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(*b.* Lvov, Austrian Galicia [now Ukrainian S.S.R.], 21 December 1878 ; *d.* Dublin, Ireland, 13 February 1956)

mathematical logic.

Łukasiewicz' father, Paul, was a captain in the Austrian army; his mother, the former Leopoldine Holtzer, was the daughter of an Austrian civil servant. The family was Roman Catholic, and the language spoken at home was Polish. Young Łukasiewicz studied mathematics and philosophy at the University of Lvov, earning his doctorate *sub auspiciis wiperatoris*, a rare honor (1902). At the same institution he received his *Habilitation* (1906) and lectured in logic and philosophy, as *Privatdozent* until 1911, then as extraordinary professor. In 1915 Łukasiewicz accepted an invitation to lecture at the University of Warsaw, then in German-occupied territory.

Between the world wars, as a citizen of independent Poland, Łukasiewicz was minister of education (1919), professor at the University of Warsaw (1920-1939), twice rector of that institution, an active member of scientific societies, and the recipient of several honors. He and Stanislaw Leśniewski founded the Warsaw school of logic, which A. Tarski helped make world famous. Viewing mathematical logic as an instrument of inquiry into the foundations of mathematics and the methodology of empirical science, Łukasiewicz succeeded in making it a required subject for mathematics and science students in Polish universities. His lucid lectures attracted students of the humanities as well.

The sufferings endured by Łukasiewicz and his wife (the former Regina Barwinska) during [World War II](#) are poignantly recalled in an autobiographical note. (See Sobociński's "In Memoriam," cited below.) In 1946 Łukasiewicz, then an exile in Belgium, accepted a professorship at the Royal Irish Academy, Dublin, where he remained until his death.

After some early essays on the principles of noncontradiction and excluded middle (1910), Łukasiewicz arrived by 1917 at the conception of a three-valued propositional calculus. His subsequent researches on many-valued logics is regarded by some as his greatest contribution. He viewed these "non-Aristotelian" logics as representing possible new ways of thinking, and he experimented with interpreting them in modal terms and in probability terms. The nonstandard systems he developed have value independently of the philosophy that inspired them or of the usefulness of those interpretations. Łukasiewicz created the elegant "Łukasiewicz system" for two-valued propositional logic and the parenthesis-free "Polish notation."

The metalogic (a term he coined on the model of Hilbert's terminology) of propositional calculi, notably the theory of their syntactic and semantic completeness, owes much to Łukasiewicz and his school. He regarded these studies as a prelude to analogous investigations for the rest of logic, which were then carried out by Tarski.

Using modern formal techniques, Łukasiewicz reconstructed and reevaluated ancient and medieval logic. Through his work in this area, we have changed our view of the history of logic.

During his last years in Ireland, Łukasiewicz published important studies on modal and intuitionistic logic, and he again made logical history with a detailed and novel study of Aristotle's syllogistic. Essentially he interpreted syllogisms in Aristotle to be theorems of logic, not rules of derivations.

BIBLIOGRAPHY

I. Original Works. Most of Łukasiewicz' contributions were first presented in short notes, often in Polish, or in his university lectures. A list of all, or almost all, of his publications is appended to Andrzej Mostowski's "L'oeuvre scientifique de Jan Łukasiewicz clans le domaine de la logique mathématique," in *Fundamenta mathematicae*, **44** (1957), 1-11. His following writings present important results systematically : *Elementy logiki matematycznej* ("Elements of Mathematical Logic" Warsaw, 1929; 2nd ed., 1958), translated by Olgierd Wojtasiewicz as *Elements of Mathematical Logic* (New York, 1963); "Philosophische Bemerkungen zu mehrwertigen Systemen des Aussagenkalküls," in *Comptes rendus des séances de la Société des sciences et des lettres de Varsovie*, CI. III, 23 (1930), 51-77, written with [Alfred Tarski](#); "Untersuchungen über den Aussagenkalkül," *ibid.*, 30-50; "Zur Geschichte der Aussagenlogik," in *Erkenntnis*, 5 (1935-1936), 111-131; "A System of Modal Logic," in *Journal of Computing Systems*, **1** (1953), 111-149 ; and *Aristotle's Syllogistic From the Stand-Point of Modern Formal Logic*, 2nd ed. (Oxford, 1957).

II. Secondary Literature. The following two articles jointly constitute a valuable survey of Łukasiewicz' lifework as a logician, philosopher, and historian of logic: L. Borkowski and J. Slupecki, "The Logical Works of Jan Łukasiewicz," in *Studia logica*, **8** (1958), 7-56; and Tadeusz Kotarbiński, "Jan Łukasiewicz's works on the History of Logic," *ibid.*, 57-62. Shorter general treatments of Łukasiewicz's work are the Mostowski article cited above; Boleslaw Sobociński, "In Memoriam Jan Łukasiewicz," in *Philosophical Studies* (Maynooth, Ireland), **6** (1956), 3-49, which contains an autobiographical note, "Curriculum vitae of Jan Łukasiewicz," and a bibliography ; and Heinrich Scholz, "In Memoriam Jan Łukasiewicz," in *Archiv für mathematische Logik and Grundlagenforschung*, **3** (1957), 3-18, which contains an excellent summary of the technical aspects of Łukasiewicz' contributions.

Łukasiewicz' exegesis of Aristotle's syllogistic is disputed in Arthur N. Prior, "Łukasiewicz's Symbolic Logic," in *Australasian Journal of Philosophy*, **30** (1952), 33-46, and is discussed in Gunther Patzig, *Die Aristoteleische Syllogistik: Logisch-philologische Untersuchungen Über das Buch A der "Ersten Analytiken"* (Göttingen, 1959); English trans. by J. Barnes, *Aristotle's Theory of the Syllogism: A Logico-philological Study of Book A of the Prior Analytics* (Dordrecht, 1968), *passim*, esp. 196-202.

For a general evaluation of Łukasiewicz' philosophical and logical ideas, see Henryk Skolimowsky, *Polish Analytical Philosophy: A Survey and a Comparison with British Analytical Philosophy* ([New York](#), 1967), 56-72.

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