing style, himself, he proclaimed, "Were Torquemada [himself] to arise from the grave, he would [again] descend 'into the depths in agony,'<sup>39</sup> to see illiterate judges"<sup>40</sup> sitting on the case.<sup>41</sup> Dr. Ginsburg expresses the opinion that evolution has become so popular--it was in every newspaper--that soon there will be cigars called "Darwin" and chewing gum named "Evolution."<sup>42</sup>

Dr. Ginsburg drew three significant conclusions from the affair. Firstly, he said, we see the non-Jews love the Pentateuch, and not in an abridged form--the abridgement of Scharfstein<sup>43</sup> notwithstanding. Secondly, the non-Jews do not like reform rabbis--as is evidenced by the fact that

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<sup>39</sup>Genesis 42:38, 44:29.

<sup>40</sup>Translation is the author's. The phrase is more poignant in original Hebrew due to the familiarity with the phrase, whereby Jacob expresses fear that, after having lost Joseph, he will also lose his youngest son, Benjamin.

<sup>41</sup>G. Jekuthiel "Sichus Chulin B'Olam HaMada," Hadoar, Vol. V, no. 1, November 27, 1924, p. 15.

<sup>42</sup>Ibid.

<sup>43</sup>Probably a reference to Zvi Scharfstein, an important figure in Jewish education.

they did not bring one as a Bible expert to the trial. Thirdly, the reform rabbis do not know that the non-Jews like the Bible so much--for, if they did, the reform rabbis would imitate the non-Jews in that matter, as they do in all other things.<sup>44</sup>

Thus, Dr. Ginsburg managed to strike a blow for Orthodoxy at the same time he did for liberalism. Dr. Ginsburg was a liberal, indeed, a registered democrat<sup>45</sup>--but simultaneously an observant Jew, believing that a liberal weltanschauung is a corollary of being Jewish.<sup>46</sup>

Dr. Ginsburg was in love with everything Jewish.<sup>47</sup> There even appeared in Scripta an article in Hebrew,<sup>48</sup> perhaps the first time an article was published in Hebrew in a mathematics journal. His private papers contain an article on the four-color problem in Hebrew.<sup>49</sup> He wrote almost weekly for Hadoar, telling the events of the day, the lighter side of the news.<sup>50</sup> Even though he stopped writing during the forties,<sup>51</sup> until his death in 1957, he continued to delight his friends and students with his unique combination of humor and a Jewish outlook on life.<sup>52</sup>

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<sup>44</sup>G. Jekuthiel, "Sichos Chulin B'Olam HaMada," Hadoar, Vol. V, no. 1, November 27, 1924, p. 15.

<sup>45</sup>"Jekuthiel Ginsburg," Who's Who in the East, 1941-1942 (Boston: Laskin, Roosevelt, and Lerner, Ltd., 1943), p. 971.

<sup>46</sup>Cf. supra, with respect to the adage, "I am a man..."

<sup>47</sup>Churgin, interview.

<sup>48</sup>Scripta Mathematica, Vol. IV.

<sup>49</sup>Gelbart's collection.

<sup>50</sup>D. Epstein, interview.

<sup>51</sup>Obituary, Hadoar, October 25, 1957.

<sup>52</sup>D. Epstein, Patt, interviews.



### CHAPTER III

#### CONTRIBUTION TO MATHEMATICS HISTORY AND EDUCATION

First and foremost, Dr. Ginsburg was an inspiring teacher who awoke the interest of his students, encouraging them to learn more--therein lies his greatness as a mathematician.<sup>1</sup> In English, Dr. Ginsburg wrote mostly about the theory of numbers and the history of mathematics<sup>2</sup>, and the history of the theory of numbers<sup>3</sup>, making no significant contribution to research or development of mathematics per se.<sup>4</sup> His lack of contribution to mathematics--in spite of the fact that he was called a mathematician (a misnomer)--is due to no fault of his own; indeed, he was a brilliant and original thinker. His training in mathematics was deficient, in the sense that he did not study the latest results and did not prepare himself for mathematical research.<sup>5</sup> It has been conjectured<sup>6</sup> that his master's degree was in the

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<sup>1</sup>Gelbart, interview.

<sup>2</sup>"Jekuthiel Ginsburg," Universal Jewish Encyclopedia (New York: 1941), Vol. IV, p. 612.

<sup>3</sup>American Men of Science, op. cit.

<sup>4</sup>Gelbart, interview.

<sup>5</sup>Ibid.

<sup>6</sup>Ibid.

field of history of mathematics, rather than mathematics itself. Even when he took a brief excursion into genuine mathematics, the results he obtained were clever little insights, showing thorough understanding of a new and clever way--but he never produced new results in depth in mathematics.<sup>7</sup>

Most of Dr. Ginsburg's mathematical energies were spent emphasizing the relation between mathematics and art, such as ornamental and recreational material<sup>8</sup> or mathematics and nature.<sup>9</sup> Scripta Mathematica abounds with beautiful pictures attracting even the most interested mathematics student to the inner beauties of mathematics that are somehow lost behind seemingly ugly equations.

Dr. Ginsburg's purely mathematical writings can be classified into two general categories. One category includes little notes, ingenious methods, or other items of interest, generally published in the "Recreation<sup>al</sup> Mathematics" section or the "Curiosa" section of Scripta Mathematica. Items of type are characterized by shortness, understandability, and lack of depth. Very few of these items are more than a half-page in length, any high-school student could understand them, and these articles have no value other than tickling one's mathematical funnybone--something for which Dr. Ginsburg was

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<sup>7</sup>Ibid.

<sup>8</sup>Fraenkel, op. cit., p. 2.

<sup>9</sup>Vita.

well noted and at which he was quite expert.

One example, entitled "Pythagorean Pleasantries," which was published in Scripta's "Curiosa"<sup>10</sup> column is brought here: It is well known, to a high-school geometry student that a triplet of numbers, such as 3, 4, and 5, or 5, 12, and 13, where the sum of the squares of the first two equals the square of the third<sup>11</sup> is known as a Pythagorean triad because the numbers in these triplets represent the two arms and the hypotenuse of a right-triangle, which satisfies the well-known Pythagorean Theorem. In this brief article, Dr. Ginsburg is interested in finding a triplet of Pythagorean triads whose last numbers themselves form a Pythagorean triad, for example:

21, 72, and 75 form a triad

60, 80, and 100 form a triad

35, 120, and 125 form a triad

and a quick calculation shows that the last column, 75, 100, 125 is also a Pythagorean triad. He gives a number of other sets of triplets of triads and finds a partial solution for generating all such sets. This piece of "curiosa" is typical of all of Dr. Ginsburg's mathematical articles, and his class lectures as well--it was something new and unpublished, clever to the point of being a stroke of genius, but lacking in depth or usability within mathematics.<sup>12</sup>

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<sup>10</sup>"Curiosa," Scripta Mathematica, 1945, Vol. XI, p. 191.

<sup>11</sup>In the former example,  $3^2 + 4^2 = 9 + 16 = 25 = 5^2$ , and, in the latter example  $5^2 + 12^2 = 25 + 144 = 169 = 13^2$ .

<sup>12</sup>Gelbart, Patt, interviews.

The other major category of Dr. Ginsburg's mathematical articles are those which in length and content constitute a contribution to mathematical research. Unfortunately, even in these cases the contribution to mathematics is minimal; moreover, the articles are few and far between.<sup>13</sup> Perhaps it was due to his modesty, or perhaps his lack of time or knowledge to become involved in genuine mathematical research, or perhaps it was due to his personal preference for the lighter side of mathematics--but, in any event, as previously mentioned, he allowed himself the luxury of only one research article in Scripta Mathematica during his entire career as editor.<sup>14, 15</sup>

This lone article in Scripta<sup>16</sup> deals with the Taylor series expansions of the numbers  $e^x$ ,  $e^{e^x}$ ,  $e^{e^{e^x}}$ , ... and related iterated exponentials. Any college calculus student should be able to follow the article, and would probably have a lot of fun doing so. The article is fascinating, but not deep. Dr. Ginsburg revealed a vast knowledge of the latest

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<sup>13</sup>Gelbart, interview.

<sup>14</sup>Manuscript belonging to Boyer's collection of Scripta related letters, written by Boyer, and later submitted as a tribute to him in Isis, a history of science journal.

<sup>15</sup>In his vita, Dr. Ginsburg claimed to have written another article for the Bulletin of the American Mathematical Society, which this author was unable to trace--but even then it is not known if the article is one of genuine research or deals primarily with something else, such as teaching models.

<sup>16</sup>Jekuthiel Ginsburg, "Iterated Exponentials," Scripta Mathematica, 1945, Vol. XI, pp. 330-353.

source material on that problem and did a thorough checking job--not the mark of a mathematician, but surely the mark of a historian.

Similarly, in the classroom Dr. Ginsburg often produced clever oddities. For example, to find the sum of the first  $n$  squares, Dr. Ginsburg proceeded as follows: Let  $S = 1^2 + 2^2x + 3^2x + 4^2x + \dots$ . With a little bit of algebraic maneuvering, Dr. Ginsburg produced:  $S = (1+x)/(1-x^3)$ . The coefficient of  $x^n$  in the expansion of the fraction on the right is the sum of the first  $n$  squares.

This problem again exhibits Dr. Ginsburg's originality in dealing with problems in elementary number theory. Again, with respect to partitions<sup>17</sup>. Dr. Ginsburg utilized series, this time  $1/(1-x)$ .<sup>18</sup>

Although Dr. Ginsburg did some serious work in number theory, for example he worked on Pell's equation<sup>19</sup>, most of his work was considered "cute," or recreational--for the classroom at best--not for publishing. Thus, the nature of

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<sup>17</sup>A partition in number theory is a way of dividing a number into different numbers whose sum is the original number. For example, a partition of 5 into <sup>two</sup> parts is  $1 + 4$ . Another partition is  $2 + 3$ . These are the only two partitions of 5 into two parts. 5 can also be partitioned into three parts:  $1 * 1 + 3$ . Larger numbers, of course, have more partitions.

<sup>18</sup>Patt, interview.

<sup>19</sup>This means he looked for a formula in order to obtain integral solutions for  $x$  and  $y$  in:  $x^2 - Dy^2 = 1$ , where  $D$  is a given integer, not equal to a perfect square.

the work he undertook may be the cause of so little of his novellae in mathematics being published. He may have been a victim of the times--in his day, number theory was looked at as recreational mathematics, or a sidetrack of algebra at best, whereas today, number theory is either considered a main branch of mathematics, along with algebra, geometry, and analysis, or at least a major sub-branch of algebra. Even today though, elementary<sup>20</sup> theory is not as highly acclaimed as its brother, analytic number theory, due to the fact that all problems in the former either are solved or are reduced to a problem in the latter. Dr. Ginsburg, of course, was in elementary number theory, being nearly totally unaware of the field analytic number theory.<sup>21</sup>

Dr. Ginsburg often mentioned interesting ideas in the classroom from the Talmud as well. He mentioned "issuraisah d'vei Rebbe," the tenth-process of Rebbe's school. One example of it is from a classical case involving visiting the sick. The Talmud says that if one visits the sick, he removes one-sixtieth of his illness. The obvious question is then asked--what if sixty people come? The answer given is that each removes one-sixtieth of what is left. Thus, if a bed-ridden person has sixty visitors, he is still left with  $(59/60)^{60}$  of

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<sup>20</sup> So termed not because it is elementary, but because the means to solve problems does not involve deep ideas from analysis.

<sup>21</sup> Gelbart, interview.

the disease, a number which approaches  $1/e$ <sup>22</sup>. A number of his points of historical interest which were taught in the classroom, Dr. Ginsburg published in Hadoar. This particular case--the approximation of  $e$ --is described in an interesting article<sup>23</sup> which combined Talmud with history of mathematics. In the case used in the article, the Talmud is concerned with inheritance. If the deceased leaves no will, the law is that the estate is split among the sons (with primogeniture) after each daughter takes one-tenth. The question is asked--what if a man has ten daughters and one son--what does he get? Similar to the case of the sick person, the Talmud answers that each daughter takes one-tenth of what is yet undistributed to the other sibling. Thus, what is left for the son is  $(1 - 1/10)^{10}$ , again an approximation to  $1/e$ . Dr. Ginsburg, in the article, developed a brief historical account of the attempt to approximate from the days of the Talmud through Rav Saadia Gaon<sup>24</sup> and through the days of Napier.<sup>25</sup>

To do justice to the man, mention of Dr. Ginsburg's mathematical talent must deal also with his contribution to the history of mathematics. In this field, Dr. Ginsburg is

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<sup>22</sup> $e$  is the base of the natural or Napierian logarithm. It pops up in an infinite variety of important ways in mathematics, for example,  $e^{-1} = -1$

<sup>23</sup>Ginsburg, "Midos U'misparim BaTalmud," Hadoar, June 29, 1928, Vol. IX, pp. 510-512.

<sup>24</sup>The famed head of the Rabbinical academy in Sura, Babylonia, during the tenth century.

<sup>25</sup>Ginsburg, "Midos U'misparim BaTalmud," op. cit.

the scholar par excellence, first working as a student under, and then as a colleague with, the most famous mathematical historian of this century, David Eugene Smith.<sup>26</sup>

Dr. Ginsburg's knowledge of several foreign languages, his knowledge of mathematics through the nineteenth century, his brilliance, his perseverance, and his thoroughness, made him unmatched. When the Mathematical Association of America commissioned Dr. Smith to write a history of mathematics in the United States of America before 1900 for the Carus monograph series, Dr. Smith requested that he be joined by Dr. Ginsburg, because he felt that his (Ginsburg's) knowledge and thoroughness would be most useful--even claiming that he is the only person with the same methodology as he, Smith-- and Smith so published in the introduction to the book.<sup>27</sup>

In an article signed by Dr. Ginsburg as a member of Columbia Teachers College, Dr. Ginsburg criticized the conclusions of Professor S.A. Miller in his voluminous writings.<sup>28</sup> Moreover, the article would certainly indicate that Dr. Ginsburg read every source referred to in each article of Dr. Miller, all footnotes and the sources they bring, the entire

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<sup>26</sup> Gelbart, interview.

<sup>27</sup> The Carus Mathematical Monographs, No. 5, (Chicago: Open Court, 1934).

<sup>28</sup> Jekuthiel Ginsburg, "On Certain Criticisms Made by Prof. S.A. Miller," School Science and Mathematics, May, 1926, Vol. XXVI, pp. 476-81.



entire bibliography, and all sources, footnotes and sources, and bibliography they each bring, seemingly ad infinitum-- or at least through three levels!

On the basis of such Herculean research Dr. Ginsburg then proceeded to demolish Professor Miller's results and methodology in a systematic and thoroughly humorous<sup>29</sup> fashion. Dr. Ginsburg brought ample proof to show that Professor Miller was not the historian that Dr. Ginsburg was. He demonstrated that Professor Miller did not go to source material, but often used secondary material, sometimes misquoting it.<sup>30</sup> Professor Miller, claimed Dr. Ginsburg, made mistakes to the point of dishonesty. For example, he attacked Smith for omitting some famous names, namely Karpinski, Cajori, Steinschneider, Thante, and Descarte, from a volume he had recently published, whereas some of these names appeared in the second volume of the same work--and Professor Miller did not wait for the second volume to appear before jumping to criticize Smith.<sup>31</sup>

Moreover, Dr. Ginsburg expressed the view that much of Professor Miller's criticisms were valueless as they attacked grammar and spelling errors--something which Dr. Ginsburg claimed Miller also was subject to.<sup>32</sup> This case can be taken as one illustrative of Dr. Ginsburg's biting

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<sup>29</sup>Typical of Dr. Ginsburg.

<sup>30</sup>Ginsburg, School Science and Mathematics, op. cit.

<sup>31</sup>Ibid.

<sup>32</sup>This author could find none in any of Dr. Ginsburg's writings, including personal letters and private papers.

humor. He said:

It may be felt that Professor Miller, even though unreliable in cases demanding scholarship on the part of a critic, has assisted readers by calling attention to misprints or slip fo [sic] the pen. No one would deny the value of such corrections in a text, any good high-school pupil could make them, and that a professor in a great university should give his time to perform the task shows a spirit of sacrifice that commands attention.<sup>33</sup>

The preceding article shows the thoroughness of Dr. Ginsburg's research methods, as well as his humor, but it is not typical in that it is a criticism. Much of Dr. Ginsburg's historical writings are about numbers and interesting mathematical relationships. His article on Euler numbers, appearing in the Encyclopaedia Britannica<sup>34</sup> is to be considered more typical in that sense.

In that article Dr. Ginsburg first defined Euler numbers to be the coefficients,  $A_n$  in the power series expansion of  $\sec x = 1/\cos x$ , i.e.,  $1/\cos x = 1 + A_1x^2 + A_2x^4 + A_3x^6 \dots$ . Then he mentioned a number of standard formulae for the  $A_n$ , for example, Euler's formula:

$$A_n/1 - A_{n-1}/2! + A_{n-2}/4! - A_{n-3}/6! + \dots = 0,$$

and the more complicated formulae of Glashier and Haussner. In typically modest fashion he brought his own, hitherto unpublished formula, in a disguised fashion: "The following formula does not seem to have been given in the memoirs on this subject  $E_n = (2n)! - B_1(2n-2)! + B_2(2n-4)! + \dots$

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<sup>33</sup>Ginsburg, School Science and Mathematics, op. cit.

<sup>34</sup>Who's Who in American Jewry, 1938-1939, op. cit.

where B represents the sum of the products of the squares of the first  $n-i+1$  odd numbers taken as products  $i$  at a time with repetition, e.g.,

$$\begin{aligned} E_4 &= 8! - 6!(1^2 + 3^2 + 5^2 + 7^2) \\ &\quad + 4!(1^2 3^2 + 1^2 5^2 + 3^2 5^2) \\ &\quad - 2!(1^6 + 1^4 3^2 + 1^2 3^4 + 3^6) + 1. \end{aligned} \quad ^{35}$$

Dr. Ginsburg also presented a number of slightly more advanced concepts relating to Euler numbers, but ended the article with a number of more readily comprehended concepts--namely, a list of elementary properties of the numbers, and a partial list of Euler numbers, themselves:

1.  $E_n$  is positive, odd.
2. The sum of any two successive  $E_n$  is divisible by 3.
3. If  $n$  is even, then  $E_n + 1 \equiv 0 \pmod{3}$ .<sup>36</sup>
4. If  $n$  is odd, then  $E_n - 1 \equiv 0 \pmod{3}$ .<sup>37</sup>
5.  $E_n$  always ends in a 1 or 5.<sup>38</sup>

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<sup>35</sup>Jekuthiel Ginsburg, "Euler Numbers," Encyclopaedia Britannica (14th ed.; Chicago: 1940), Vol. III, p. 417.

<sup>36</sup>The three parallel bars, read, "congruent to," mean that  $E_n + 1$  is evenly divisible by 3.

<sup>37</sup>Similarly, this "equation" (more properly, congruence), is read, "ee sub-en minus one is congruent to zero, modulo (or just mod) three," meaning 3 divides evenly into  $E_n - 1$ .

<sup>38</sup>The reader should realize that there is a certain amount of repetition in these elementary properties of the Euler numbers. For example, the fifth property, that  $E_n$ 's last digit is a 1 or 5, clearly implies that  $E_n$  is odd (property one). Also, properties three and four imply property

The first ten Euler numbers are: 1, 5, 61, 1385, 51521, 2702765, 199360961, 19391512145, 240489675441, and 370371100237525.<sup>39</sup>  $E_{50}$  has 127 digits.<sup>40</sup>

Dr. Ginsburg also collected material on Bernoulli numbers.<sup>41</sup> The extent of the material is so vast that even

two, and, property two, taken in conjunction with the fact that  $E_n$  is odd, implies properties three and four. (This double implication means that property two is equivalent to properties three and four--that is to say, they are saying the same thing in different words.)

<sup>39</sup>After wading through a column of somewhat technical material in the Encyclopaedia Britannica, the non-mathematically inclined reader is likely to experience a certain disappointment when he first meets these Euler numbers. "They look like 'regular' numbers," he will exclaim. "What is special about them?" Indeed, they do have the appearance of 'regular' numbers, and there is nothing really special about them. Their real interest is to the curiosity-seeker or the mathematical historian, but they have no real value to the mathematician.

<sup>40</sup>Ginsburg, "Euler Numbers," op. cit.

<sup>41</sup>According to an article in the fourteenth edition of the Encyclopaedia Britannica which Dr. Ginsburg mistakenly claims to have authored, Bernoulli numbers were named after the famous mathematician of the same name, whose work about them came to first light in his posthumous Ars Confectanti in 1713. Again, mostly of historical value, the numbers do play some role in differential equations. It is now known that these numbers are the coefficients of  $x$  in the expansions of  $x/2 \cdot e^{x+1}/e^x-1$  and  $x/e^x-1$ . Bernoulli, however, initially defined them recursively by letting  $S_n =$

$1^n + 2^n + 3^n + \dots + x^n$  and by solving the equation

$$S_n = x^{n+1}/n + 1 + x^n/2 - (n/2)B_1x^{n-1} +$$

$[\overline{n(n-1)(n-2)(2 \cdot 3 \cdot 4)}]B_2x^{n-3} - \dots$ , for the  $B_n$ , the

$n^{\text{th}}$  Bernoulli number. A large variety of fascinating formulae, relationships, and other properties have since been discovered, one of the most fundamental, due to Euler: Defining

$$T_{2m} = 1/1 + 1/2^{2m} + 1/3^{2m} + \dots$$
, he demonstrated that

the ambitious Dr. Ginsburg did not finish the task of publishing even his immense, hand-written manuscript. Dr. Fryde accepted the responsibility of editing Dr. Ginsburg's work and completing the task, but he, too, passed away before the work could be completed. Dr. Gelbart, editor of Scripta Mathematica, was initially planning to publish this work as an article, and later as a separate volume, but the task remains unfinished.<sup>42</sup>

Dr. Ginsburg had a deep sense of beauty of mathematics, especially in the theory of numbers.<sup>43</sup> His teaching and his founding of Scripta Mathematica were results of his own sense of beauty and attempt to imbue others with a love of mathematics. Even though Scripta was officially devoted to the history and philosophy of mathematics, Dr. Ginsburg published many items in Scripta dealing with the beauty of mathematics, so profound was his love of it.<sup>44</sup>

Dr. Ginsburg attempted--and met with extraordinary success--to popularize mathematics on two fronts. One, he wished <sup>to</sup> popular <sup>ize</sup> mathematics for the student through the use of art and gimmicks, and by otherwise appealing to his

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$$T_{2m} = \frac{2^{2m-1} \pi^{2m}}{2m!} \cdot B_m, \text{ thereby proving that}$$

$$B_m = \frac{T_{2m}}{2^{2m-1}} \cdot \frac{2m!}{\pi^{2m}}$$

<sup>42</sup>Gelbart, interview.

<sup>43</sup>Boyer, Isis manuscript.

<sup>44</sup>Ibid.

aesthetic and imaginative faculties. Two, Dr. Ginsburg wished to make the material in Scripta available in a manner appealing to the professional mathematician.<sup>45</sup> "My method is very simple," he once exclaimed. "I begin by emphasizing the artistic aspect. (see figures 1-13). Mathematics has cultural value, which, for some, will take precedence over its value for science and industry."<sup>46</sup>

Dr. Ginsburg's course to teach students the love of mathematics, based on an artistic approach, evolved out of the work done around 1920 at Columbia University under D.E. Smith.<sup>47</sup> President Truman's Scientific Research Board wanted to improve the quality of arithmetic instruction, as arithmetic represents the students for introduction to science. Low quality arithmetic instruction in the elementary school alienated many intelligent people from pursuing further science study, thereby weakening the United State's development potential.<sup>48</sup> Dr. Ginsburg arose to this challenge by developing a course in 1948, guaranteed to arouse the mathematical curiosity of even the most disinterested student after only five lessons:

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<sup>45</sup>Sam Hartstein, "A Cherubic Man Who Sought Truth, Praised the Divine," Long Island Jewish Press, November, 1957.

<sup>46</sup>Public Relations release, reprinted in American Jewish Daily, New York, New York, January 12, 1950; Jewish Record, Elizabeth, New Jersey, January 12, 1950; and Southern Jewish Outlook, Richmond, Virginia, April, 1950.

<sup>47</sup>MacDougall, op. cit.

<sup>48</sup>Hugh Scott, op. cit.

Last year after I inaugurated the system, I took a class of retarded boys and before the end of the fifth lesson they were all interested in going ahead with mathematics. One who declared that he hated the subject is now majoring in it.<sup>49</sup>

By emphasizing beauty and creative work, Dr. Ginsburg helped stir an interest within each student:

A student making any of these linear patterns (see figure 14) soon comes to realize that the design goes beyond beauty and that the lines have mathematical meaning. I have never known one who did not enjoy the study of mathematics after making that discovery.<sup>50</sup>

The underlying philosophy, of course, was:

A person doesn't have to be a painter to enjoy art, and he doesn't have to be a musician to enjoy music. We want to prove he doesn't have to be a professional mathematician to enjoy mathematical forms and shapes, and even some abstract ideas.<sup>51</sup>

Every mathematical equation is a picture and every one of these pictures has some beauty in it. The really great mathematician sees the picture as he looks at the equation; to others it is revealed as they work it out. A teacher who is capable of translating a simple logarithmic progression, for example, into a beautiful lucite spiral--which by the way looks very much like a striking example of modern art--can give his students a pleasant and interesting stimulus to encourage them as they work.<sup>52</sup>

Dr. Ginsburg's "mathematical clinic," as he called it,<sup>53</sup> and his claim that all can appreciate mathematics, made

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<sup>49</sup>Hugh Scott, op. cit.

<sup>50</sup>ibid.

<sup>51</sup>ibid.; MacDougall, op. cit.

<sup>52</sup>Public Relations release of May 13, 1952, for May 15, 1952; Jewish Advocate, June 26, 1952; and Christian Science Monitor, December 27, 1952.

<sup>53</sup>MacDougall, op. cit.

him famous.<sup>54</sup> His projects--in the classroom and in Scripta--often dealt with the mathematics of art, both two- and three-dimensional (see figures 15 and 16). But Dr. Ginsburg's brilliance did not cease with mathematics in art. He produced other items of interest such as post cards with mathematical themes in order to awaken the student's interest,<sup>55</sup> old and new proofs of the Pythagorean theorem, visual aids, recreational mathematics (such as magic squares - see figures 17-20), and mathematics in nature (such as pictures of the exact geometrical shapes in a drop of milk splashing).<sup>56</sup>

Thus, Scripta Mathematica was a journal devoted to humanizing mathematics.<sup>57</sup> The Institute of Mathematics, through its public lectures, similarly exhibited its "aims at humanization and popularization of mathematics."<sup>58</sup> Sometimes as part of course work students were required to attend these lectures<sup>59</sup> which were open to the public, and attended by people of all interests and all ages at Joan of Art High School<sup>60</sup>.

At a typical lecture, around twenty people--from those in their teens to those over sixty, of both sexes,

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<sup>54</sup>Fraenkel, op. cit.

<sup>55</sup>Public Relations memo to the New York Post, September 16, 1949.

<sup>56</sup>Public Relations release of March 5, 1951, for March 7, 1951.

<sup>57</sup>New York Times Magazine, April, 1951, pp. 56-7.

<sup>58</sup>Life, March 21, 1949, Vol. XXVI, pp. 17-20.

<sup>59</sup>Patt, interview.

<sup>60</sup>Lisman, interview.



would attend. Dr. Ginsburg explained that the lectures attracted a wide range of people due to the fact that "People come out of high school with a deep-seated distaste for math, caused by improper teaching." The geometric shapes and designs thereby attracted the attention of many.<sup>61</sup>

Even if Dr. Ginsburg was not the lecturer, he often appeared, interacting with the audience on a personal level. On one such occasion a New Yorker reported he commented:

'Given the proper approach, mathematics can be fun for everybody. Watch this!' Dr. Ginsburg took a piece of cardboard out of his briefcase, and in the dim light from the screen<sup>62</sup> began folding it. In no time at all, he had a star. 'Part of an icosahedron,' he commented, with satisfaction. 'Teach a student to make one himself, and all sorts of mathematical questions pop into his head.'<sup>63</sup>

Thus, Dr. Ginsburg's technique was one of "bootstrapping," getting the student involved and interested on his own. He was referred to as a "Doctor of trickonometry,"<sup>64</sup> but he really was much more. He enriched the world's culture. At the World's Fair of 1938, on September 23, a time capsule was buried containing two portfolios of Scripta Mathematica including one by D.E. Smith entitled "Portraits of Eminent Mathematicians with Brief Biographical Sketches." This work, as well as many others printed by the press of Scripta Mathematica Studies, was not written for the mathematician, but

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<sup>61</sup>The New Yorker, January 3, 1953.

<sup>62</sup>The conversation took place while the lecturer was showing some slides of mathematical beauty.

<sup>63</sup>The New Yorker, op. cit.

<sup>64</sup>"Personal Touches," New York Mirror Magazine, August 25, 1957, p. 12.

the educated man.<sup>65</sup>

In its first ten years Scripta Mathematica, with mathematical contributions from professors at Brown, Columbia, Michigan University, and others, produced eight volumes of the periodical, more than twelve books, four portfolios, scores of pamphlets, and at least one-hundred pictorial plates.<sup>66</sup> Pictures from Scripta were used as teaching aids in 3,000 classrooms.<sup>67</sup> Many articles about Scripta or its famous founder's successful attempt to revolutionize the teaching of mathematics in America were printed in magazines and newspapers around the world, such as the Spanish newspaper, El Plato;<sup>68</sup> the French L'illustre;<sup>69</sup> or the Russian Amerika.<sup>70</sup> The fact that most of these articles appeared at the prompting of the Public Relations Department of Yeshiva University (in that prior to publishing an article on Scripta or on Dr. Ginsburg, the periodical normally received a bulletin or even explicit request for an article from Public Relations, informing the periodical of Scripta's achievements) in no way reduces the significance of Professor Ginsburg's works, since these periodicals were quite pleased to write an article on Dr. Ginsburg, and

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<sup>65</sup>Fleisher, op. cit.

<sup>66</sup>Ibid.

<sup>67</sup>Amerika, no. 43, August 1950.

<sup>68</sup>Jane Jacobs, El Plato, January 26, 1961.

<sup>69</sup>Yeshiva University News, Fall, 1957, Vol. VI, no.1, p.5

<sup>70</sup>Amerika, op. cit.

often sent a reporter to interview him after they received a release from Public Relations.<sup>71</sup>

In the classroom and at the faculty meetings, Professor Ginsburg was equally successful. He tried to establish the backbone of a sound department in terms of faculty, course, and general procedures.

The basic undergraduate curriculum (later expanded) consisted of first- and second-year calculus course, intermediate calculus, advanced calculus, algebra, theory of equations, differential equations,<sup>72</sup> vector analysis, theory of numbers, projective geometry, statistics, and recreational mathematics.<sup>73</sup>

Dr. Ginsburg made the mathematics department at Yeshiva College almost like a club. He often discussed problems with running the department, whose faculty met often in order to discuss methods of improving it. He was profoundly interested in what was best for the students and in improved methods of teaching.<sup>74</sup> Dr. Ginsburg tried to train the student to take over the teaching, and was

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<sup>71</sup>Public Relations Department's files.

<sup>72</sup>According to Dr. Patt, this is the only course Professor Ginsburg taught wherein he closely followed a text. In all other courses, Dr. Ginsburg consistently presented his own material, much of it original.

<sup>73</sup>Lisman, interview.

<sup>74</sup>Churgan, interview.

later joined on the Yeshiva faculty by his own students.<sup>75</sup>

Dr. Ginsburg would classify freshmen by ability, and put together in one class those of similar ability so that they would stimulate each other. Dr. Ginsburg himself often taught the remedial course, believing it was a greater challenge. He felt that if he could motivate the student with lesser ability or poorer background, he was accomplishing much more than if he taught something to the previously interested and talented student.<sup>76</sup> This philosophy of his is typical of his human side and his attempt to humanize mathematics. His motive was to make mathematics more appealing and less rigorous so that people would like it.<sup>77</sup>

In the initial announcement advertising the opening of the graduate department of mathematics, an outgrowth of the Institute of Mathematics, Dr. Ginsburg was quoted as saying:

We believe that prospective teachers of mathematics should get intensive training in advance mathematics, and conversely that the so-called pure mathematician should have a background in the subject as one of the humanities. Mathematics is a thing of beauty and a vital part of every man's cultural background. It will be our aim to train teachers who can impart to their students this feeling for mathematics as an inexhaustible source of pleasure.<sup>78</sup>

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<sup>75</sup>Lisman, interview.

<sup>76</sup>Statement made by Dr. Patt in the name of Dr. Jonah Mann, a former student of Dr. Ginsburg, and later a teacher at Yeshiva College.

<sup>77</sup>Lisman, interview.

<sup>78</sup>Public Relations release of April 21, 1952, for April 24, 1952.

To this goal Dr. Ginsburg instituted two groups for the graduate school. The courses in the "A" group were for those who wished to become mathematicians, receiving a degree in mathematics. Group "B" was for those wishing to receive training as mathematics teachers. Students in the "A" group were required to take some "B" courses as well,<sup>79</sup> and conversely.<sup>80</sup>

In the Group B program there was a course in recreational mathematics and a workshop with models<sup>81</sup> thus making Dr. Ginsburg the originator of the modern "math lab". One course, taught by a retired army colonel, even dealt with cutting and pasting in order to make various geometric solids.<sup>82</sup>

The underlying idea behind the concept of two groups in graduate school was one Dr. Ginsburg had long been advocating. Dr. Ginsburg said that many students develop fears about their ability to do math, not because it is inherently difficult, but because it is not always properly presented to them.<sup>83</sup>

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<sup>79</sup>Twenty-four credits from Group A, twelve credits from Group B.

<sup>80</sup>Public Relations release of April 21, 1942, for April 24, 1952.

<sup>81</sup>Ibid.

<sup>82</sup>Patt, interview. Unfortunately, the course was held together by Dr. Ginsburg's personality more than anything else, and in time, interest in it dissipated.

<sup>83</sup>Public Relations release of April 21, 1942, for April 24, 1952.

Dr. Ginsburg remarked:

We reach the young pupils through the teachers. Already many high schools are trying these methods and soon we hope that they may be used in elementary schools. To arouse the student's interest, a teacher might hand him a piece of paper and ask him to perform the apparently impossible task of cutting a hole in the paper large enough to push a piano through. When the student suggests that this is impossible, the teacher does it by folding the paper and cutting a hole that has an accordion-like expansion.<sup>84</sup>

Afraid that the student's introduction to science was lukewarm because of a poor presentation of mathematics,<sup>85</sup> Dr. Ginsburg hoped to establish a graduate program for training high school teachers who could show the student the significance of it without alienating him.

The initial faculty was formed by bringing to Yeshiva several associates of Professor Ginsburg, from other institutions, a number of whom were famous: Hermann Baravalle, head of Adelphi mathematics department; Robert S. Beard, Colonel, U.S. Army; Carl B. Boyer, Professor of Mathematics, Brooklyn; Jesse Douglas, Professor of Mathematics, Brooklyn; Samuel Eilenberg, Professor of Mathematics, Columbia University; Kurt Eisemann, Senior Mathematician, I.B.M.; Howard Fehr, Professor and Head of Department of Teaching Mathematics, Teachers College, Columbia University; Abe Gelbart, Professor of Mathematics, Syra-

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<sup>84</sup>Public Relations release of May 13, 1952, for May 15, 1952.

<sup>85</sup>ibid.

cuse University; Jekuthiel Ginsburg, Professor and Head of Department at Yeshiva University; Ellie Kolchin, Professor of Mathematics, Columbia University; Henry Lisman, Associate Professor of Mathematics, Yeshiva University; Arnold Nohh Lowan, Professor of Physics, Yeshiva University; William D. Reeve, Professor Emeritus of Mathematics Teachers College, Columbia University; Carl N. Shuster, Professor and Head of Mathematics Department, New Jersey State Teachers College, Trenton; Robert C. Yalin, Associate Professor of Mathematics, U.S. Military Academy West Point<sup>86</sup>, and Abraham Frankel<sup>87</sup> visiting Professor from Hebrew University.<sup>88</sup>

Prof. Ginsburg himself only taught courses in Group B, specializing in number theory, history, and recreational mathematics.<sup>89</sup> Although the professors and courses varied slightly the first five years,<sup>90</sup> the initial list of courses was: Fundamentals of Analysis, History of Mathematics, Theory of Numbers, Theory of Functions of a Complex Variable, Modern Algebra, Laboratory Course in Mathematics; Theory of Ideals and Algebraic Differential Equations; Differential Geometry, Methods of Teaching Mathematics, Numerical Cal-

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<sup>86</sup>Announcement of opening of graduate school, Public Relations' files.

<sup>87</sup>In some places the spelling is given as "Fraenkel."

<sup>88</sup>Public Relations release of April 21, 1942, for April 24, 1952.

<sup>89</sup>Catalogues of the Belfer Graduate School of Science, in the Belfer library.

<sup>90</sup>Ibid.

culus, and Seminar in Teaching Mathematics.<sup>91</sup> Modern Algebra and the Seminar were not taught the first two years the Graduate School of Mathematics opened, in 1952 and 1953, but were taught, starting in 1954,<sup>92</sup>; similarly, other courses, including physics courses, were added, making the school the Graduate School of Mathematics and Science<sup>93</sup>. The Numerical Calculations and the Laboratory Course were for two credits each, the others for three.<sup>94</sup> Also, certain courses, in particular the Laboratory Course and the Methods of Teaching course, were open to undergraduates.

From 1954-1956 the courses given were: Fundamentals of Analysis, Group A,; Theory of Numbers, Group B, Dr. Ginsburg; History of Mathematics, Group B, Drs. Boyer and Ginsburg; ~~Group A~~, Vector Analysis, Group A; Advanced Mathematics Education, Group B; Laboratory Course in Mathematics, Group B, Drs. Boyer and Ginsburg; Methods of Teaching Mathematics, Group B; Theory of Ideals and Algebraic Differential Equations, Group A; Theory of Functions on Complex Variables, Group A, Dr. Gelbart; Modern Algebra, Group A;

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<sup>91</sup>Announcement of opening of graduate school.

<sup>92</sup>ibid.

<sup>93</sup>Catalogues of Belfer.

<sup>94</sup>ibid.



Differential Geometry, Group A; Calculus of Variations, Group A; Introduction to Topology, Group A; Theory of Functions of a Real Variable, Group A; Seminar in Teaching Mathematics, Group B; and Numerical Calculations, Group A.<sup>95</sup>

The third curriculum program was projected for 1956-1958. A course in physics was added, and no other major changes were made, other than a tuition increase from the initial \$12.50 a credit to \$25.00 a credit, and from \$10.00 registration to \$25.00.<sup>96</sup>

Dr. Ginsburg, a popular speaker, was involved with educational projects other than the ones he motivated. For example, he participated in a "Frontier of Knowledge" lecture series.<sup>97,98</sup> The Frontier of Knowledge was a Philadelphia based group which sponsored scientific lectures, once a week hiring such famous people during the early fifties as Mario Pei of Columbia, who spoke on "The Nature of Language"; J. Dolzhansky, of Columbia, who spoke on "Heredity and Evolution"; and Ralph Bunche, of the United Nations, who spoke on "World Settlement and Cultural Rapprochement." They advertised the

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<sup>95</sup>Ibid.

<sup>96</sup>Ibid.

<sup>97</sup>The series started in 1951 in association with New York University and charged a nominal fee of \$25.00 a term and \$2.00 registration.

<sup>98</sup>"The Frontier of Knowledge," brochure, belonging to files of Public Relations.

purpose of the lectures as:

interpretive concepts in science, philosophy, and education, a course of study designed to show...that the organizing principles behind the various fields of specialization may be meaningful and simple. This being so, human knowledge may be seen to fit into an integrated framework of law, order, and organization...

The central theme /of the lectures/ will, therefore, be that only through an effort of every discipline to reveal concepts and to relate them can order be brought into education and human affairs.<sup>99</sup>

Obviously, this theme was precisely Dr. Ginsburg's game. He gave the second lecture of the fall term (in a series of fifteen, the eighth and fifteenth being summaries and reviews of the preceding lectures), on October 14, 1953, on "Mathematics as a Deductive Science."<sup>100</sup>

Most of Prof. Ginsburg's energies, though, were spent on Scripta. Billed (during his lifetime) as "A Quarterly Journal devoted to the Philosophy, History, and Expository Treatment of Mathematics," its main objective was "to arouse the interest of mathematicians and intelligent laymen"<sup>101</sup>. Scripta (meaning Dr. Ginsburg) had the idea of popularizing mathematics through its beauty.<sup>102</sup> It was subscribed to by "every leading college, university, and public library in the world, as well as most schools and college departments

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<sup>99</sup>Ibid.

<sup>100</sup>Ibid.

<sup>101</sup>Boyer's Scripta correspondence.

<sup>102</sup>Yeshiva University News, op. cit.

of mathematics."<sup>103</sup> Subscriptions were mailed to other continents across the seas, including Africa.<sup>104</sup> True to Dr. Ginsburg's Jewish spirit, Scripta published works of Jewish interest such as Zacuta's Almanac (used by Columbus) in English and Hebrew, and a treatise on spherical trigonometry of the thirteenth century by R. Ben Machir, of which Halley's (the famed discoverer of Halley's comet) book on spherical trigonometry is almost a word-for-word copy.<sup>105</sup>

In the attempt to modernize and popularize mathematics, Scripta published geometric puzzles, curious formulae, and card tricks.<sup>106</sup> Baravalle, known for his designs and mathematical curves used as visual aids was also a popular lecturer.<sup>107</sup> Other artists and architects, such as H.B. Edler and Rutherford Boyd (who made a mathematical movie, "Parabola," and designed a toothpaste tube) published in Scripta. Boyd, in particular, used lucite, alabaster, marble, and plaster for his mathematical art.<sup>108</sup> E. Milick, a native of Tunisia who wrote a dozen books on mathematics, was known for his designs of hearts and flowers. He, too, published in Scripta. Indeed, many designs--some complex,

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<sup>103</sup>Ibid.

<sup>104</sup>Ibid.

<sup>105</sup>Fleisher, op. cit.

<sup>106</sup>Life, op. cit.

<sup>107</sup>Ibid.

<sup>108</sup>Ibid.

and some simple that look intricate, but that can be made by anyone in one-half an hour --adorned the pages of Scripta in the guise of mathematical art, architecture, engineering, or mathematical jewelry.<sup>109</sup>

Although the journal was quite popular in its heyday, Dr. Ginsburg had great difficulty initially in finding ample financial backing. However, Ginsburg's sparkling personality made him many famous friends who lent their names to help Scripta. The letterhead of the Society of Friends of Scripta Mathematica has such famous names as: Hon. Herbert H. Lehman, Raymond Clare Archibald, E.T. Bell, G.D. Birkhoff, P.W. Bridgman, John Dewey, Leonard E. Dickson, Albert Einstein, Sir Thomas L. Heath, Edward Kasner, Cassius Jackson Keyser, Gino Loria, Bernard Revel, Lao G. Simons, and David Eugene Smith.<sup>110</sup> In just fifteen years Profs. Smith and Ginsburg had spread the idea of Scripta to people in all walks of life.<sup>111</sup> Scripta, never short of new material--dealing with designs, postcards, postal stamps (see figure 21), and biographies--received correspondence from all over the world.<sup>112</sup>

Everything in Scripta had Dr. Ginsburg's personal touch of warmth and perfection. He read all the reviews, proofread the material himself, decided on the script under pictures, corrected matters of grammar and style, and care-

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<sup>109</sup>Ibid.

<sup>110</sup>Gelbart's collection.

<sup>111</sup>MacDougall, op. cit.

<sup>112</sup>Lisman, interview.

fully arranged the spacing of footnotes on the page<sup>113, 114</sup>

All was done with great concern for others. When Dr. Ginsburg sent Dr. Boyer a check for \$50.00 for a lecture sponsored by the Forum, he apologized saying he did not feel the sum was adequate.<sup>115</sup> He typically sent regards to friends in business letters, and otherwise made them very personal letters.<sup>116</sup>

In addition to publishing Scripta Mathematica, Dr. Ginsburg, through Scripta, sponsored lectures<sup>117</sup>, wrote pamphlets<sup>118</sup>, made visual aids, published monographs<sup>119</sup>, published books and pictures of great mathematicians<sup>120</sup>, published twenty<sup>121</sup> full-length books as part of the Scripta Mathematica Library (basically mathematical works) or Scripta Mathematica Studies (history or philosophy of mathematics<sup>122</sup>)-- both projects of Mathematica Press,<sup>123</sup> and published Picto-

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<sup>113</sup>Boyer's Scripta correspondence, especially letter to Boyer, September 29, 1955.

<sup>114</sup>Boyer's Scripta correspondence.

<sup>115</sup>Ibid.

<sup>116</sup>Ibid.

<sup>117</sup>Public Relations release of April 21, 1952, for April 24, 1952.

<sup>118</sup>Ibid.

<sup>119</sup>According to Dr. Churgin, the monograph on Copernicus inspired Poland to honor Dr. Ginsburg because Dr. Ginsburg had sided with the Poles on the Polish-German dispute over the nationality of Copernicus.

<sup>120</sup>Fraenkel, op. cit.

<sup>121</sup>Yeshiva University News, op. cit.

<sup>122</sup>Boyer's Isis manuscript.

<sup>123</sup>Gelbart, "A Home for Science," Alumni Review, Fall, 1960, Vol. XI, no. 1, pp. 3, 12.

rial Mathematics.<sup>124</sup>

Some volumes of the Scripta Mathematica Library, each at least ninety-six pages, were: volume 1, Pontry, Mathematics, and Other Essays, by D.E. Smith; volume 2, Mathematics and the Question of the Cosmic Mind, with Other Essays by Cassius Jackson Keyser; volume 3, Scripta Mathematica Forum Lectures, addresses by Cassius Jackson Keyser, David Eugene Smith, Edward Kasner, and William Shuster, delivered at the Forum of the Society of Friends of Scripta Mathematica; volume 4, Fabric and Mathematics, and Other Essays, by Lao Genevea Simons; and volume 5, Galois Institute Lectures, Addresses by Professor Jesse Douglas, Philip Franklin, Leopold Infeld, and Cassius Jackson Keyser, delivered at the Institute of Mathematics of Long Island University.<sup>125</sup>

Pictorial Mathematics included: I-II, Portraits of Eminent Mathematicians, biographies by David Eugene Smith, two portfolios; III, Portraits of Philosophers Who Contributed to Mathematics, with biography by Cassius Jackson Keyser, and IV, Portraits of Physicists, with biography by Prof. Henry Creur.<sup>126</sup>

The list of Scripta publications seems nearly endless. Other publications include: Simon's Bibliograph of Early

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<sup>124</sup>Boyer's Scripta correspondence.

<sup>125</sup>Catalogues of Belfer.

<sup>126</sup>ibid.

American Textbooks in Algebra; Durham's Everyman a Millionaire; Prof. Keyser's The Human Worth of Rigorous Thinking; Keyser's Mathematics as a Culture Clue; Keyser's Thinking About Thinking; Peacock's A Treatise on Algebra, Vol. I and II--a facsimile reprint of the 1842-1845 edition; one-hundred twenty single plate illustrations depicting visual aids in the teaching of mathematics; Collection of Papers in Memory of Sir W.R. Hamilton; Mathematical Table Makers: Portraits and Biographies, by Prof. Raymond Clare Archibald; Jacob Steiner's Geometrical Constructions, translated and edited by Prof. Archibald; Prof. Marion Elizabeth Starke's Summary of the Theory of Integrals, edited by Prof. Jesse Douglas; The Four Color Problem by Prof. Philip Franklin; approximately one-hundred pamphlets dealing with various mathematical subjects, and forty-two mathematical post-cards.<sup>127</sup>

The only thing more amazing than the staggering amount produced by Scripta is the fact that nearly all the works (unless otherwise stated) were edited by Prof. Ginsburg!<sup>128</sup> No wonder Scripta Mathematica was praised by the government as an example of "American enterprise in the field of higher education."<sup>129</sup> Indeed, it was even distri-

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<sup>127</sup>Ibid.

<sup>128</sup>Boyer, interview.

<sup>129</sup>Yeshiva University News, cop. cit.

buted by the government as such an example<sup>130</sup>.

Dr. Ginsburg was the motivating force behind Scripta, and to a large extent of an entire revolution in the teaching of mathematics in America. He was successful because his personality created an atmosphere of learning and idealism.<sup>131</sup> Always kind and humble, his deep interest was in the student he taught. If he discovered a promising student, he would exclaim with the greatest satisfaction, "Oh, he is going to be a better mathematician than I am."<sup>132</sup> He never reprimanded nor even criticized a student. He never preached, but yet, he still extended the greatest moral influence because his personal life was the finest sermon.<sup>133</sup>

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<sup>130</sup>Fraenkel, op. cit.

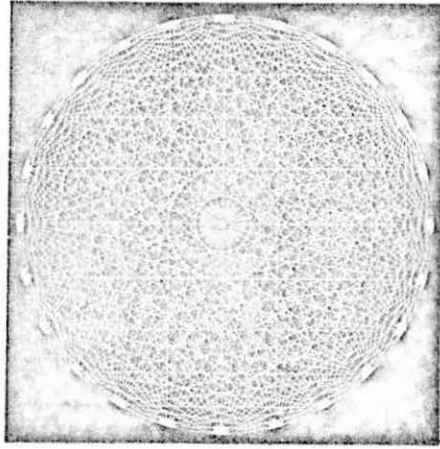
<sup>131</sup>Churgin, interview.

<sup>132</sup>Belkin, op. cit.

<sup>133</sup>ibid.

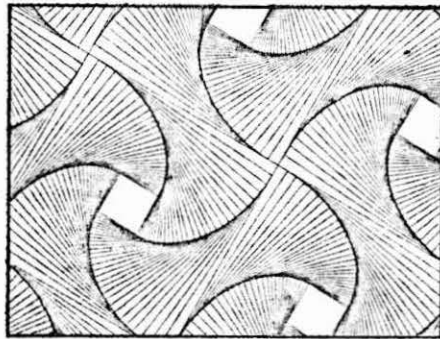


Figures anyone can draw.



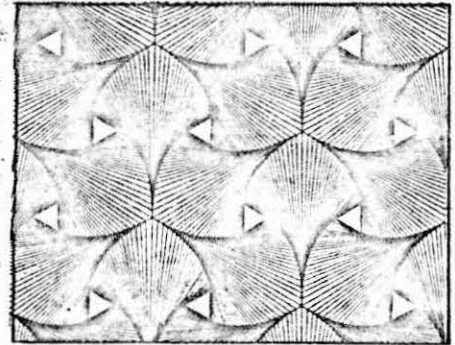
Design obtained by drawing all diagonals of a 24-side polygon.

Fig. 1



New shapes created by operating on a simple geometrical square.

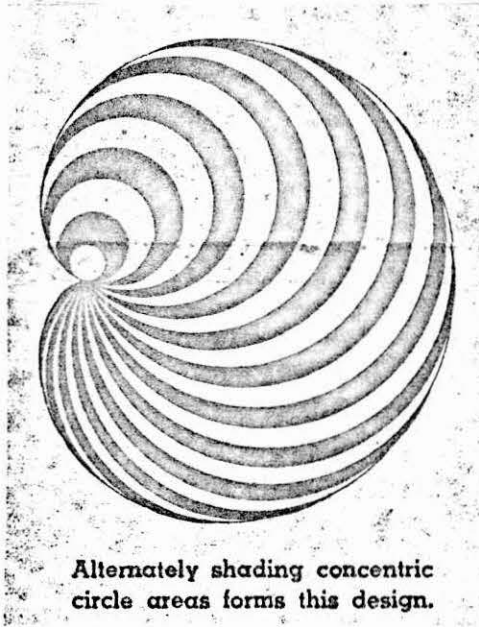
Fig. 2



Curvilinear figures produced by using only triangles, hexagons.

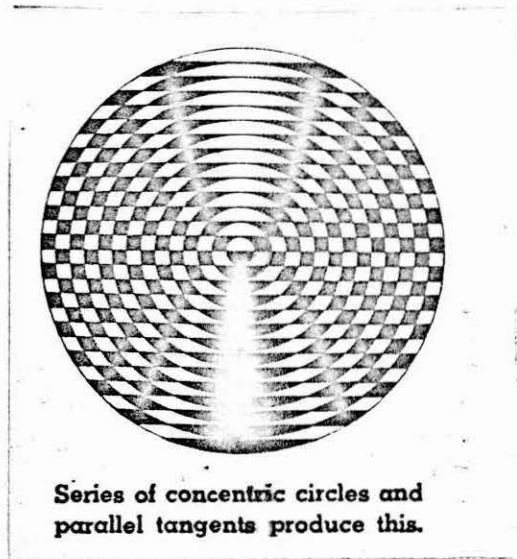
Fig. 3

Figures created by shading.



Alternately shading concentric circle areas forms this design.

Fig. 4



Series of concentric circles and parallel tangents produce this.

Fig. 5

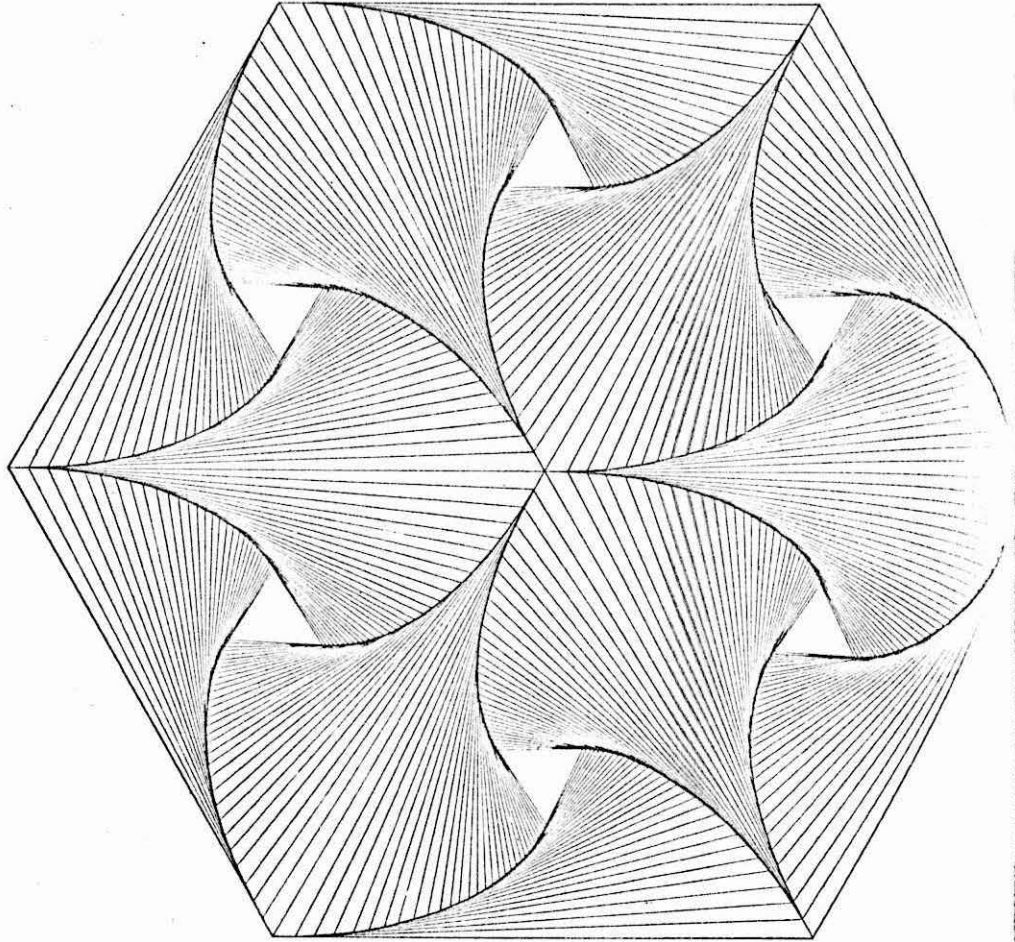


Fig. 3. The Mystery of the Vanishing Triangle. In constructing the diagram only triangles were drawn yet the weird spade-like shape so dominates the result that the triangles pass unnoticed.

Fig. 6

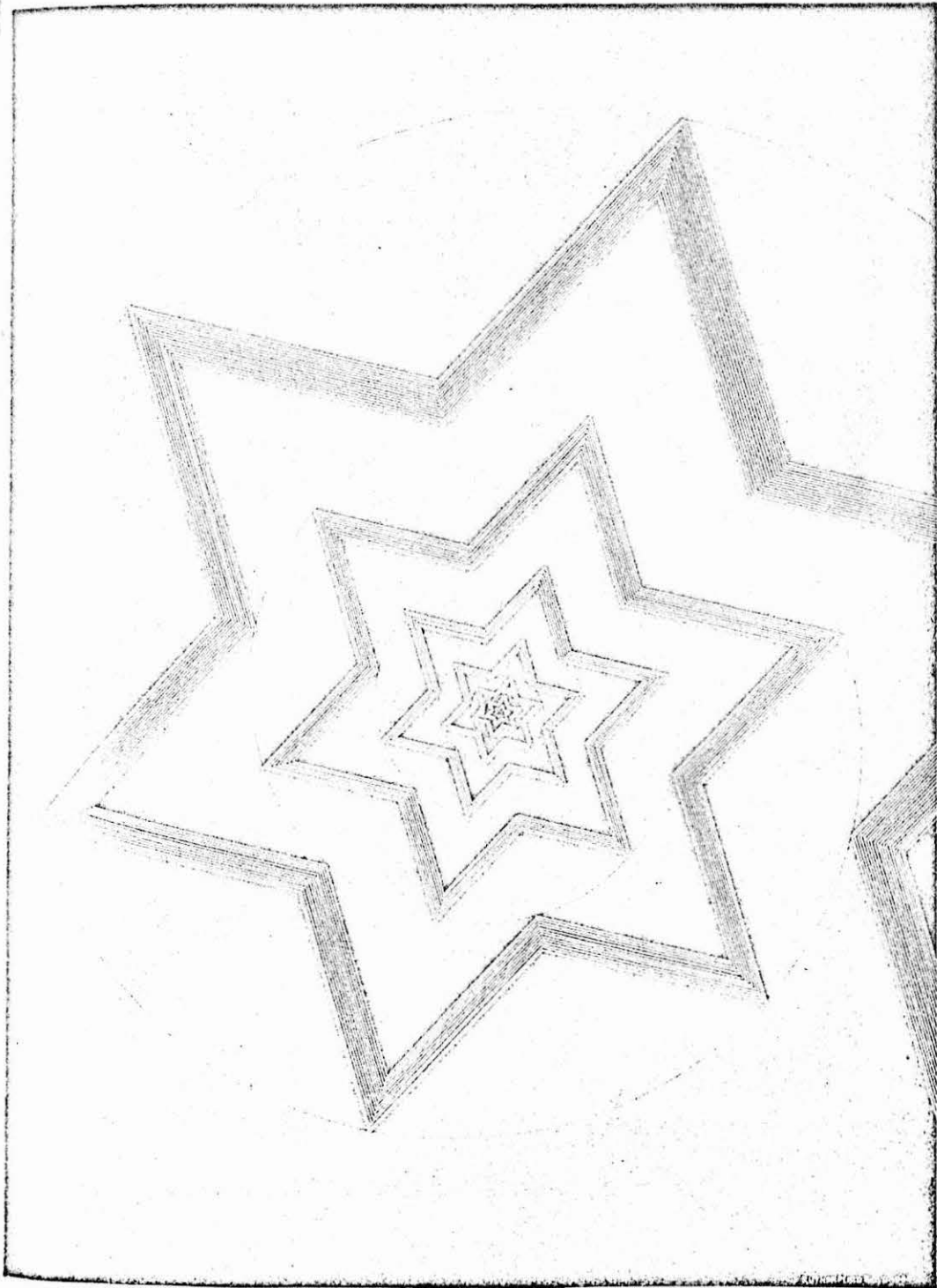


Fig. 7

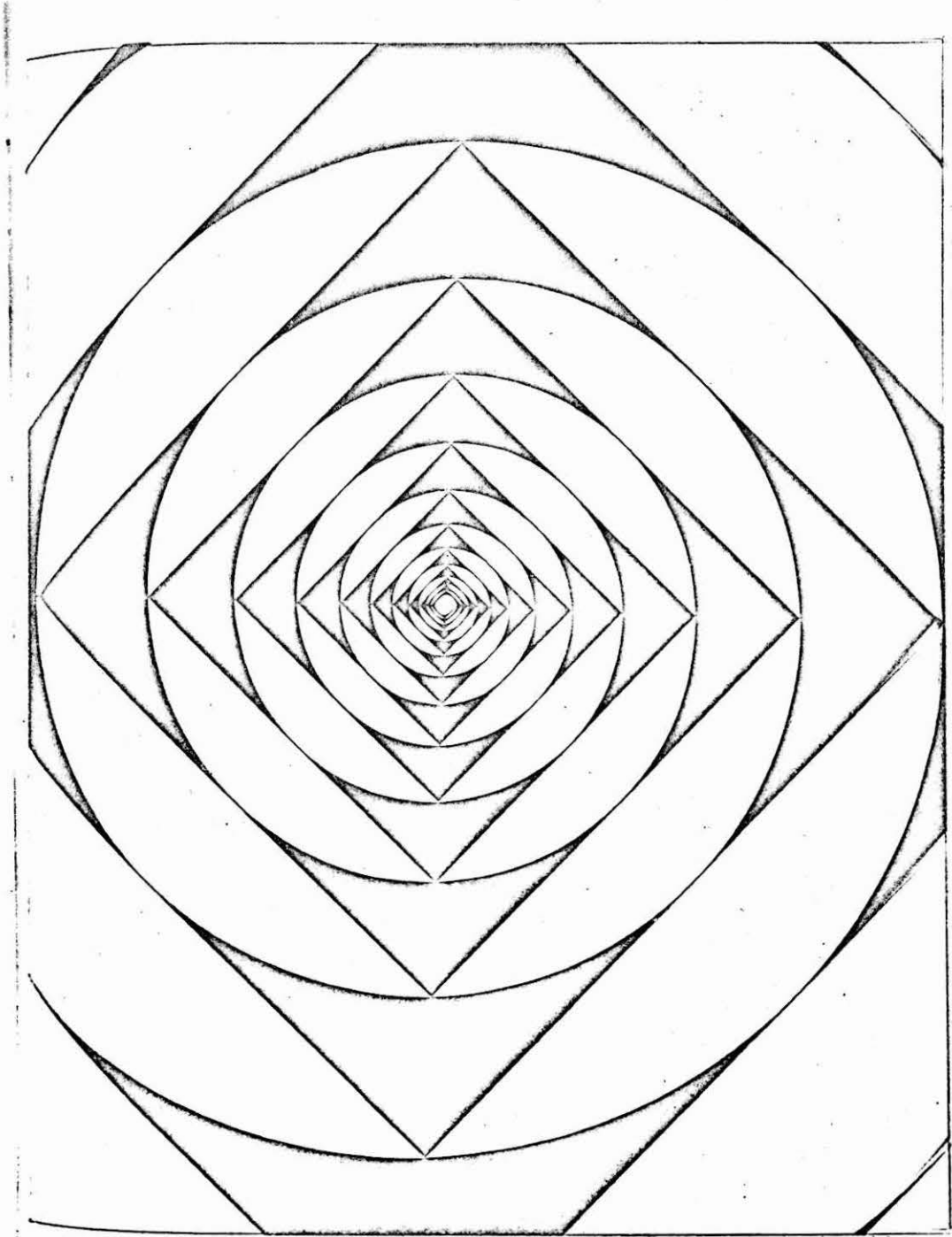
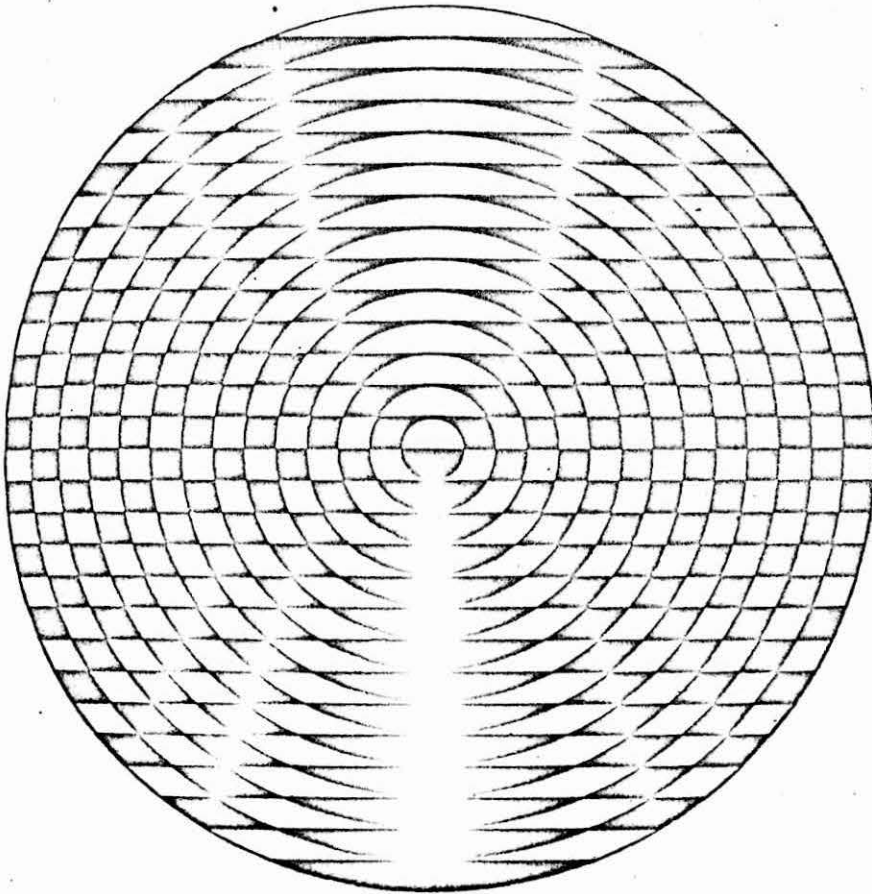


Fig. 8

DYNAMIC BEAUTY OF GEOMETRICAL FORMS

BY HERMANN BARAVALLE



To obtain the above design draw a series of concentric circles with radii  $r, 2r, 3r \dots nr$ , and a series of parallel tangents terminating on the circumference of the largest circle.

Fig. 9

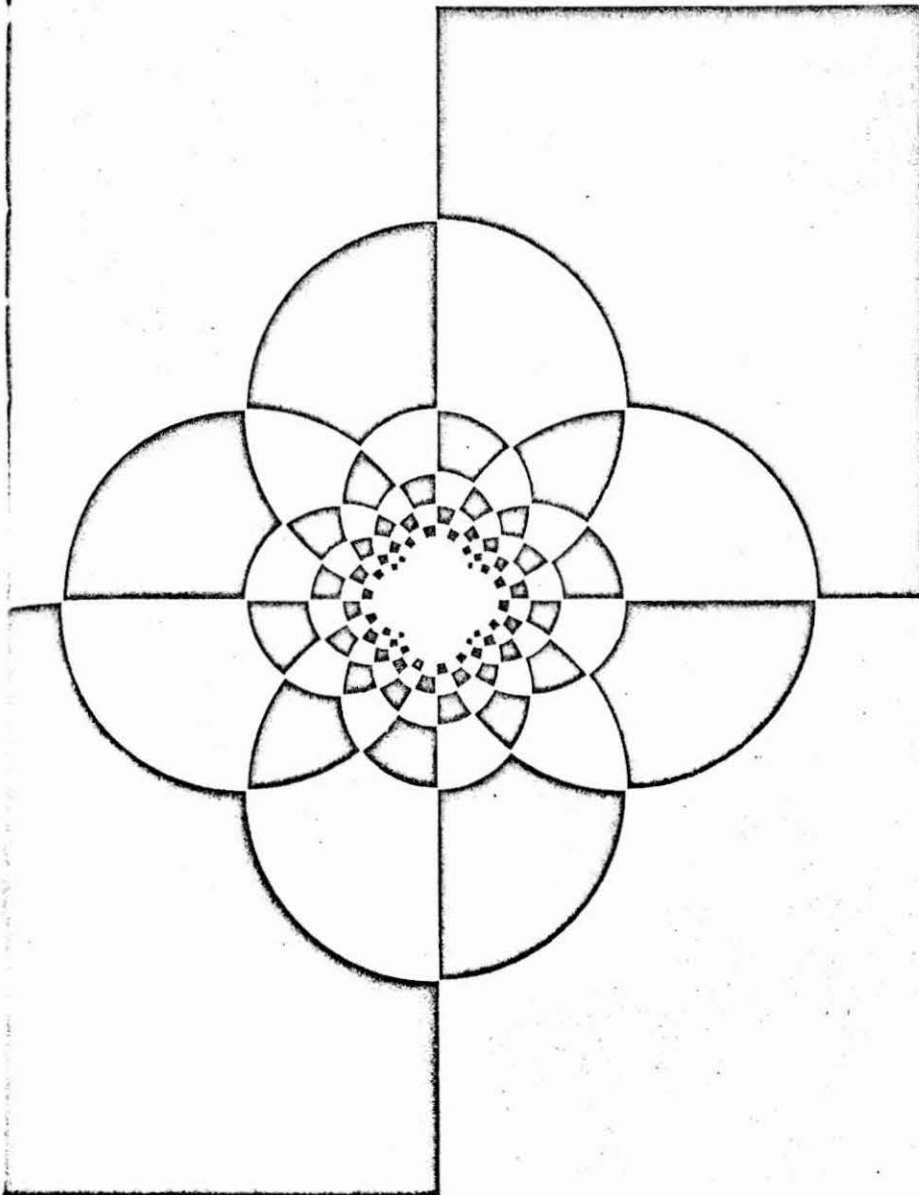


Fig. 9. The Result of Inversion Applied to a Checker Board

Fig. 10

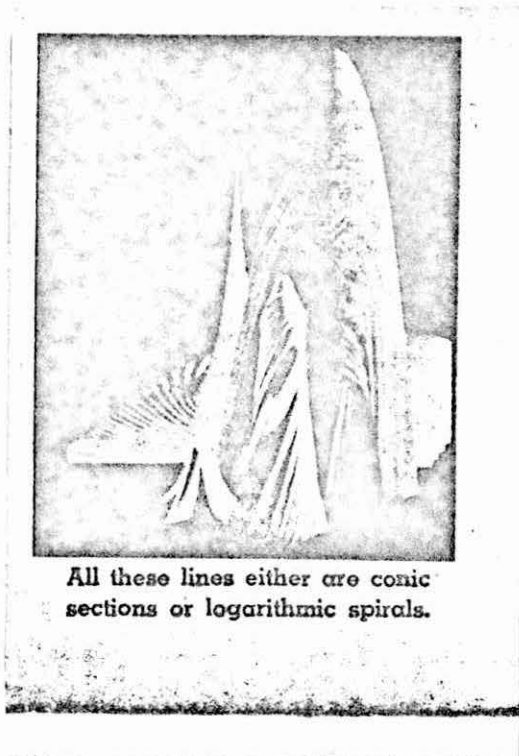


Fig. 11

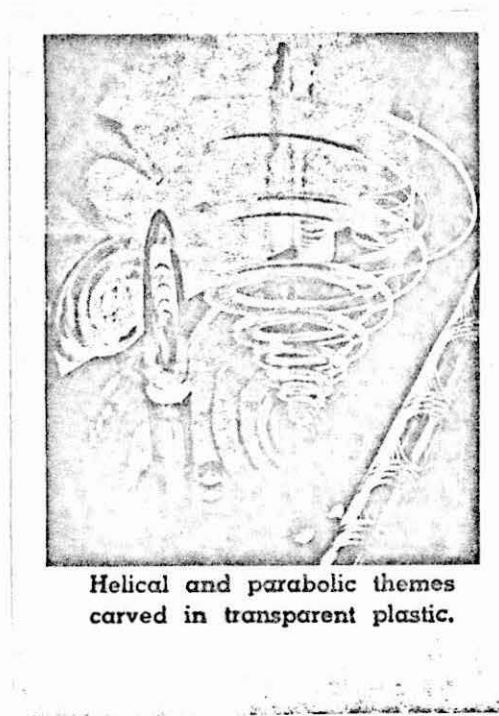


Fig. 12

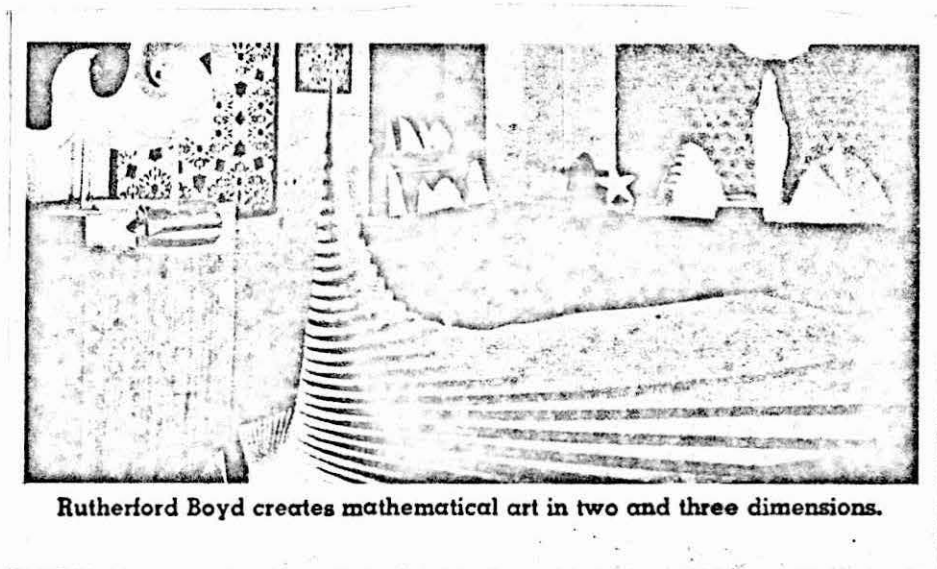
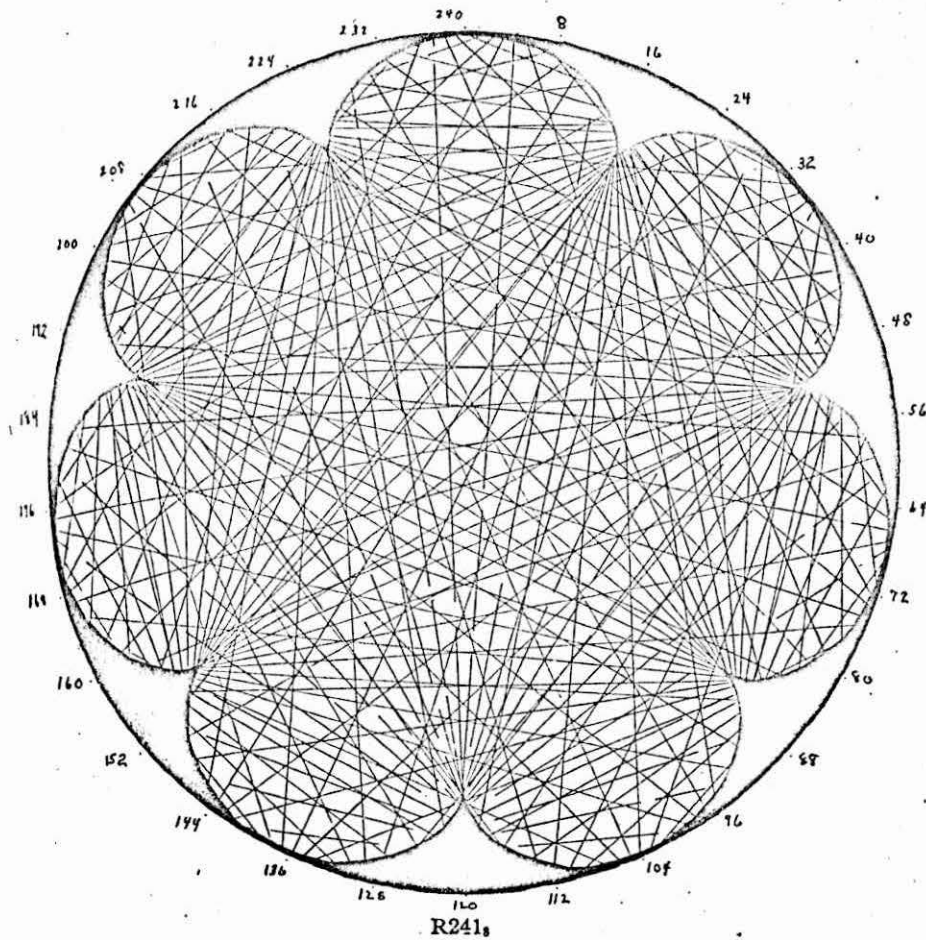


Fig. 13



### RESIDUE CURVES

BY FENTON STANCLIFF



A circle is divided into 240 parts and the points of division are marked 1, 2...240. A straight line is then drawn from every point  $n$  to the point  $8n - 241$ . A curve of 7 cusps is obtained.

Fig. 14.--A design anyone can draw.

ELECTRONIC ABSTRACTIONS

By Ben F. Laposky

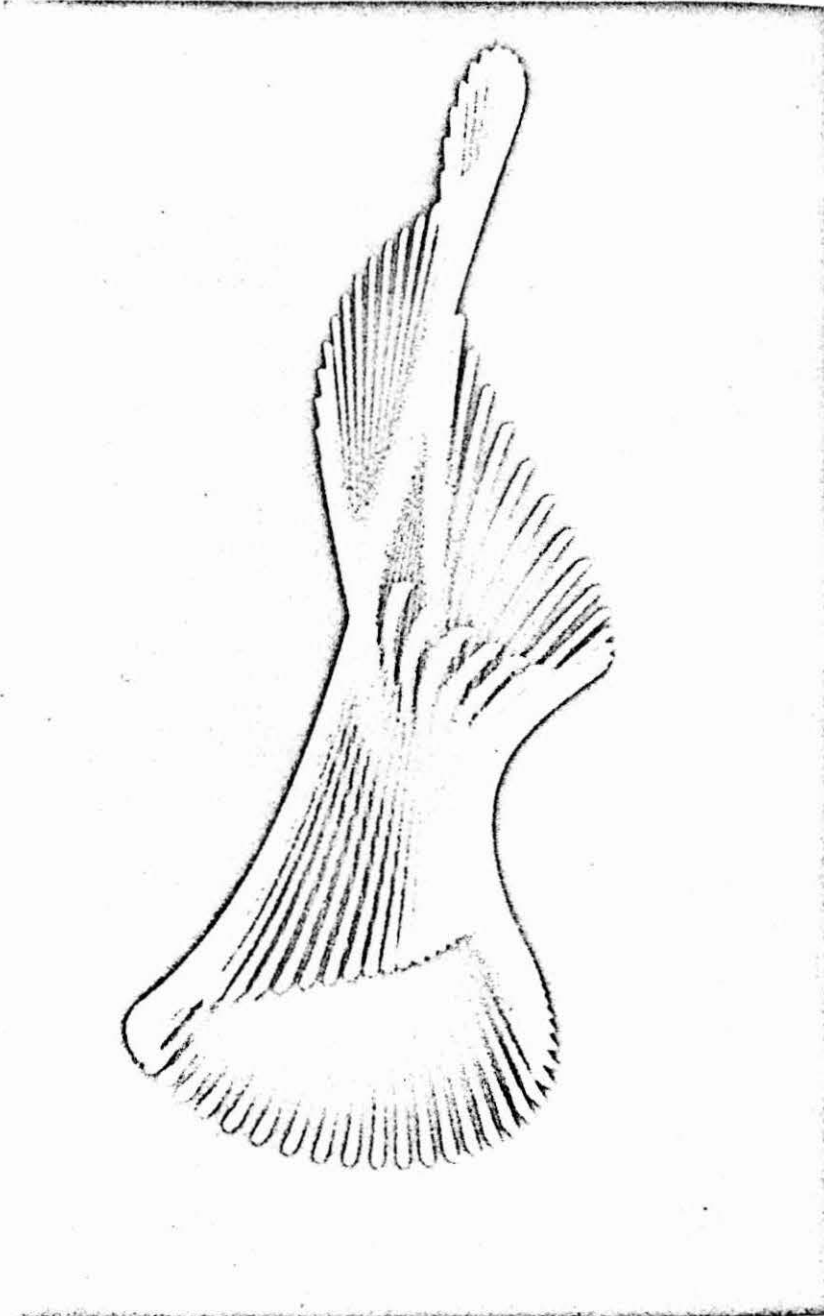


Fig. 15.--Art in physics.

A PENDULUM DESIGN

By Ben F. Laposky

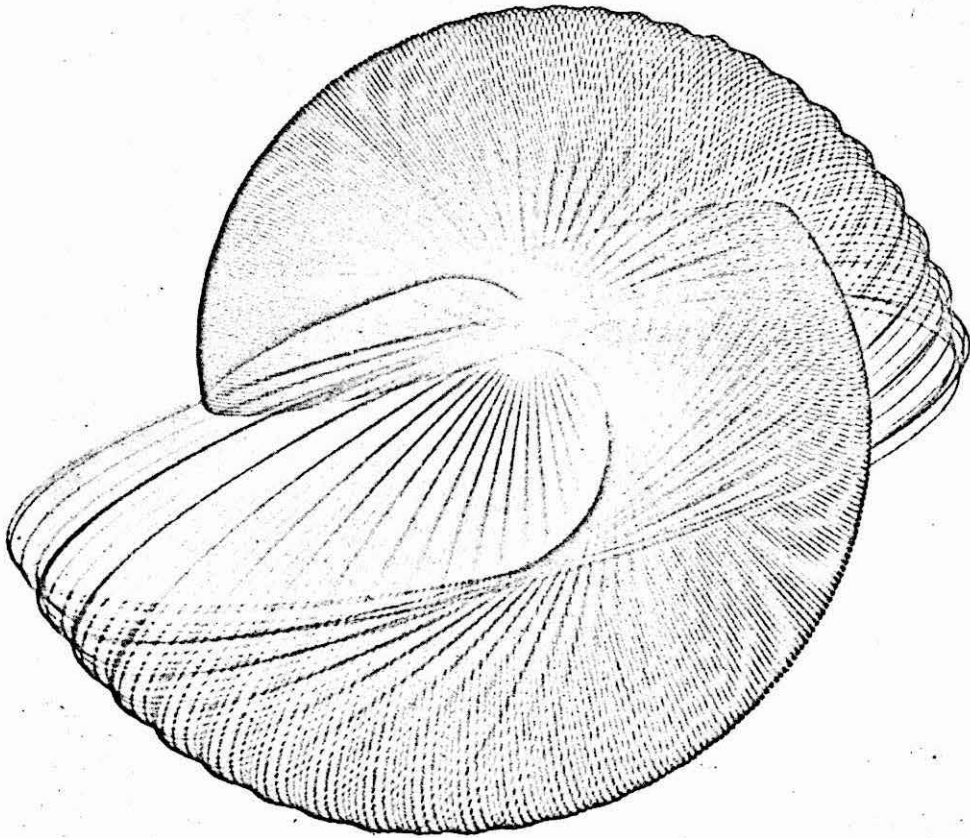
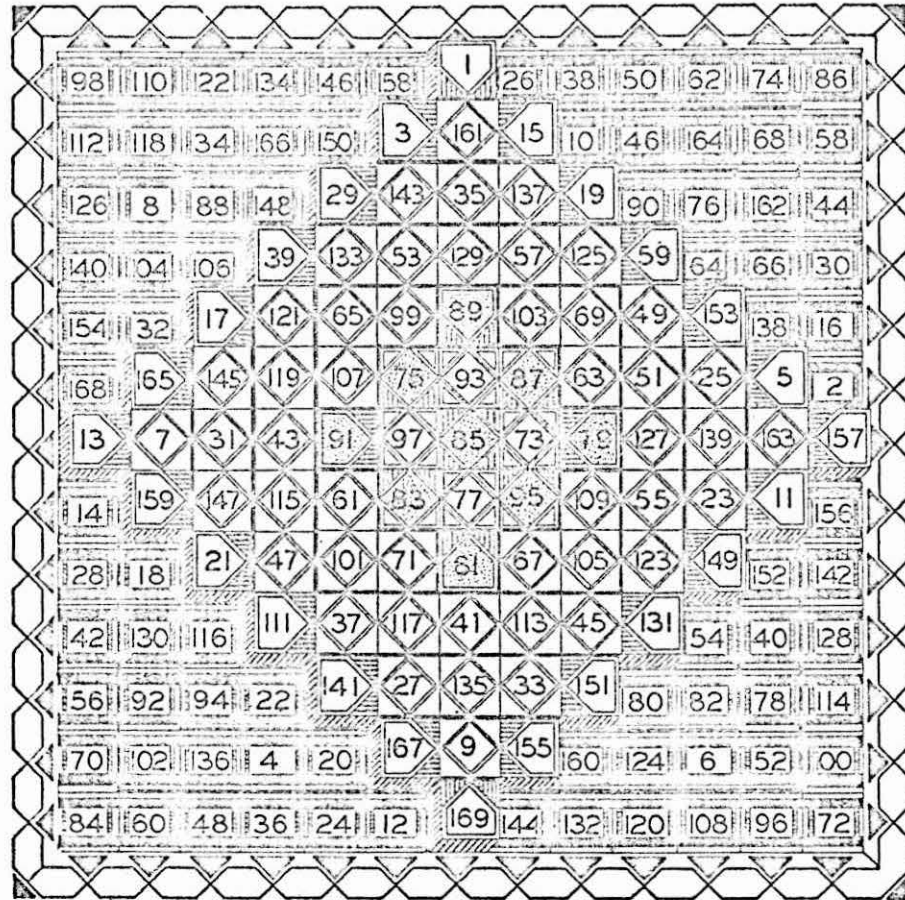


Fig. 16.--Art in physics.

# CONCENTRIC MAGIC SQUARES

BY ROYAL V. HEATH



This 13 × 13 magic square contains the first 169 numbers with a 3 × 3 magic square as a nucleus around which five panels of numbers have been arranged concentrically forming:

- A 3 × 3 magic square—rows, columns and diagonals totaling 255
- A 5 × 5 magic square—rows, columns and diagonals totaling 425
- A 7 × 7 magic square—rows, columns and diagonals totaling 595
- A 9 × 9 magic square—rows, columns and diagonals totaling 765
- An 11 × 11 magic square—rows, columns and diagonals totaling 935
- A 13 × 13 magic square—rows, columns and diagonals totaling 1105

The center numbers in the rows and columns forming the panel for the 5 × 5 magic square also may be used to form an additional 3 × 3 magic square, viz.:

ninety-one — 75 — eighty-nine  
 83 — 85 — 87  
 eighty-one — 95 — seventy-nine

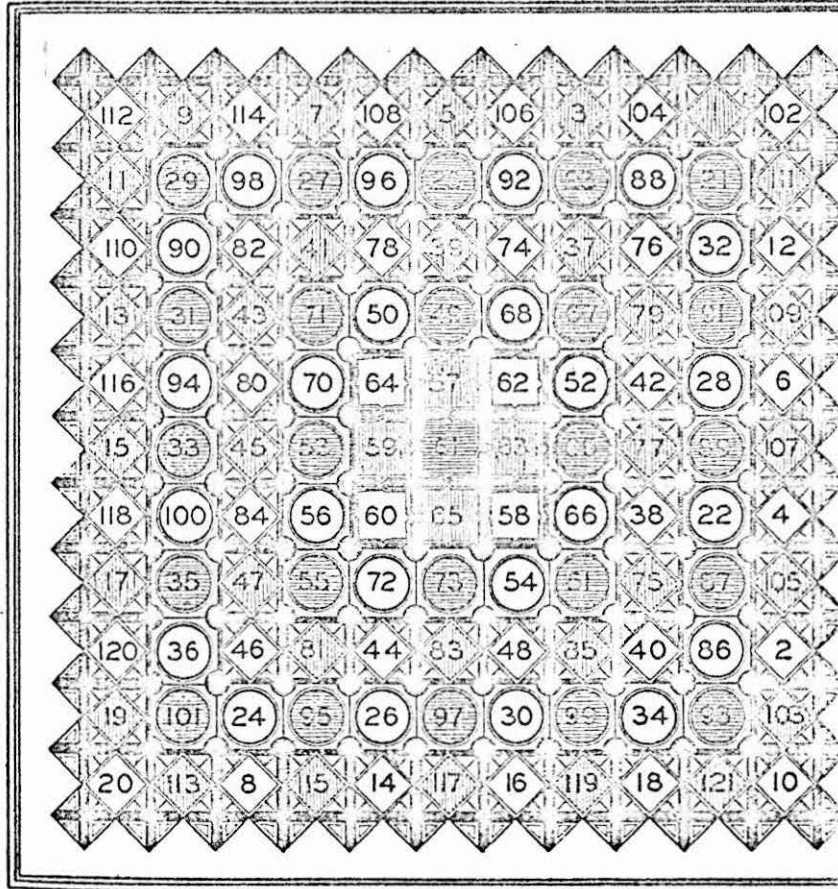
All the odd and even numbers are segregated.

66

Fig. 17.—Recreational mathematics.

# CONCENTRIC MAGIC SQUARES

BY ROYAL V. HEATH



This 11 × 11 magic square contains the first 121 numbers with a 3 × 3 magic square nucleus around which four panels of numbers have been arranged concentrically forming

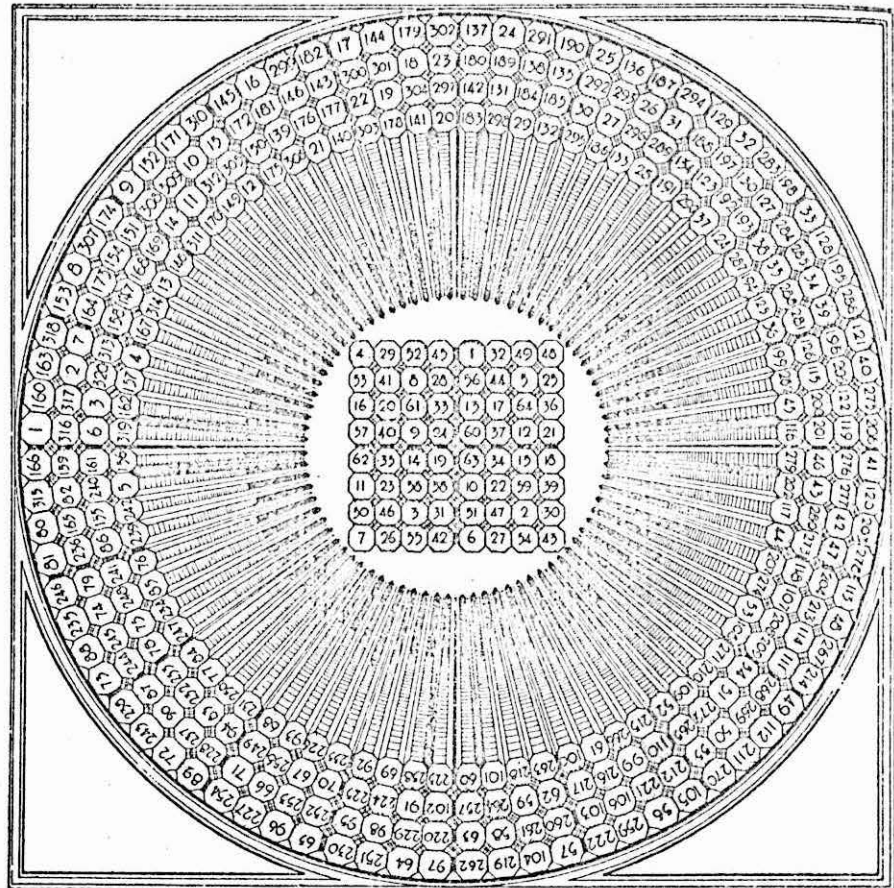
- A 3 × 3 magic square—rows, columns and diagonals totaling 183
- A 5 × 5 magic square—rows, columns and diagonals totaling 305
- A 7 × 7 magic square—rows, columns and diagonals totaling 427
- A 9 × 9 magic square—rows, columns and diagonals totaling 549
- An 11 × 11 magic square—rows, columns and diagonals totaling 671

All panels are formed with alternately odd and even numbers. An interesting symmetrical arrangement is that of the progression 1, 3, 5, . . . to 47, inclusive.

Fig. 18.--Recreational mathematics.

# A MAGIC CIRCLE

BY ROYAL V. HEATH



The rim of this circular diagram contains the first 320 numbers arranged in twenty subdivisions each of which forms a magic square. Each row, column and diagonal totals 642.

In the entire ring every right or left diagonal totals 642. Four extra magic squares are formed where the following numbers appear on the outer edge:

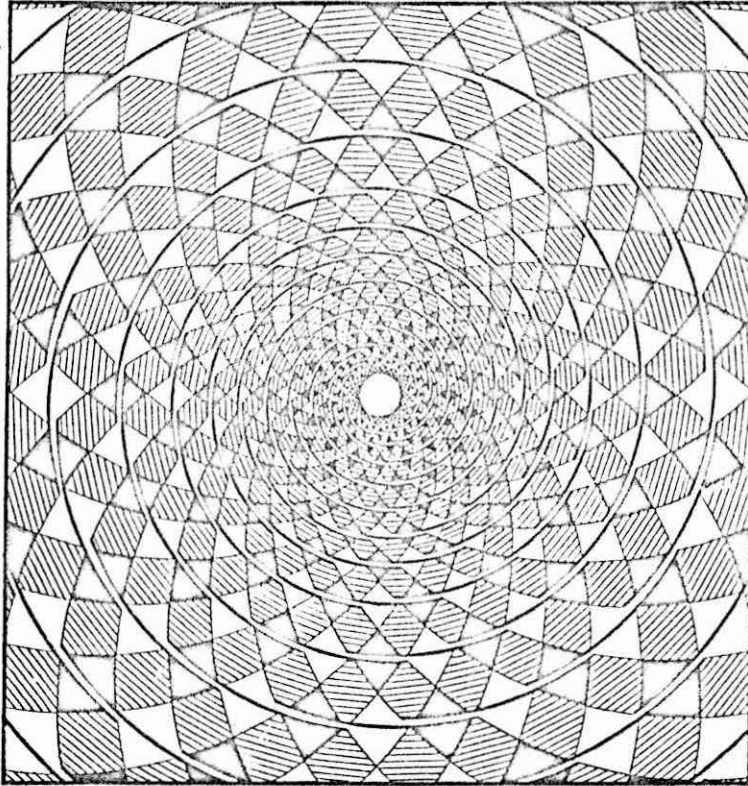
- 267, 124, 49, 112
- 227, 254, 84, 72
- 207, 174, 9, 152
- 187, 294, 129, 32

In the center there is a perfect  $8 \times 8$  magic square composed of the numbers 1-64. Each quarter section forms a magic square. Adding any number in a quarter section with the numbers in like position in the other sections we always get the sum 130.

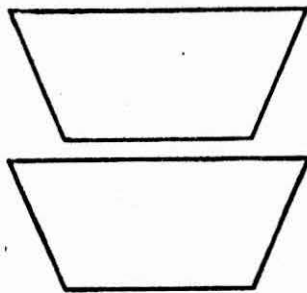
The upper tier of the square forms a pan-diagonal rectangle, so does the lower tier.

Fig. 19.--Recreational mathematics.

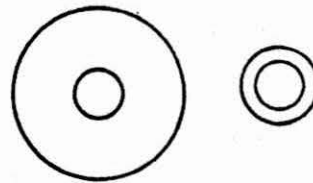
OPTICAL ILLUSIONS



1. Concentric circles or a spiral?



2. These two trapezoids do not seem to be of the same size, but they are.



3. The two inner circles are equal. Yet the one to the right seems to be larger.

*From "Monde des Formes," by A. Sainte-Lague*

Fig. 20.--Recreational mathematics.

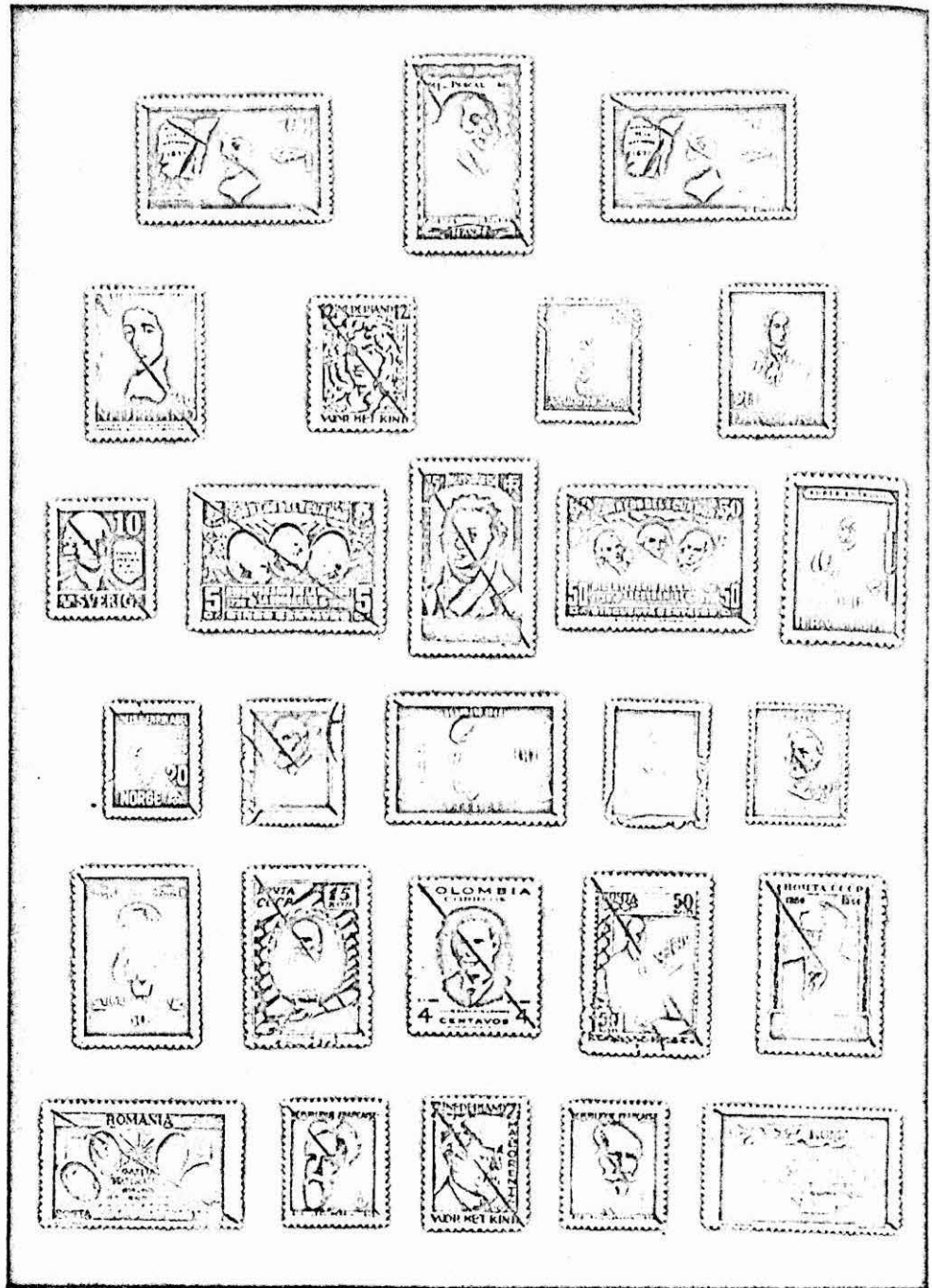


Plate II

Top row: Descartes and Pascal; second row: De Witt, Huygens, Leibniz, and Roemer; third row: Swedenborg, De la Condamine (central figure of the three portraits), Ampère, Bouguer (right-hand figure of the three portraits), and Boscovich; fourth row: Abel, Eötvös, Bolyai, and Hamilton; fifth row: Chebichev, Zhukovsky, Armero, and Chaplygin; bottom row: Gazeta Matematica (with Ionescu, Titeica, Idachimescu, Cristescu), Perrin, Lorentz, and Langevin.

Fig. 21.--Postage stamps depicting mathematicians.



## APPENDIX A

This appendix consists of material sent by Mrs. Freedman that arrived too late to include in the main body of the paper.

Mrs. Ginsburg, the proud mother, and sister Haya arrived in the United States in 1921 to find the brothers at the height of their intellectual and organizational activities. Shimon was editor of HaToren and on the editorial board of Miklat and Luach Achiever. He helped found the Z.O.A. in 1915, and received his doctorate from Dropsie College in 1923. Pesach and Jekuthiel were also active in literary circles, Pesach taking his endeavors to Israel in 1921.

Previously, Jekuthiel and Shimon had worked for Stibel Publishing Company as printers, until it closed shortly before the mother and sister arrived. Soon thereafter, Jekuthiel Ginsburg became principal of the Yeshiva of Bensonhurst in Brooklyn, where he remained until he was invited to head the mathematics department at Yeshiva College.

All three brothers died relatively early--Pesach died in 1947 at the age of fifty-two, Shimon died in 1944 at the age of fifty-one, and Jekuthiel died in 1957 at the age of sixty-eight, having survived earlier heart attacks.

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APPENDIX C

A partial bibliography<sup>1</sup> of Professor Ginsburg's writings<sup>2</sup>

Hebrew Writings

- "Midos U'Misparim B'Talmud" ("Measurements and Numbers in the Talmud"), Hadoar, July 20, 1928, Vol. 8, nos. 32-34.
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<sup>1</sup>Courtesy of Mrs. Haya Freedman.

<sup>2</sup>The list is incomplete in that it does not necessarily contain works of Dr. Ginsburg mentioned elsewhere in this paper, and because neither Mrs. Freedman nor anyone else was able to supply a complete list. Furthermore, the issue numbers on different bibliographies were subject to diverse opinions. In all cases we have followed Mrs. Freedman.

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"Notes on Stirling Numbers," American Mathematical Monthly,  
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"On the Early History of the Decimal Point," American Mathe-  
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<sup>3</sup>Here, as well as in the other articles whose Heb-  
rew titles have been translated quite literally, the word  
"Israel" does not refer to a geographical location or a  
political state, but rather, it is a generic term, referring  
to the Jews or the Jewish nation.

<sup>4</sup>Much of this bibliography supplied by Mrs. Freedman  
is taken from an article in an A. T. M. Newsletter, 1957, by  
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<sup>1</sup>Many articles here were from the files of the Public Relations Department of Yeshiva University.

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<sup>2</sup>This material arrived too late for inclusion in the main body of the paper, and consequently, most of this material is in Appendix A.

<sup>3</sup>Due to the fact that this collection was submitted late, the author did not exhaust all the material available in this collection.

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<sup>4</sup>This was a popular pseudonym of Dr. Ginsburg.

<sup>5</sup>This name also was a pseudonym of Dr. Ginsburg.

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<sup>6</sup>According to Zussmer, the article was written by Moses Meizlish.

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