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(*b.* Darmstadt, Germany, 20 September 1842; *d.* Tübingen, Germany, 8 June 1935)

*mathematics.*

Brill, the nephew of the geometer Christian Wiener, was a student of Alfred Clebsch at both the Politechnikum in Karlsruhe and at the University of Giessen. He graduated in 1864 and passed his *Habilitation* in 1867. From then until 1869 he was a *Dozent* at Giessen; from 1869 to 1875, a professor at the Politechnikum in Darmstadt; and from 1875 to 1884, a professor at the Politechnikum in Munich, where he worked with [Felix Klein](#) and was influenced by him. From 1884 to 1918, when he retired, Brill was a professor at the University of Tübingen. He worked primarily on the theory of algebraic functions and [algebraic geometry](#), characteristically using algebraic methods, striving to avoid transcendental methods and aiming at “Weierstrassian strictness” of exposition. The systematic study of those properties of algebraic functions which are invariant under birational transformations is contained in his fundamental work, written with Max Noether (1874). In it many of the results obtained by Riemann and by Clebsch and Gordan, using transcendental means, are substantiated by algebraic-geometrical methods. Also noteworthy are his papers on three-dimensional algebraic curves (1907) and on pseudospherical three-dimensional space (1885), where the impossibility of putting such a space into a Euclidean four-dimensional space and the possibility of its being placed in a Euclidean five-dimensional space are proved.

At the end of the last century, Brill published a series of articles on methodology of mathematics, participated—following Klein—in the movement to reform its teaching, and was an initiator of the use of models of geometrical figures in teaching; many such models were prepared under his guidance.

Brill also wrote on the theory of determinants, on the theory of elimination, on the theory of elliptic functions, on some special curves and surfaces, and on the singularities of planar and spatial algebraic curves. He was also concerned with theoretical mechanics. In *Vorlesungen über allgemeine Mechanik* (1928) and *Vorlesungen über algebraische Kurven und algebraische Functionen* (1925) Brill, who was then retired, summed up his scientific and pedagogical career.

Brill’s survey of the development of the theory of algebraic functions (“Die Entwicklung der Theorie der algebraischen Functionen in älterer und neuerer Zeit,” 1894), which was written with Noether, has significance for the history of mathematics. His last work, published when he was eighty-seven, dealt with Kepler’s *New Astronomy*.

## BIBLIOGRAPHY

I. Original Works. Among Brill’s writings are “Ueber die algebraische Functionen und ihre Anwendung in der Geometrie,” in *Mathematische Annalen*, **7** (1874), 269–370, written with Max Noether; “Bemerkungen ueber pseudosphärischen Mannigfaltigkeiten,” *ibid.*, **26** (1885), 300–303; “Die Entwicklung der Theorie der algebraischen Functionen in älterer und neuerer Zeit,” in *Jahresbericht der Deutschen Mathematiker-Vereinigung*, **3** (1894), 107–566, written with Max Noether; “Ueber algebraische Raumkurven,” in *Mathematische Annalen*, **64** (1907), 289–324; *Vorlesungen über algebraische Kurven und algebraische Functionen* (Brunswick, 1925); and *Vorlesungen über allgemeine Mechanik* (Munich–Berlin, 1928). For a more complete list see Poggendorff.

II. Secondary Literature. See S. Finsterwalder, “Alexander von Brill. Ein Lebensbild,” in *Mathematische Annalen*, **112** (1936), 653–663; and F. Severi, “Alexander von Brill,” in *Jahresbericht der Deutschen Mathematiker-Vereinigung*, **31** (1922), 89–96

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