Juda Kreisler (1904–1940s?):
A Bio-Bibliographical Sketch of a Lviv Physicist and a Popularizer of Science

Abstract
We present a detailed biographical account and analysis of works of Juda Kreisler (1904–1940s?), a theoretical physicist from Lviv. He was born in Tlumach (Ukrainian: Тлумач, Polish: Tłumacz, Yiddish: טאלמיטש), nowadays a town in Ivano-Frankivsk oblast in the western part of Ukraine. In 1923, Juda Kreisler finished a gymnasium in Stanislaviv and entered the Philosophical Faculty of the University of Lviv (Wydział Filozoficzny Uniwersytetu Jana Kazimierza [UJK] we Lwowie) in order to study physics.
In 1932, he was promoted to the doctoral degree in physics under the supervision of Professor Stanisław Loria. For a short period in the 1930s, Juda Kreisler worked at the Department for Theoretical Physics of the University of Lviv; and returned to the University in 1940, after the Soviets had reorganized it upon taking over Lviv in September 1939. His fate remains unknown: he is listed among murdered by Nazis Jewish employees of the University of Lviv in 1941–43.

Dr. Kreisler authored four scientific papers and four abstracts of conference presentations delivered at the Congresses of Polish Physicists in 1932–36. There is, however, another field, where he was extremely prolific in the late 1930s. We have discovered 122 of his popular articles in “Chwila” (English: “Moment”), a local daily newspaper published by the Jewish community in Lviv during 1919–39. These articles covered various subjects, that can be tentatively divided into the following major topics: chronicles and personalia; history of science; discoveries, new studies and inventions; the applied value of science (for medicine and economy in particular); interconnection between science and war; organization of scientific life; Hitler’s Germany and the problem of so-called ‘Aryan science’. While various branches of physics formed the largest part within disciplines reflected in Juda Kreisler’s articles, he also discussed biology, chemistry, meteorology, and geology. The latter field is closely related to his professional career at Lviv’s Geophysical Institute of “Pionier”, a joint-stock company for the exploration and exploitation of bituminous materials, where he spent nine months in 1936.

**Keywords:** Lviv University; theoretical physics; popular papers; ‘Aryan’ science; paradigm shift; “Chwila” newspaper

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**Juda Kreisler (1904–1940s?):**
**Szkic biobibliograficzny lwowskiego fizyka i popularyzatora nauki**

**Abstrakt**

Przedstawiamy szczegółową relację biograficzną i analizę twórczości Judy Kreislera (1904–1940?), fizyka teoretycznego ze Lwowa. Urodził się w Tłumaczu (ukr. Тлумач, jid. טאלמיטש),
obecnie mieście w obwodzie iwanofrankowskim w zachodniej części Ukrainy. W 1923 Juda Kreisler ukończył gimnazjum w Stanisławowie i wstąpił na Wydział Filozoficzny Uniwersytetu Jana Kazimierza (UJK) we Lwowie na studia fizyczne. W 1932 został awansowany na stopień doktora fizyki pod kierunkiem prof. Stanisława Lorii. Przez krótki okres w latach 30. XX w. Juda Kreisler pracował w Katedrze Fizyki Teoretycznej Uniwersytetu Lwowskiego, a następnie powrócił na Uniwersytet w 1940 r., po zreorganizowaniu go przez Sowietów po przejęciu Lwowa we wrześniu 1939 r. Jego ostateczny los pozostaje nieznany: jest wymieniany wśród zamordowanych przez hitlerowców żydowskich pracowników Uniwersytetu Lwowskiego w latach 1941–43.

Dr Kreisler jest autorem czterech artykułów naukowych i czterech streszczeń wystąpień konferencyjnych wygłoszonych na Zjazdach Fizyków Polskich w latach 1932–1936. Jest jednak inna dziedzina, w której pod koniec lat 30. XX w. był niezwykle płodny. Udało nam się dotrzeć do jego 122 popularnych artykułów publikowanych w lokalnym dzienniku „Chwila”, wydanym przez wspólnotę żydowską we Lwowie w latach 1919–1939. Artykuły te podejmują różną problematykę, którą można wstępnie podzielić na następujące główne tematy: kroniki i personalia; historia nauki; odkrycia, nowe badania i wynalazki; wartość użytkową nauki (w szczególności z uwzględnieniem medycyny i ekonomii); związek między nauką a wojną; organizacja życia naukowego; Niemcy hitlerowskie a problem tzw. „nauki aryjskiej”. Podczas gdy różne gałęzie fizyki zajmują naturalnie największy udział w dyscyplinach odzwierciedlonych w artykułach Juda Kreislera, omawia on również biologię, chemię, meteorologię i geologię. Ta ostatnia dziedzina jest blisko związana z jego karierą zawodową w Instytucie Geofizycznym Spółki akcyjnej dla wyszukiwania i wydobywania materiałów bitumicznych „Pionier” we Lwowie, gdzie spędził dziewięć miesięcy w 1936 roku.

**Słowa kluczowe:** Uniwersytet Lwowski, fizyka teoretyczna, prasa popularna, nauka „aryjska”, zmiana paradigmatu, dziennik „Chwila”

1. **Introduction**

The Interbellum, i.e., the period between the First and Second World War, was not only the time of major geopolitical changes that shaped the future landscape of the world, but also the time of significant achievements
in science and technology. In a bizarre manner, they intertwined in the biography and works of Juda Kreisler, a theoretical physicist from Lviv, now the largest urban center of Western Ukraine, known as Lwów in Polish and Lemberg in German. The city was under Polish rule in 1918–39 and was taken over by the Soviets in September 1939.

Juda Kreisler’s scientific works, though not numerous, represented topical subjects of his time and were devoted to a developing field of quantum mechanics and atomic physics. The entwining of geopolitics, science, and technological progress mentioned above was reflected in over a hundred newspaper articles by Kreisler, which covered a vast set of topics, from the history of science to issues linked to the so-called “German” (Aryan) science; and from then obtained synthetic materials to nuclear fission and fusion. Besides, Kreisler wrote also on astrophysics.

The paper is organized as follows: Section 2 presents a detailed biographical account of Juda Kreisler. His scientific works are briefly discussed in Section 3. A thorough analysis of popular newspaper articles by Juda Kreisler (listed in the Appendix) is given in Section 4. Final remarks in Section 5 conclude the paper.

2. Biographical note

The information in this section is mostly based on Juda Kreisler’s personal files deposited at the State Archive of Lviv oblast and the Archive of the University of Lviv (Kreisler archive files). Other sources are referenced when necessary. Shortened versions of this biography appeared previously in papers by Rovenchak (2013) and Maligranda, Prytula (2013).

Juda Kreisler was born on October 12, 1904 in Tlumach (Ukrainian: Тлумач, Polish: Tłumacz, Yiddish: טאלמיטש), presently a town in Ivano-Frankivsk oblast in the western part of Ukraine; see also Fig. 1.

His mother, Schewe Kreisler, was a daughter of Lipe and Ruchel Kreisler and was single. No father is mentioned in Juda Kreisler’s birth record, however, in later documents, he sometimes put “Mojżesz” as his father’s name. We suppose that it might be used as a generic Jewish male name to comply with the form of documents.

In 1910, Juda Kreisler started his primary education at the Mickiewicz Community School in Stanislaviv (presently Ivano-Frankivsk; Polish: Szkoła Ludowa im. A. Mickiewicza w Stanisławowie). Upon completing the
fourth grade in 1914, he passed the entrance examination for the first grade at the Second State Gymnasium in Stanislaviv (Polish: II Państwowe Gimnazjum w Stanisławowie). However, because of Russian invasion, he continued his education there only in 1915.

Juda Kreisler passed his maturity exam in 1923 and entered the Philosophical Faculty of the University of Lviv (Polish: Wydział Filozoficzny Uniwersytetu Jana Kazimierza [UJK] we Lwowie), where he studied physics. He was a member of the Court of Honor of the Society of Jewish Students of Philosophy (Polish: Towarzystwo żydowskich studentów filozofii U. J. K.). Also, we discovered that a list of members of the Rigorosant Society (Jewish Academic House) in Lviv (Polish: Towarzystwo Rygorozantów (Żydowski dom akademicki)) contained the name “Juda Kreisler” in the report for the academic year 1924/25, but not in later reports, so we cannot identify him here firmly. In 1928, Juda Kreisler passed the scientific part of his teacher’s examination. In 1928–29, he taught at a private Jewish gymnasium in Stanislaviv, then, during 1929–31, he had a teaching practice at the Third State Gymnasium in Stanislaviv and at the Second State Gymnasium in Lviv. In June 1931,

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1 See Towarzystwo… 1927, p. 19.
2 Sprawozdanie roczne… 1925, p. 50.
Juda Kreisler passed the pedagogical part of his teacher’s examination and started working as a teacher at a private gymnasium in Dubno, where he stayed since March 1932 till the end of the school year 1932/33.

On July 6, 1932, Juda Kreisler received a doctoral degree in physics for his thesis entitled *O rozmieszczeniu kierunkowem fotoelektronów z warstwy M* (On the directional distribution of photoelectrons from the M layer), which was supervised by Professor Stanisław Loria, see Fig. 2.

Fig. 2. A page from *Wszechświat: tygodnik popularny poświęcony naukom przyrodniczym*, 1932, nr 6 (listopad/grudzień) with lists of defended theses. Juda Kreisler is mentioned in the left column, marked with a tick (√). Source: MBC URL: [http://mbc.malopolska.pl/Content/93851/wszechswiat_1932_006.pdf](http://mbc.malopolska.pl/Content/93851/wszechswiat_1932_006.pdf) (accessed on 20 October 2021).

From October 1, 1933 to August 31, 1935, Dr. Kreisler worked as a junior assistant-volunteer (Polish: asystent młodszy woluntarjusz fizyki teoretycznej) at the Department for Theoretical Physics at the University of Lviv. In 1935, he obtained 500 zloty as a contribution to his scientific work in the domain of theoretical physics (Polish: zasiłek na pracę naukową w zakresie fizyki teoretycznej). From archival documents

3 Kreisler archive files, Maligranda, Prytula 2013.
and the information of the University syllabi, we can determine that Juda Kreisler’s home address in Lviv was: ul. Jachowicza, 16 (presently Prof. Roman Kucher Street), see Fig. 3.

Fig. 3. Present-day entrance to former ul. Jachowicza, 16 (now Prof. Roman Kucher Street) in Lviv.

From January through September 1936, Dr. Kreisler worked at the Joint-stock Company for the Exploration and Exploitation of Bituminous Materials (Polish: “Pionier”, Spółka akcyjna dla poszukiwania i wydobywania materialów bitumicznych we Lwowie). About the same time (1934–36), the Geophysical Institute, which was a part of the company, hired at least one more physicist from the University of Lviv, Zdzisław Specht.⁴ Juda Kreisler returned to the University of Lviv for the academic year 1937/38 as a substitute junior assistant (Polish: zastępca asystenta młodszych) at the Department for Theoretical Physics. During 1937–39, he also taught at a school in Lviv.

⁴ See Rovenchak 2018.
It is worth mentioning that the 1930s can be regarded as years of prosperity of theoretical physics at the pre-WWII University of Lviv. Juda Kreisler was lucky to work in particular with Leopold Infeld, Vasyl (Bazyli) Milianczuk, and Zenon Chrapływyj (Zeno Chraplyvy), under the guidance of Professor Szczepan Szczeniowski, who headed the Department in 1931–36, and Professor Wojciech (Adalbert) Rubinowicz, who came to the University in 1937. Additionally, Professor Stanisław Loria, the supervisor of Kreisler’s doctoral thesis, had been heading the Department for Experimental Physics of the University since 1927.\(^5\)

After the Soviets took over Lviv in September 1939, they quickly reorganized the University and re-opened it in November 1939, with a new name, the Ivan Franko State University of Lviv (since January 1940). This time, Dr. Kreisler returned to the University as a Docent at the Department for Theoretical Physics headed by Professor Rubinowicz. The third member of the Department was Professor Chrapływyj.\(^6\) Stanisław Hartman, a Polish mathematician who was a student at the University of Lviv in 1939–41, mentions the following about Juda Kreisler:

Od asystentów wymagano ukraińszczyzny, ale nie zawsze to było przestrzegane. Kiedy przyszł do nas dr Kreisler prowadzić ćwiczenia z fizyki teoretycznej, zaczął mówić po ukraińsku, ale powiedzieliśmy mu, że jesteśmy wszyscy polskojęzycznii i zaniechał tego (Hartman 1994, p. 43).

[Assistants were required to speak Ukrainian, but this was not always observed. When Dr. Kreisler came to us to conduct theoretical physics lessons, he started to speak Ukrainian, but we told him that we were all Polish-speaking and he abandoned it.]

On March 28, 1941, Juda Kreisler’s doctoral degree was reconfirmed as its Soviet equivalent, “Candidate of Sciences”.\(^7\) This is the last biographical detail known for Dr. Kreisler. His ultimate fate remains

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\(^5\) See Wróblewski 2015; Rovenchak 2021.  
\(^6\) See Maligranda, Prytula 2017.  
\(^7\) See Tarnavskyi 2016.
unknown: he is listed among Jewish employees of the University of Lviv murdered by Nazis in 1941–43, with a note barely readable as “убитий імовірно... [probably killed in...]”, see Fig. 4.

Fig. 4. List of the Lviv University employees murdered by Germans in 1941–1943. The copy is obtained from Yad Vashem. Kreisler is mentioned under item 2 in the last block (4th line from the bottom).

3. Scientific works

Dr. Kreisler authored the following four papers:

[S1] Kreisler, J. 1933: Über die Verteilung der Photoelektronen der M-Schale wasserstoffähnlicher Atome [On the distribution of the photoelectrons of the $M$ shell of hydrogen-like atoms]. Acta Physica Polonica II(1), pp. 7–22.
[S2] Kreisler, J. 1934: Sztucznie wzbudzona promieniotwórczość [Artificially induced radioactivity]. *Mathesis Polska* IX(5–6), pp. 82–87.

[S3] Kreisler, J. 1935: Die Übergangswahrscheinlichkeiten im zweifach angeregten Heliumatom [The transition probabilities in the doubly excited helium atom]. *Acta Physica Polonica* IV(1/2), pp. 151–161.

[S4] Kreisler, J. 1937: Zur Theorie der Zertrümmerung von Deuteronen durch Deuteronen [To the theory of deuteron splitting by deuterons]. *Acta Physica Polonica* VI(4), pp. 327–334.

Item [S3] above has been cited in a number of works, namely:
- Kiang, T.; Ma, S.T.; Wu, Ta-You 1936: Attempt to observe the spectrum of doubly excited helium. *Physical Review* 50(7), p. 673. DOI: 10.1103/PhysRev.50.673.

It was reprinted later on in:
- Kiang, T.; Ma, S.T.; Wu, Ta-You 1936: Attempt to observe the spectrum of doubly excited helium. *Chinese Journal of Physics [Peking]* (中国物理学报 = Zhōngguó wùlǐ xué bào) 2(7), pp. 117–123. URL: http://wulixb.iphy.ac.cn/fileWLXB/journal/article/wlxb/1936/2/PDF/w19360201.pdf (accessed on).

- Bundy, F.P. 1937: An attempt to observe the spectrum of doubly excited helium. *Physical Review* 52(5), pp. 452–453. DOI: 10.1103/PhysRev.52.452.

- Wu, Ta-You 1944: Auto-ionization in doubly excited helium and the \( \lambda 320.4 \) and \( \lambda 357.5 \) lines. *Physical Review* 66(11–12), 291–294. DOI: 10.1103/PhysRev.66.291.

Reprinted in:
- *Chinese Journal of Physics [Taiwan]* (華人物理學刊 = Huárén wùlǐ xué kǎn) 32(5-II), pp. A15–A18.

- Wheeler, Henry P.; Swenarton, Louise B. 1952: *Helium: Bibliography of Technical and Scientific Literature from Its Discovery (1868) to January 1, 1947* (U.S. Government Printing Office), 76 pages.

- Bransden, B.H.; Dalgarno, A. 1953a: The calculation of auto-ionization probabilities—I: Perturbation methods with application to auto-ionization in helium. *Proceedings of the Physical Society. Section A* 66(10), pp. 904–910. DOI: 10.1088/0370-1298/66/10/308.

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8 Cf. also Maligranda, Prytula 2013.
- Bransden, B.H.; Dalgarno, A. 1953b: The calculation of auto-ionization probabilities—II: A variational method for radiationless transitions with application to the \((2s)^2 \, ^1S - (1s^k)s)^1S\) transition of helium. *Proceedings of the Physical Society. Section A* 66(10), pp. 911–920. DOI: 10.1088/0370-1298/66/10/309.

- Arnold Russek (1963). Ionization produced by high-energy atomic collisions. *Physical Review* 132(1), pp. 246–261. DOI: 10.1103/PhysRev.132.246.

- Barry Simon (1973). Resonances in \(n\)-body quantum systems with dilatation analytic potentials and the foundations of time-dependent perturbation theory. *Annals of Mathematics, Second Series* 97(2), pp. 247–274. Stable URL: http://www.jstor.org/stable/1970847.

Additionally, Juda Kreisler participated in the Congresses of Polish Physicists and the respective abstract books contain his four abstracts as follows:

[S5] Kreisler, J. 1932: O rozmieszczeniu kierunkowem photoelektronów z warstwy M [On the directional distribution of photoelectrons from the M layer]. *Program VI Zjazdu Fizyków Polskich w Warszawie 29 IX – 2 X 1932* (Warszawa, 1932), p. 20.

[S6] Kreisler, J. 1934: Natężenie linii helu przy podwójnym pobudzeniu [The intensity of the helium lines at double excitation]. *Program VII Zjazdu Fizyków Polskich w Krakowie, 27 IX – 29 IX 1934* (Kraków, 1934), pp. 17–18.

[S7] Kreisler, J. 1936a: Uwagi o Schrödingerowskiej postaci jednolitej teorji pola Born–Infelda [Notes on Schrödinger’s formulation of the unitary field theory of Born–Infeld]. *Program VIII Zjazdu fizyków polskich, Lwów, 28 IX – 2 X 1936* (Lwów: Nakładem Komitetu organizacyjnego, 1936), p. 37.

[S8] Kreisler, J. 1936b: Przyczynek do teorji rozbijania deutonów przez deutony [Contribution to the theory of deutons breaking down by deutos]. *Program VIII Zjazdu fizyków polskich, Lwów, 28 IX – 2 X 1936* (Lwów: Nakładem Komitetu organizacyjnego, 1936), pp. 37–38.

Item [S7] has been cited in

- Scharnhorst, K. 2017–2020: Photon-photon scattering and related phenomena. Experimental and theoretical approaches: The early period. *E-print arXiv:1711.05194 [physics.hist-ph]*. https://arxiv.org/abs/1711.05194.
Items [S1] and [S5] reflect the doctoral thesis of Juda Kreisler:

O rozmieszczeniu kierunkowem fotoelektronów z warstwy $M$ [On the directional distribution of photoelectrons from the $M$ layer] (Lwów, 1932).

Some works are shown in Fig. 5.

Juda Kreisler’s career in the Geophysical Institute of the Joint-stock company for the exploration and exploitation of bituminous materials “Pionier” was briefly reflected at least in two publications. The paper “Badania sejsmiczne refleksyjne okolic Kosowa” [Seismic and reflexive research in the vicinity of Kosiv] / opracował St. Wyrobek; z udziałem Z. A. Mitery i A. Kisłowa. Przemysł naftowy: Dwutygodnik; Organ Krajowego Towarzystwa Naftowego we Lwowie. 25 marca 1938 r. XIII(6), pp. 144–148; contains a note on page 145 (see also Fig. 6):

“Analizę obliczeń przeprowadził Dr Kreisler, asystent Katedry Fizyki Teoretycznej U. J. K.”

[The analysis of the calculations was carried out by Dr. Kreisler, assistant in the Department of Theoretical Physics of U. J. K.].
Interestingly, Afrykan Kisłow (1976; quoted via Trześniowski 1997), writing about “Pionier”, mentions Kreisler in the following context:

…Duża pomoc wówczas została okazana przez Zakład Geofizyki Uniwersytetu Jana Kazimierza we Lwowie (dr Józef Kreisler).

[…A lot of help was then provided by the Department of Geophysics of the Jan Kazimierz University in Lviv (Dr. Józef Kreisler).]

Obviously, the above was a misidentification: the lists of the University employees contained no Kreisler at the Department for Geophysics of the University of Lviv (headed in the 1920–30s by Prof. dr. Henryk Arztowski); the only “dr J. Kreisler” worked at the Department for Theoretical Physics.

As we can observe, Dr. Kreisler’s scientific interests were focused on atomic physics. Their detailed analysis would bring us far beyond the scope of the present paper. Nevertheless, it should be noted that Kreisler also started working in the new domain [S7], namely the unitary field theory\(^9\) which had been proposed just two years earlier by Max

\[^9\] See Born, Infeld 1933; 1934.
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Born and Leopold Infeld, who was a senior assistant at the Department for Theoretical Physics of the University of Lviv in 1929–37 and had a research leave as a Fellow of the Rockefeller Foundation in Cambridge in 1933–34.10 We note that, most probably, Dr. Kreisler did not publish any scientific work after 1937. In particular, his name was not listed in the recently discovered tables of contents of unpublished issues of the Lviv University Communications (Наукові записки Львівського університету. Фізико-математичний факультет) from 1940–41.11

However, there was another field, where Dr. Kreisler was extremely prolific in the late 1930s: popular science articles in “Chwila” [Moment], a local daily newspaper published by the Jewish community in Lviv during 1919–39;12 see Fig 7. We were able to discover at least 122 such articles; all of them are listed in the Appendix.

Fig. 7. First pages of the “Chwila” newspaper, where the first and the last Dr. Kreisler’s articles appeared. Source: Polona.pl. URL: https://polona.pl/press/chwila-dziennik-dla-spraw-politycznych-społecznych-i-kulturalnych,MTQ2NzMwMjY/ (accessed on 20 October 2022).

10 See Rovenchak, 2013.
11 See Maligranda, Prytula 2018.
12 See Borzymińska n.d.
4. Popular scientific works

Publication of popular scientific articles was typical of Lviv physicists in the second half of the 19th century and in the first half of the 20th century. However, such works appeared mainly in journals (Kosmos, Matheesis Polska, Przrod a i Technika, etc.) or as books and rarely in newspapers. However, the latter option would certainly ensure a wider audience. This was perfectly reflected in Dr. J. Kreisler’s articles published in the “Felieton naukowy” [Scientific feuilleton] section of the “Chwila” newspaper during the years 1935–1939.

Further on, we will select the main eight themes that were raised systematically in these articles (at the same time, several topics were often combined and intertwined in one article), and trace the timeline dynamics of their topics. In addition, we will determine the branches of science highlighted in the publications.

Among the various themes, a particular type of publications were articles dedicated to certain events, or their anniversaries. Such events included, e.g., the birth and death of prominent scholars. In this context, J. Watt, Ch.-A. De Coulomb, A.-M. Ampère, G. Marconi, L.-A. Galvani, E. Rutherford were referenced. The publications described major events and periods of life of these scholars, their most important scientific achievements, their relationship with other scholars and their impact on the development of science in general. These articles were written as biographical notes. Two examples are shown in Fig. 8.

Also, publications of this kind were focused on anniversaries of inventions or discoveries (e.g., cable [87], photos [97], cartoons [107], incandescent lamp [109], and measurement of distance from Earth to fixed stars [89]). In addition, Kreisler dedicated articles to such events as, for example, scientific conference [71], scientific and technical exhibition [70], or solemn events honoring outstanding scholars [92].

In this kind of publications, we discern particularly those that were devoted to Nobel Prizes in physics and chemistry in 1935–1938. The articles were about the spouses Joliot-Curie (1935); V. F. Hess, Ch. D. Anderson and P. Debye (1936); C. Davisson and G. P. Thomson (1937) and E. Fermi (1938). In these publications, the author informed

13 See Rovenchak 2013; 2018; Rovenchak, Kiktyeva 2016.
14 Here and below, numbers in square brackets correspond to the list of Dr. Kreisler’s papers in “Chwila” given in the Appendix.
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readers about the scientific achievements of the winners, both previous and those, for which they were awarded the Nobel Prize, as well as the relevant work of other scholars associated with them. Additionally, many Dr. Kreisler’s articles mentioned the Nobel Prizes awarded to E. Rutherford (1908) and A. Einstein (1921), and the fact of awarding this prizes to German scholars before 1932. However, these facts were also mentioned in publications dedicated to biographies of scholars, the history of science, and the science in Germany, which will be discussed further on. Kreisler also informed his readers about the principles of awarding Nobel Prize [90].
In his series of popular science publications, Dr. Kreisler referred to topics such as the **history of science**. We find this topic in the publications dedicated to certain scholars and their achievements, as well as in the publications devoted to certain scientific inventions and studies. Among others, the author wrote about the history of studies of space and the atmosphere of the Earth; the inventions of phone, telegraph, television, incandescent lamps; the theory of relativity, and the theory of light. Within the framework of these topics, the author referred to the structure of matter, research history, ways of converting some substances to others, and making artificial substitutes of important materials. In addition, the theme of the history of science in Germany and the so-called “German science” was discussed separately; we will show this subject in what follows.

In contrast to the history of science, the author also paid attention to then **new studies, inventions, and discoveries**. In the area of **new studies**, most often there were stories about the research of viruses (as intermediaries between alive and dead matter), research of space objects and rays, as well as research within the “new” (quantum) physics. As for the **new discoveries**, here it was also partly about the scope of space, however, the bulk of the new discoveries was dedicated to the structure of the atom, structure of matter, ways of changing it, and transformation of certain substances into others. About half of the articles on new achievements was devoted **new inventions**, mostly related to novelties in the field of television and film production, and new types of microscopes, see Fig. 9. As a rule, such publications contained digressions about the history of given research, the relevant stages of technological progress that led to those inventions; or was related to the field, but led to different results. Usually, when it came to new discoveries and inventions, the author was aware of their relevant and/or potential practical application. In addition, several publications provided facts and reflections on dangers to humanity arising from scientific and technical progress. At the same time, Dr. Kreisler expressed his hopes and expectations that people would be able to avoid or minimize this harm. This was one of his three main subjective attitudes conveyed in the analyzed publications. Others will be discussed later on.

In a large part of the publications by Dr. Kreisler, the theme of the **applied value of science**, in particular for medicine and economy, was considered. The articles about the interrelation of scientific inventions
and research in *medicine*, as a rule, were dedicated to the ultrasound waves (and other), methods of extraction and use of radium, and new opportunities in the study of viruses and the treatment of diseases caused by them. In addition, the practical significance of scientific innovations was important in the field of *transport*. Here it was, first of all, about aviation: the perfection of aircrafts, new studies of the stratosphere, and opportunities for the fast and safe air traffic to distant parts of the world. In addition to air transport, these articles also referred to ground transport, namely, the improvement of engines and fuel. Within the theme of the practical application of the scientific inventions, author also addressed the sphere of *entertainment*, i.e. television, photo and film production, and animation. However, the most attention in this topic was paid to the use of scientific developments in the *industry*. The articles of this subgroup were about new ways of extracting natural resources and metal processing, as well as the ability to create artificial substitutes of rare and/or expensive natural substances and materials (by changing the structure of matter, inclusively). Among the materials, rubber, fuel, textiles, metals, and food products (such as sugar) were most often mentioned. Interestingly, the subject of the practical application of scientific achievements was discussed in a separate article “Przemiany pierwiastków” [Transformations of elements] of 27.11.1938 [91], in which the author explained in a reasoned way how scientific developments of previous years or decades subsequently found their practical application.

Dr. Kreisler’s publications included those about *science and war* being interconnected. The topic was taken up in two ways. First, all sorts of *inventions* that enhance the military-industrial complex of the countries were being described, i.e. ones facilitating reconnaissance, warfare, increasing the ability to protect and win. Among those inventions were, for example, radio-controlled submarines, torpedoes, and methods of using ultrasound waves, as well as scientific methods of weather forecasting. Second, within this topic we can identify publications, in which the author reflected on military conflicts for natural *resources* and a need for countries to ensure all the necessary resources. There, Kreisler wrote on creating a kind of state-autarky that would not depend on others in terms of providing the necessary resources, as well as on the importance of scientific development in creating artificial substitutes for the lacking resources, especially important in case of war. It is necessary to recall
that we mean interwar period here, and the real examples of the usage of scientific and technical development were taken from military actions of the First World War. Moreover, Kreisler wrote about upcoming military conflict (World War II, seen as Revenge of Germany, to which, obviously, all the leading countries of the world were preparing at that time).
Describing the interwar period in science, Dr. Kreisler wrote about an organization of scientific life. Here, in particular, he meant functioning and (re)organization of departments, laboratorios, universities, and their financing: both public and private. For example, one of the articles, “Fundacje Rockefellerowskie” [31], was dedicated to the Rockefeller Foundation and its financing of scientific research in various fields.

However, within this topic much more attention was paid to: 1) chronological sequence of discoveries and research (including accidental discoveries); 2) interdisciplinarity, which primarily referred to the connection of physics with sciences such as chemistry and biology, and, mostly – 3) internationality. Actually, focusing on the latter, the author repeatedly expressed the opinion that the development of the world science could only take place in the interaction and mutual influence of scientists from various countries (which is the second of the mentioned subjective attitudes expressed by Dr. Kreisler). A striking example of the chronological sequence, interdisciplinarity, and internationality of the science was described, in particular, in the article “Święto wiedzy” (A celebration of knowledge) of 04.12.1938 [92].

Besides, this topic included the forced or voluntary change of the place of work and/or residence of German scientists and how their work and German science in general were influenced by National Socialists coming to power in Germany.

The topic of Hitler’s Germany could be found repeatedly among the publications by Dr. Kreisler. In general, Germany as a country was mentioned in 20 articles out of a total number of 122 that we have analyzed. These publications can be divided into three groups.

The first of them includes the articles in which Germany was mentioned as an example of a country that seeks for economic independence and aims for self-sufficient state-autarky. This was evaluated as not only advantageous from the economic point of view, but also strategically important in the case of an international military conflict. There, scientific development helping to create artificial substitutes of natural resources and materials was emphasized.

The second and third group of publications are often intertwined. But, the second group refers to articles on discrimination of the scientists of non-Aryan origin by the Nazi regime (in particular, Victor Hess and Enrico Fermi were mentioned). They informed also about reasons and organization of emigration from Germany due to the “Aryan paragraph”
and National Socialists policy, as well as following contribution made by immigrating scientists to the development of science in the U.S. and the U.K, particularly. In a report about the First International Conference on Exact Sciences (Warsaw, 30 May – 2 June 1938) [71], obstacles hindering Werner Heisenberg from visiting this conference were described.

However, the most interesting, in terms of the science sphere analysis, is the third group of publications. They covered reorganization of German universities and the country’s scientific life influenced by ideas of “German science”. Kreisler explained there that “German/Nordic/Aryan physics” meant not a combination of groundwork and achievements of the scientists who lived and worked in Germany, but the scholars who had a particular genetic bond and belonged to the Aryan race. A “spirit” of science was important for the Nazi regime. At the same time, the regime denied such important – for Dr. Kreisler in particular – peculiarities of science as consistency, or, moreover, – internationality. The position of the German state leaders at that time was: “The origin is more important than intelligence”. Kreisler strongly criticized the policy, admired the achievements of German scientists and regretted that they did not have the opportunity to work as before the establishment of Nazism in Germany (when they had been not forbidden to attend conferences abroad, neither had they been censored and non-Aryan books had been not burned). The author considered such “German science” as a dead-end. The perception of “German science” and the criticism of Nazi policy in science is the third and the most subjective attitude – namely, the most emotionally charged comparing to other rather neutral ones – of those expressed by Dr. Kreisler in this series of publications. Probably, this was partly due to the Jewish origin of the author himself. Five publications in this group were almost entirely dedicated to the topic. These were the articles from 19.12.1935 (“Rzut oka na obecny stan nauki w Trzeciej Rzeszy” [A glance at the current state of science in the Third Reich]) [2], 25.03.1936 (“«Nordycka» a «nienordycka» nauka” [‘Nordic’ versus ‘non-Nordic’ science]) [4], 07.02.1937 (“Brunatne hasła…” [Brown slogans…]) [18], 09.05.1937 (“Spóżniona rocznica” [Late anniversary]) [28], 27.06.1936 (“Wolność myśli” [Freedom of thought]) [33]. Some excerpts are demonstrated in Fig. 10. Instead, in publications from 1939 this subject was practically not taken up.
Unlike Germany, Poland, in which Dr. Kreisler lived and published, was rarely mentioned in his journalistic work that we analyzed. Basically, Kreisler wrote about Poland when he exemplified quantitative indicators of the economy. Here, Poland was just an example. What concerns Polish cities, Warsaw (the capital of Poland), and Lviv (where the author lived and that belonged to Poland at that time) was mentioned in several articles as points of reference for measuring distances and...
drawing analogies, for example, for comparison with distances between space objects and between elementary particles. In addition, we also found several mentions of these cities in reference to certain events, like scientific conference, or exhibitions. In general, the development of science in Poland was not discussed and practically not covered by Kreisler in his works published in the Polish newspaper “Chwila”.

Taking into account the genre of publications by Dr. Kreisler, namely, popular science articles, we can analyze what science he paid attention to. Thus, publications informing about development of medicine, like studies of viruses or use of ultrasonic waves, which we mentioned above, were in the field of biology and chemistry. Also, Dr. Kreisler did not ignore geology, writing about Earth structure studies, movement of continents, or new possibilities in predicting earthquakes. In addition, he discussed meteorology, mainly, in the context of already tested and just developed methods of weather forecasting, and, slightly less – studies of the stratosphere, which were necessary for development of aviation. But, much more attention he gave to chemistry, because it was important for medicine (e.g., artificial extraction of oxygen, radium, new drugs for anesthesia), and for economy (e.g., creating artificial substitutes for natural materials, such as rubber, fuel, and textiles). Several excerpts from the articles on the topics mentioned above are shown in Figs. 11 and 12.

However, Dr. Kreisler was still a physicist, and the publications in this field had twice as much attention as it is taken together. The three largest groups among the articles on physics can be identified. They were the studies of electromagnetic phenomena, astrophysics, and atomic and quantum physics, respectively.

As for the electromagnetic phenomena, we have found articles that described inventions of electric devices (both old ones and modern for the author), usage of electromagnetic field and radio waves, as well as studies on light and its application. This group of publications was the smallest one compared to the other two ones.

Publications in the field of astrophysics made a significant part of the author’s works that we have analyzed. Among them, we have found ones discussing “mystery of cosmic rays”; ones that gave that time newest popular science information about the planets of the Solar system; and publications about other space objects, such as comets, meteorites, and stars. Actually, Dr. Kreisler paid attention to the study of stars mostly.
He wrote about their structure, weight, mass, density, brightness, as well as about aggregations of stars (Milky Way and Andromeda galaxies), distances between such objects and their distances to Earth, and, of course, about the “Life Path” of stars: from “birth” to “fading”. In this context, the novae and supernovae phenomena were been repeatedly mentioned. Some of the articles are shown in Fig. 13.
More than every second article on physics belongs to the third group – atomic and quantum physics. Many of them discussed structure of an atom and discovery of the new elementary particles, such as positron, neutrino, or heavy electron, cf. Fig. 14. Another topic in this group was the possibility of transforming some metals into other (precious ones), creating artificial gold, platinum, and obtaining transuranic elements. This became possible due to splitting atoms of some substances by bombardment and transforming them to the atoms of other substances.
In this context, Lord Ernest Rutherford, who was the first to split an atom (and made the transformation of matter the subject of science, not alchemy), and Enrico Fermi, who won the Nobel Prize in 1938 for inducing radioactivity by neutron bombardment of atoms, were presented to the readers. Besides, the articles of this group discussed possibility of creating artificial rays, a potential of nuclear energy, the Heisenberg uncertainty principle, and the light in the context of changes in the structure of matter (“dualism of matter and light”).
Interesting, from our point of view, is also a part of Kreisler's publications on atomic and quantum physics, in which he referred simultaneously to "new" physics and to Einstein's theory of relativity, see Fig. 15. He wrote both about the chronological sequence and the contradiction and interaction of these two branches of physics. Dr. Kreisler called...
Einstein’s theory of relativity and Heisenberg’s quantum mechanics were two major milestones of the scientific revolution in physics of the first half of the 20th century. He pointed out that classical (traditional) physics was based on the principle of causality. Instead, an unpredictable chance (uncertainty, probability) was the basis for the “new” physics.

For comparative analysis, timeline dynamics of the publication topics is also important. Even though most of the topics in the publications of the section “Felieton naukowy” presented evenly during the analyzed period (1935–1939), certain differences in years can still be traced. Thus, in 1935–1937 the topics such as the history of science, the biographies of scientists, and the organization of scientific life were presented twice as much often than in biennium 1938–1939. In the topic of innovations, new studies were also presented more frequently in the years 1936–1937 while discoveries and new inventions are more frequent in 1938–1939. The Nazism and its criticism was discussed by Dr. Kreisler mostly in 1935–1937, but, somewhat strange, practically not mentioned in 1939. In the same 1939, Kreisler wrote and published half of all his articles on the relationship between scientific achievements and opportunities in the conduct of (potential) military actions.

So, as we see, the topics of “Felieton Naukowy” by Dr. Kreisler were: the history of science and the biographies of its creators, scien-
tific studies, inventions and discoveries, their practical application, and, interestingly, – the negative impact of politics (in particular, politicians of dictatorial regimes) on science. Mostly, the author was quite objective there and rarely resorted to evaluative judgments. However, this does not apply to all his topics. In particular, he systematically expressed his opinion that, in order to develop, science should be international, and that people would always have enough of common sense to use scientific achievements only in favor, not for the destruction of mankind. And of course, the author was the most categorical when it came to criticism of the Nazi German leadership in connection with its policy of discrimination and the destruction of science in their country.

Because Dr. Kreisler himself was a physicist, it was quite obvious that this science was mostly represented in his popular publications. The next would be chemistry, especially when it closely bonded with physics. The analysis of the timeline of the publications has not shown significant differences in the terms of years. In general, the series of articles by Kreisler in the newspaper “Chwila” can be divided into periods of 1935–1937 years, and 1938–1939 biennium. However, given the small number of these differences, we did not focus on them. Instead, we emphasized what kind of topics Dr. Kreisler raised in “Felieton naukowy” and how he did it.

5. Final remarks

We have given a detailed biographical account and analysis of publications by Juda Kreisler, a theoretical physicist working in Lviv during the 1930s and early 1940s. The biographical data were collected from various sources, with a focus on secondary details that complement previously published information based on archival documents. The list of Juda Kreisler’s scientific papers was supplemented with the list of his conference abstracts. The information about citation of his works has been extended by a few items comparing to Maligranda, Prytula 2013. The major part of our study is constituted by the popular papers by Juda Kreisler published in “Chwila”, a local Jewish newspaper. We present here a detailed analysis of the subjects covered by his 122 texts discovered so far. The following topics can be tentatively defined: the chronicles and personalia; the history of science; the discoveries, the
new studies and inventions; the applied value of science (in particular, focused on medicine and economy); the interconnection between science and war; the organization of scientific life; as well as Hitler’s Germany and the problem of the so-called ‘Aryan science’. Juda Kreisler’s popular papers were not limited to physics, but covered also other natural sciences, like biology, chemistry, meteorology, and geology. The latter field was closely related to his professional career, as he worked at the Geophysical Institute of the Joint-stock company for the exploration and exploitation of bituminous materials, “Pionier”.

Numerous popular papers by Juda Kreisler suggest that he could have been involved in some larger-scale popularization activity. The primary place to look for it would be the local cultural and educational association known as The Albert Einstein Jewish People’s University in Lviv; full official title in Polish reads: Stowarzyszenie kulturalno-oświatowe “Żydowski Uniwersytet Ludowy im. Alberta Einsteina” we Lwowie.\(^{15}\) Unfortunately, the archival documents of this organization do not contain any information about lectures given. We found only a large share of lectures concerning medicine and hygiene, while natural sciences (in the modern narrow sense) were not principal interest of this institution.\(^{16}\) Although “Chwila” listed announcements of such lectures, we are not sure whether they were published regularly. So far, no trace of Juda Kreisler’s lecture has been discovered in those announcements.

A large share of Dr. Kreisler’s popular papers presented topics linked to the theory of relativity and quantum mechanics. Thus, we see that he attempted to inform his readers on current and rather hot scientific achievements related to what was later called “the paradigm shift” by Thomas Kuhn (1962; 1996). In our opinion, such enlightening activities are essential for maintaining the overall educational level within various strata of society. Their lack or insufficient quality would lead to rise of pseudo- and antiscientific beliefs among people, like flat-Earth doctrine or anti-vaccination propaganda, that dangerously spread in recent years.

\(^{15}\) See Jewish University archive files; Łapot 2012.

\(^{16}\) See Łapot 2012.
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Appendix. Juda Kreisler’s popular articles in “Chwila”

1. Rodzina laureatów Nobla. (Z okazji przyznania nagrody Nobla małżonkom Curie-Joliot). Nr. 5990, Lwów, niedziela, 24. listopada 1935. Rok XVII, ss. 9–10.

2. Rzut oka na obecny stan nauki w Trzeciej Rzeszy. Nr. 6015, Lwów, czwartek, 19. grudnia 1935. Rok XVII, s. 7.

3. James Watt. (W 200. rocznicę urodzin wynalazcy maszyny parowej). Nr. 6048, Lwów, czwartek, 23. stycznia 1936. Rok XVIII, s. 5.

4. „Nordycka” a „nienordycka” nauka Nr. 6110, Lwów, środa, 25. marca 1936. Rok XVIII, s. 5.

5. Ampere i Coulomb. Dwie rocznice elektryczności. Nr. 6218, Lwów, niedziela, 12. lipca 1936. Rok XVIII, s. 7.

6. Telewizja. Otwarcie nadawczej stacji telewizyjnej w Pałacu Aleksandrii w Londynie. Nr. 6303, Lwów, środa, 7. października 1936. Rok XVIII, s. 9.

7. Promienie „śmierci”. Nr. 6321, Lwów, niedziela, 25. października 1936. Rok XVIII, s. 9.

8. Czy można wytwarzać sztucznie złoto? Nr. 6335, Lwów, niedziela, 08. listopada 1936. Rok XVIII, s. 7.

9. Nowoczesna alchemia. Czy można wytwarzać sztucznie złoto? II. Nr. 6342, Lwów, niedziela, 15. listopada 1936. Rok XVIII, ss. 7–8.

10. Nowi laureaci Nobla w dziale fizyki i chemii. I. V. F. Hess. Nr. 6349, Lwów, niedziela, 22. listopada 1936. Rok XVIII, s. 9.
11. Nowi laureaci Nobla w dziale fizyki i chemii. C. D. Anderson. Nr. 6356, Lwów, niedziela, 29. listopada 1936. Rok XVIII, s. 9.
12. Nowi laureaci Nobla w dziale fizyki i chemii. III. P. Debye. Nr. 6363, Lwów, niedziela, 06. grudnia 1936. Rok XVIII, s. 11.
13. Sztuczne surowce. Nr. 6377, Lwów, niedziela, 20. grudnia 1936. Rok XVIII, s. 7.
14. Chemia na usługach autarkii. Nr. 6390, Lwów, niedziela, 03. stycznia 1937. Rok XIX, s. 7.
15. Chemia na usługach autarkii. II. Nr. 6397, Lwów, niedziela, 10. stycznia 1937. Rok XIX, s. 9.
16. Loty międzyplanetarne. Nr. 6404, Lwów, niedziela, 17. stycznia 1937. Rok XIX, ss. 7–8.
17. Najniższe temperatury. Nr. 6418, Lwów, niedziela, 31. stycznia 1937. Rok XIX, s. 9.
18. Brunatne hasła… Nr. 6425, Lwów, niedziela, 07. lutego 1937. Rok XIX, s. 7.
19. Elektryczne oko. Nr. 6439, Lwów, niedziela, 21. lutego 1937. Rok XIX, s. 9.
20. Zagadka życia a promienie Roentgena. Nr. 6446, Lwów, niedziela, 28. lutego 1937. Rok XIX, s. 7.
21. Przepowiadanie pogody. I. Nr. 6453, Lwów, niedziela, 07. marca 1937. Rok XIX, s. 9.
22. Przepowiadanie pogody. II. Nr. 6460, Lwów, niedziela, 14. marca 1937. Rok XIX, s. 7.
23. Jak wielki jest świat? Nr. 6478, Lwów, sobota, 03. kwietnia 1937. Rok XIX, s. 7.
24. Jak wielki jest świat [(II.)]. Nr. 6479, Lwów, niedziela, 04. kwietnia 1937. Rok XIX, s. 7.
25. Nauka przekształca życie. Nr. 6486, Lwów, niedziela, 11. kwietnia 1937. Rok XIX, s. 7.
26. Wiek ziemi. Nr. 6500, Lwów, niedziela, 25. kwietnia 1937. Rok XIX, s. 7.
27. Źrenica świata. Nr. 6506, Lwów, niedziela, 02. maja 1937. Rok XIX, s. 9.
28. Spóźniona rocznica. Nr. 6513, Lwów, niedziela, 09. maja 1937. Rok XIX, ss. 7–8.
29. Horyzonty nowej wiedzy. Nr. 6527, Lwów, niedziela, 23. maja 1937. Rok XIX, s. 7.
30. Hel. Nr. 6541, Lwów, niedziela, 06. czerwca 1937. Rok XIX, s. 9.
31. Fundacje Rockefellerowskie. Nr. 6548, Lwów, niedziela, 13. czerwca 1937. Rok XIX, s. 11.
32. Z Biegunu Północnego donoszą… Nr. 6555, Lwów, niedziela, 20. czerwca 1937. Rok XIX, s. 9.
33. Wolność myśli. Nr. 6562, Lwów, niedziela, 27. czerwca 1937. Rok XIX, s. 9.
34. Telewizja. Nr. 6569, Lwów, niedziela, 04. lipca 1937. Rok XIX, s. 7.
35. Wędrujące kontynenty. Nr. 6576, Lwów, niedziela, 11. lipca 1937. Rok XIX, s. 9.
36. Z tajemnic światła. Nr. 6593, Lwów, środa, 28. lipca 1937. Rok XIX, ss. 7–8.
37. Guglielmo Marconi. Nr. 6597, Lwów, niedziela, 01. sierpnia 1937. Rok XIX, s. 7.
38. Na granicy życia. Nr. 6604, Lwów, niedziela, 08. sierpnia 1937. Rok XIX, s. 9.
39. Na szlakach emigracji niemieckiej. Nr. 6611, Lwów, niedziela, 15. sierpnia 1937. Rok XIX, s. 9.
40. Podniebne sfery. (Na marginesie polskiego lotu do stratosfery). Nr. 6618, Lwów, niedziela, 22. sierpnia 1937. Rok XIX, s. 7.
41. Promienie kosmiczne a nadludzie. Nr. 6625, Lwów, niedziela, 29. sierpnia 1937. Rok XIX, s. 7.
42. Koniec świata. Nr. 6637, Lwów, niedziela, 12. września 1937. Rok XIX, s. 9.
43. Nowoczesna różdżka czarodziejska. Nr. 6643, Lwów, niedziela, 19. września 1937. Rok XIX, s. 7.
44. Ludwik Alojzy Galvani. Nr. 6650, Lwów, niedziela, 26. września 1937. Rok XIX, s. 9.
45. Z tajemnic materii. Nr. 6657, Lwów, niedziela, 03. października 1937. Rok XIX, s. 11.
46. Mniej hałasu… Nr. 6664, Lwów, niedziela, 10. października 1937. Rok XIX, s. 9.
47. Rad – najdroższy metal świata. Nr. 6671, Lwów, niedziela, 17. października 1937. Rok XIX, s. 7.
48. Wnętrze ziemi. Nr. 6678, Lwów, niedziela, 24. października 1937. Rok XIX, s. 7.
49. Lord Ernest Rutherford of Nelson. Nr. 6692, Lwów, niedziela, 07. listopada 1937. Rok XIX, ss. 7–8.
50. Czy wszechświat jest skończony? Nr. 6699, Lwów, niedziela, 14. listopada 1937. Rok XIX, s. 9.
51. Fale materii. (Z okazji przyznania nagrody Nobla C. Davissonowi i G. P. Thomsonowi. Nr. 6706, Lwów, niedziela, 21. listopada 1937. Rok XIX, s. 5.
52. Strzępy atomów. Nr. 6720, Lwów, niedziela, 05. grudnia 1937. Rok XIX, s. 9.
53. Nowa cegielka świata. Nr. 6754, Lwów, niedziela, 09. stycznia 1938. Rok XX, s. 10.
54. Czy poza ziemią istnieje życie? Nr. 6761, Lwów, niedziela, 16. stycznia 1938. Rok XX, s. 9.
55. Narodziny materii. Nr. 6768, Lwów, niedziela, 23. stycznia 1938. Rok XX, s. 9.
56. Energia słońca. Nr. 6782, Lwów, niedziela, 06. lutego 1938. Rok XX, s. 10.
57. Niewyżyskane bogactwa. Nr. 6789, Lwów, niedziela, 13. lutego 1938. Rok XX, s. 9.
58. Dokładny czas. Nr. 6796, Lwów, niedziela, 20. lutego 1938. Rok XX, ss. 11–12.
59. Zdobycy bieguna. Nr. 6803, Lwów, niedziela, 27. lutego 1938. Rok XX, s. 12.
60. Nauka łamie monopole. Nr. 6810, Lwów, niedziela, 06. marca 1938. Rok XX, s. 9.
61. Krok w nieznane. Nr. 6817, Lwów, niedziela, 13. marca 1938. Rok XX, s. 9.
62. Niewidzialne światło. Nr. 6824, Lwów, niedziela, 20. marca 1938. Rok XX, s. 8.
63. Tunele aerodynamiczne. Nr. 6831, Lwów, niedziela, 27. marca 1938. Rok XX, s. 10.
64. Sztuczne pierwiastki. Nr. 6845, Lwów, niedziela, 10. kwietnia 1938. Rok XX, s. 7.
65. Film trójwymiarowy. Nr. 6853, Lwów, środa, 20. kwietnia 1938. Rok XX, s. 9.
66. Trzęszenia ziemi. Nr. 6864, Lwów, niedziela, 01. maja 1938. Rok XX, s. 11.
67. Rozchodzenie się fal radiowych. Nr. 6871, Lwów, niedziela, 08. maja 1938. Rok XX, s. 11.
68. Tajemnicze sygnały radiowe. Nr. 6881, Lwów, wtorek, 17. maja 1938. Rok XX, s. 9.
69. Promienie z zaświatów. Nr. 6885, Lwów, niedziela, 22. maja 1938. Rok XX, s. 9.
70. 1.000 km. na godzinę. Nr. 6892, Lwów, niedziela, 29. maja 1938. Rok XX, s. 11.
71. I. Międzynarodowa Konferencja Nauk Ścisłych w Warszawie. Nr. 6899, Lwów, niedziela, 05. czerwca 1938. Rok XX, s. 9.
72. Świat nowych idei. Nr. 6905, Lwów, niedziela, 12. czerwca 1938. Rok XX, s. 11.
73. Z tajemnic atomu. Nr. 6912, Lwów, niedziela, 19. czerwca 1938. Rok XX, s. 9.
74. Kamienie z nieba. Nr. 6919, Lwów, niedziela, 26. czerwca 1938. Rok XX, s. 10.
75. Narodziny słońca. Nr. 6926, Lwów, niedziela, 03. lipca 1938. Rok XX, ss. 11–12.
76. Komora Wilsoina. Nr. 6933, Lwów, niedziela, 10. lipca 1938. Rok XX, s. 11.
77. Zimne światło. Nr. 6940, Lwów, niedziela, 17. lipca 1938. Rok XX, s. 11.
78. Mleczna Droga. Nr. 6947, Lwów, niedziela, 24. lipca 1938. Rok XX, s. 9.
79. Rekordy wszechświata. Nr. 6954, Lwów, niedziela, 31. lipca 1938. Rok XX, s. 9.
80. Kauczuk ze spirytusu. Nr. 6968, Lwów, niedziela, 14. sierpnia 1938. Rok XX, s. 7.
81. Liczniki mikrokosmosu. Nr. 6975, Lwów, niedziela, 21. sierpnia 1938. Rok XX, s. 9.
82. Krótkie fale radiowe. Nr. 6982, Lwów, niedziela, 28. sierpnia 1938. Rok XX, s. 11.
83. Kwarcowe zegary. Nr. 6996, Lwów, niedziela, 11. września 1938. Rok XX, s. 9.
84. Sztuczni ludzie. Nr. 7021, Lwów, niedziela, 09. października 1938. Rok XX, ss. 7–8.
85. Barwny film. Nr. 7028, Lwów, niedziela, 16. października 1938. Rok XX, ss. 7–8.
86. Autopilot. Nr. 7035, Lwów, niedziela, 23. października 1938. Rok XXs. 9.
87. Wieśc mknie po drucie… (W 100-lecie wynalezienia kabla). Nr. 7042, Lwów, niedziela, 30. października 1938. Rok XX, s. 9.
88. Dlaczego niebo jest błękkitne? Nr. 7049, Lwów, niedziela, 06. listopada 1938. Rok XX, s. 9.
89. 40 bilionów kilometrów. Nr. 7056 a, Lwów, niedziela, 13. listopada 1938. Rok XX, s. 9.
90. Enrico Fermi – laureatem Nobla. Nr. 7063, Lwów, niedziela, 20. listopada 1938. Rok XX, s. 9.
91. Przemiany pierwiastków. Nr. 7070, Lwów, niedziela, 27. listopada 1938. Rok XX, s. 9.
92. Święto wiedzy. Nr. 7077, Lwów, niedziela, 04. grudnia 1938. Rok XX, s. 9.
93. Słońca-olbrzymy i słońca-karły. Nr. 7084, Lwów, niedziela, 11. grudnia 1938. Rok XX, s. 9.
94. Okręty i samoloty kierowane przez radio. Nr. 7110 a, Lwów, niedziela, 08. stycznia 1939. Rok XXI, s. 7.

95. Mikroskop elektronowy. Nr. 7117 a, Lwów, niedziela, 15. stycznia 1939. Rok XXI, s. 5.

96. Co wiemy obecnie o Marsie? Nr. 7124 a, Lwów, niedziela, 22. stycznia 1939. Rok XXI, s. 8.

97. Klisza fotograficzna w roli odkrywcy (W 100-lecie wynalezienia fotografii). Nr. 7131 a, Lwów, niedziela, 29. stycznia 1939. Rok XXI, s. 7.

98. Zagadka promieni kosmicznych. Nr. 7138 a, Lwów, niedziela, 5. lutego 1939. Rok XXI, s. 11.

99. Torpedy powietrzne. Nr. 7145 a, Lwów, niedziela, 12. lutego 1939. Rok XXI, s. 9.

100. Katastrofy gwiazd. Nr. 7152 a, Lwów, niedziela, 19. lutego 1939. Rok XXI, s. 11.

101. Gdy ucho przestaje być wrażliwe… Nr. 7159 a, Lwów, niedziela, 26. lutego 1939. Rok XXI, s. 11.

102. Rozbijamy atomy… Nr. 7180 a, Lwów, niedziela, 19. marca 1939. Rok XXI, s. 11.

103. Włókiennicze surowce zastępcze. Nr. 7187 a, Lwów, niedziela, 26. marca 1939. Rok XXI, s. 10.

104. Gazogeneratory samochodowe. Nr. 7194 a, Lwów, niedziela, 2. kwietnia 1939. Rok XXI, s. 9.

105. Teleskop-olbrzym. Nr. 7213 a, Lwów, niedziela, 23. kwietnia 1939. Rok XXI, s. 9.

106. Czy zwiastun wojny? Nr. 7220 a, Lwów, niedziela, 30. kwietnia 1939. Rok XXI, s. 11.

107. Film rysunkowy. Nr. 7226 a, Lwów, niedziela, 7. maja 1939. Rok XXI, s. 11.

108. Telefonia na promieniach podczerwonych. Nr. 7233 a, Lwów, niedziela, 14. maja 1939. Rok XXI, s. 9.

109. Od włókna węglowego do zimnego światła (60 lat żarówki elektrycznej). Nr. 7240 a, Lwów, niedziela, 21. maja 1939. Rok XXI, s. 11.

110. Tajemnicze gwiazdy. Nr. 7247 a, Lwów, niedziela, 28. maja 1939. Rok XXI, s. 9.

111. Płynne złoto. Nr. 7253 a, Lwów, niedziela, 4. czerwca 1939. Rok XXI, s. 10.

112. Bojownicy głębin (Po tragediach w łodziach podwodnych »Squalis« i »Thetis«). Nr. 7260 a, Lwów, niedziela, 11. czerwca 1939. Rok XXI, s. 8.
113. Alchemia żelaza. Nr. 7267 a, Lwów, niedziela, 18. czerwca 1939. Rok XXI, s. 11.

114. „Niewiarygodne” liczby. I. Nr. 7274 a, Lwów, niedziela, 25. czerwca 1939. Rok XXI, s. 11.

115. „Niewiarygodne” liczby. (II) Liczba i rozmiary atomów. Nr. 7281 a, Lwów, niedziela, 2. lipca 1939. Rok XXI, s. 9.

116. Nowy środek walki z rakiem. Nr. 7288 a, Lwów, niedziela, 9. lipca 1939. Rok XXI, s. 11.

117. Surowce – z powietrza. Nr. 7295 a, Lwów, niedziela, 16. lipca 1939. Rok XXI, s. 9.

118. Nadmikroskop. Nr. 7302 a, Lwów, niedziela, 23. lipca 1939. Rok XXI, s. 9.

119. Czy będzie pogoda? Nr. 7309 a, Lwów, niedziela, 30. lipca 1939. Rok XXI, s. 11.

120. Sztuczna promieniotwórczość a przemiana materii. Nr. 7316 a, Lwów, niedziela, 6. sierpnia 1939. Rok XXI, s. 9.

121. Prawa przypadku. Nr. 7323 a, Lwów, niedziela, 13. sierpnia 1939. Rok XXI, s. 11.

122. Zagadka życia w świetle nowej fizyki. Nr. 7330 a, Lwów, niedziela, 20. sierpnia 1939. Rok XXI, s. 11.