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DEPARTMENT OF THE AIR FORCE  
NATIONAL AIR & SPACE INTELLIGENCE CENTER  
WRIGHT-PATTERSON AFB OHIO

30 May 2018

Colonel Jed S. Cohen  
Vice Commander  
National Air and Space Intelligence Center  
4180 Watson Way  
Wright-Patterson AFB OH 45433-5648

John Greenewald  
The Black Vault  
27305 W. Live Oak Rd., Suite 1203  
Castaic, CA 91384-4520

Dear Mr. Greenewald


This letter is in reference to your Freedom of Information Act (FOIA) request dated 9 March 2018 for a copy of a document entitled *The Biefeld-Brown Effect*. We received your request from the 88 CS/SCOKI FOIA office and assigned case number 2018-01638-F to it.

A review was conducted to determine if the record you requested may be released in whole or in part. After reviewing the document it has been determined that it may be released.

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Sincerely

  
JED S COHEN, Colonel, USAF  
Vice Commander

Attachment:  
Requested Document

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# NATIONAL AIR INTELLIGENCE CENTER



## THE BIEFELD-BROWN EFFECT

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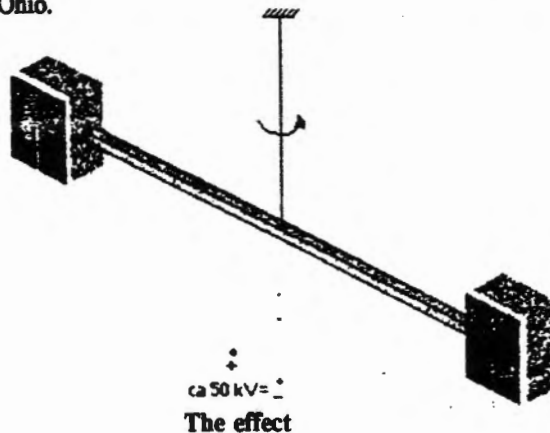
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**TRANSLATION SERVICE (DXLT)  
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WPAFB, OH 45433**

## THE BIEFELD-BROWN EFFECT

The phenomenon known as the Biefeld-Brown effect was discovered around 1920 by Thomas Townsend Brown and first investigated in detail in 1923 by him and his physics professor at the time, Dr. Paul Alfred Biefeld, at Denison University in Granville, Ohio.



The effect consists in the fact that a capacitor charged to high voltage (in the kV range) exhibits a tendency to travel in the direction of its positively charged plate. In other words, a propelling force is generated which is independent of the orientation of the capacitor in space.

The diagram above illustrates the principle of a setup which permits a relatively sensitive demonstration of the effect. A torsional pendulum consisting of two plate capacitors and an insulating connecting rod is suspended on a fine wire. The capacitor plates are connected together "crosswise" [text missing - TR] possible whether the pure effect has been observed (which in this is compensated). The entire apparatus must [text missing - TR] be housed in a protective enclosure to isolate it from drafts. This enclosure should be placed in an environment in which ambient temperature remains as uniform as possible; to prevent convection inside the enclosure, it should be protected from exposure to heat radiation. The enclosure should also constitute a Faraday cage configured such that [text missing - TR] if the air can be evacuated from the enclosure. It is occasionally [text missing - TR] that the effect can be attributed to the so-called "ion wind," i.e., to the repulsion of charged gas ions by a similarly charged surface. This explanation, however, is inadequate in view of the fact that the Biefeld-Brown effect was also to be observed in experiments in vacuum chambers. Incidentally, these variants also offer the only opportunity to observe the effect in its "pure" form.

The strength of the effect is a function of the following:

- the voltage applied to the capacitor;
- the capacitance of the capacitor, i.e.,
  - plate surface,
  - distance between plates,
  - type of dielectric (dielectric constant!);
- the density of the dielectric (!);
- various environmental conditions, e.g. sunspots(!); and
- the shape of the capacitor and, accordingly, of the electric field.

### Thomas Townsend Brown

Thomas Townsend Brown was born in Zanesville, Ohio in 1905. He was already relatively early demonstrating great interest in space travel and electronics. While he was still in college he discovered the Biefeld-Brown effect, later named after him and his physics professor, which he would first begin to investigate in detail in 1923 at Denison University in Granville Ohio. He attributed the effect to the relationship hypothesized to exist between electric and gravitational fields.

After graduation [text missing - TR] the Navy's Naval Research Laboratory.

In 1932, as staff physicist, he participated in the U.S. Navy Department's International Gravity Expedition to the West Indies and in 1933 in the Johnson-Smithsonian Deep Sea Expedition. What he worked on for the Navy after 1939 is not known in any detail, although it is assumed that, among other things, he did work on the Philadelphia Project. Concurrently with his professional activities, however, he continued at least privately to study the effect he had discovered and work on technical applications of it. Following a nervous breakdown, Brown was retired in early 1944 on the recommendation of Navy physicians. He later worked as a consultant for the Lockheed-Vega Aircraft Corporation, which he left in 1952 [text missing - TR] that the apparatus could lift more than its own weight.

In 1953 Brown succeeded in flying one of his "airfoils" around a 6 m-diameter circular course in a laboratory. The apparatus was connected by wire to a pole and in this way supplied with the required 50 kV operating voltage. Required power was 50 W. The apparatus reached a top speed of almost 185 km/h.

Following initial successes and improvements, as well as a number of demonstrations in Europe, the French company SNCASO, for which Brown was working at the time, merged with another; and his research funding was cancelled.

Brown returned to the U.S. and there within a year found himself chief consultant on the Whitehall-Rand Project, a program of antigravity research controlled by the Bahnsen Company in Winston-Salem, North Carolina. But then after Bahnsen was involved in a crash in his private aircraft, the project was terminated.

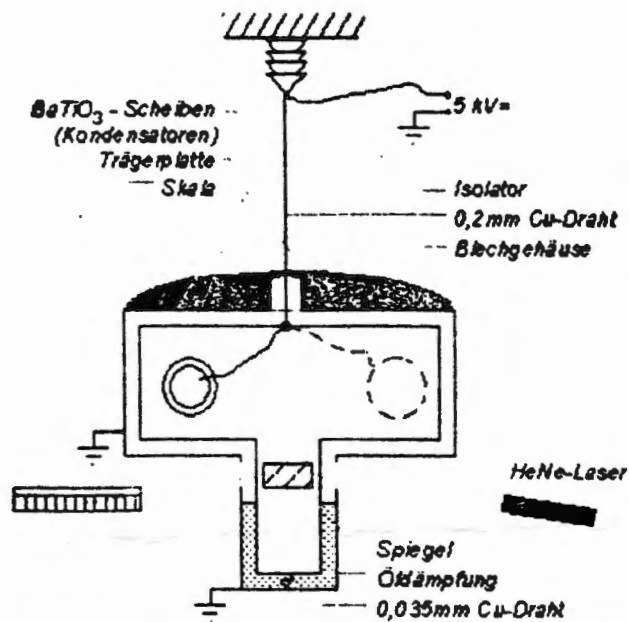
In 1958 Brown tried again, this time forming his own company, Rand International Limited, which still exists as a business organization. But despite numerous U.S. and foreign patents, he and his "Gravitor" would not see success. He held several more demonstrations, including one for NASA, and continued his private investigations in California.

T. T. Brown owns the following patents:

- A Method of and an Apparatus or Machine for Producing Force or Motion  
U.S. Patent No. 300,311, Nov. 15, 1928
- Electrostatic Motor  
U.S. Patent No. 1,974,483, Sept. 25, 1934
- Electrokinetic Apparatus  
U.S. Patent No. 2,949,550, Aug. 16, 1960
- Electrokinetic Generator  
U.S. Patent No. 3,022,430, Feb. 20, 1962
- Electrokinetic Apparatus  
U.S. Patent No. 3,187,206, June 1, 1965
- Method and Apparatus for Producing Ions and Electrically Charged Aerosols  
U.S. Patent No. 3,296,491, Jan. 3, 1967
- Fluid Flow Control System  
U.S. Patent No. 3,518,462, June 30, 1970

#### Other Research

In (3) below, Sven Mielordt describes his attempt to demonstrate the Biefeld-Brown effect qualitatively. The diagram below illustrates the setup. The use of barium titanate as the dielectric and the combination of a torsional pendulum with an optical pointer produces clearly observable (qualitative) results at even the relative low voltage of 5 kV. Reversal of the polarity of the voltage source and the resulting reversal of the effect show that this is not an electrostatic effect (attraction or repulsion). The ion wind, however, cannot be ruled out as an explanation. This would be possible only with an evacuated apparatus.



Clockwise: BaTiO<sub>3</sub> plates (capacitors), support plates, scale; insulator, 0.2 mm Cu wire, sheet metal housing; HeNe laser; mirror, oil damping, 0.035 mm Cu wire

### Bibliography

1. Berlitz, Ch. and Moore, W. L. *Das Philadelphia-Experiment*. Paul Zsolnay Verlag GmbH. Vienna/Hamburg. 1979. ISBN 3-552-03100-6.
2. Kelly, D. A. *The Manual of Free Energy Systems and Devices*. 1986. ISBN 0-932298-59-5.
3. Mielordt, Sven. *Kompendium Hypertechnik, Tachyonenenergie, Hyperenergie, Antigravitation*. Gehrden, 1984. The book may still be available from the author.
4. Brown, T. T. *A Method of and an Apparatus or Machine for Producing Force or Motion*. U.S. Patent No. 300,311, Nov. 15, 1928.
5. Brown, T. T. *Electrokinetic Apparatus*. U.S. Patent No. 3,187,206, June 1, 1965.



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