

# Mathematisch-physikalische Semesterberichte

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# Warning:

This subject is rather complex – so simplifications had to be made.

# The journal

The journal *Mathematisch-physikalische Semesterberichte* was founded in 1932 by Heinrich Behnke (1898 - 1979) and Otto Toeplitz (1881 - 1940).

Behnke was a young professor at Münster, Toeplitz was at Bonn. Both had strong connections to the Göttingen school and both were engaged in future teacher training.

# Behnke and Toeplitz



# Aims and scope

- Behnke was mainly interested in maintaining the relationship between universities and teachers at the *Gymnasium* that is to inform them on current works in mathematics.
- Toeplitz was more interested in improving the teaching of mathematics at the Gymnasium by given concrete propositions.

# Typical examples

- Behnke „New results in the theory of analytic functions in several variables“ (1 (1932)), „On the impossibility of the trisection of an angle“ (11 (1937/38) and „On different ways to introduce points at infinity“ (6 (1934/35))
- Toeplitz wrote on „How to deal with equations given by texts [eingekleidete Gleichungen] and the general principle for teaching deriving from that“ (4 (1933/34))

# Behnke's vision

- The good old German „Gymnasialprofessor“, that is a teacher who is well informed on the progresses of mathematics and who is actively engaged in mathematical research (think of people like Killing, Kummer or Weierstraß). In his town, he is the local representative of the scientific – technical culture (that is of progress).
- The new professor (after World War II) is called „Studienrat“ by Behnke, he is often a „Sozialbeamter“.

# Other topics

- Of course there were a lot of other topics: Behnke wrote a lot on general (political) questions concerning the training of future teachers, Toeplitz on the history of mathematics. There were a lot of other contributors.



# After WW II

- The „Semesterberichte“ were refounded by Behnke in 1949; other editors were now Wilhelm Süß (1895 - 1958) – the founder of the Forschungsinstitut at *Oberwolfach* – and Walter Lietzmann (1880 - 1959), the grand old man of German didactics concerning the *Gymnasium*.
- Nota bene: In Germany, there was a strict separation between the training of the future teachers at the *Gymnasium* and those at the *Volksschule*. There were two completely separated systems.

# Mathematisch-Physikalische Semesterberichte

zur Pflege des Zusammenhangs  
von Schule und Universität

Herausgegeben von  
Heinrich Behnke und Walter Lietzmann

in Verbindung mit dem  
Mathematischen Forschungsinstitut  
in Oberwolfach

1. Band



Göttingen · Vandenhoeck & Ruprecht · 1950

# Mathematisch-Physikalische Semesterberichte

Zur Pflege des Zusammenhangs von Schule und Universität  
BEGRÜNDET 1932 VON H. BEHNKE UND O. TOEPLITZ

Herausgegeben von:

H. Behnke in Münster / K. P. Grottemeyer in Berlin / A. Kirsch  
in Gießen / K. Koch in Münster / W. Kroebe in Kiel / E. Mollwo  
in Erlangen / G. Pickert in Gießen / H. A. Ristau in Hamburg /  
H. G. Steiner in Münster / H. Tietz in Hannover

NEUE FOLGE · BAND X



GÖTTINGEN · VANDENHOECK & RUPRECHT · 1964

# Aims and scope

Behnke continued to insist on his old vision. In his article introducing the new series of the *Semesterberichte* under the heading „Universität und höhere Schule“ (1 (1950)), he emphasized that the journal should not treat questions of concrete teaching – „internal questions of the Gymnasium“ as he called them.

# Didactics in the „Semesterberichte“

- In the first years after WW II, there were few articles concerning more or less concrete questions of the teaching of mathematics. Themes like that were typically treated by active teachers in their own journal „Der mathematisch-naturwissenschaftliche Unterricht“ (MNU – refounded in 1948).

# Changes

The situation changed gradually during the 1950s.

1. There was an ongoing discussion on ideas going back to the „Meran reform propositions“ (1905) which was not yet completely realized (an important topic was the introduction of differential and integral calculus into the Gymnasium [more or less an unfinished innovation in the 1920s]; another topic was calculating with vectors [not vector spaces]).

# Changes

2. After 1955, the first ideas of „new math“ showed up also in Germany. This was related to the need of modernizing mathematics at German universities after WW II by introducing ideas of Bourbaki, category theory, abstract algebraic geometry and so on. Remember that German mathematicians were isolated from those developments taking place mainly in France and in the United States before. After this modernization was accomplished the need was felt to modernize school mathematics also – to bridge the gap between the *Gymnasium* and the universities.

# Changes

3. Beginning in the 1950s but culminating around 1970, the need was felt to introduce didactics in the formation of future teacher at universities as a reaction to the modernization of the math teaching.

At the same time that didactics of mathematics established itself as a field of research.

# Back to „Semesterberichte“

After the death of Lietzmann (1959) and Süß (1958), new editors were appointed: Koch, Kroebel, Kirsch, Mollwo, Pickert, Ristau, Steiner, Tietz.

Seemingly, the publishing house of the journal (then Vandenhoeck & Ruprecht at Göttingen) urged Behnke to give more space to articles on didactics in his journal in order to get more readers.



# Some examples

- Behnke, H.: Wandel im Aufbau der Mathematik (3 (1953)), Röhrl, H.: Ein Bericht über N. Bourbaki ... (4 (1955))
- Dieudonné, J.: Moderne Mathematik und Unterricht auf der höheren Schule (8 (1962)), Servais, W.: Affine Geometrie als Basis des geometrischen Anfangsunterricht (14 (1966)), Steiner, H. – G.: Wie steht es mit der Modernisierung unseres Mathematikunterrichts? (11 (1965))
- Kirsch, A.: Eine Analyse der sogenannten Schlussrechnung (16 (1969)), Griesel, H.: Algebra und Analysis der Größensysteme I, II (16 (1969)), Steiner, H. – G.: Äquivalente Fassungen des Vollständigkeitsaxioms für die reellen Zahlen (13 (1966)), Karcher, H.: Analysis mit Lipschitz-stetigen Funktionen (21 (1974)), Pickert, G.: Bemerkungen zum Variablenbegriff (7, (1961))

# Stoffdidaktik

- Idea: to improve teaching by analyzing its mathematical contents from different points of view (systematically, historically, logically, psychologically, ...)
- Lenné: this is didactics towed to mathematics
- Didactics of mathematics (as far as the Gymnasium is concerned) was created under the protection and with the help of active mathematicians in close relation to the training of future teachers
- So: You have to pay the price?!

# Semesterberichte

- The *Semesterberichte* played a key role in the process of establishing *Stoffdidaktik* in Germany. After 1955, other journals were founded in Germany which treated that field, too. Nevertheless the *Semesterberichte* maintained an important role until Behnke's death (1979) and even beyond.

# Further reading

- Mathematische Semesterberichte 63 (2016)  
Heft 1 (with a particular focus on  
Stoffdidaktik)