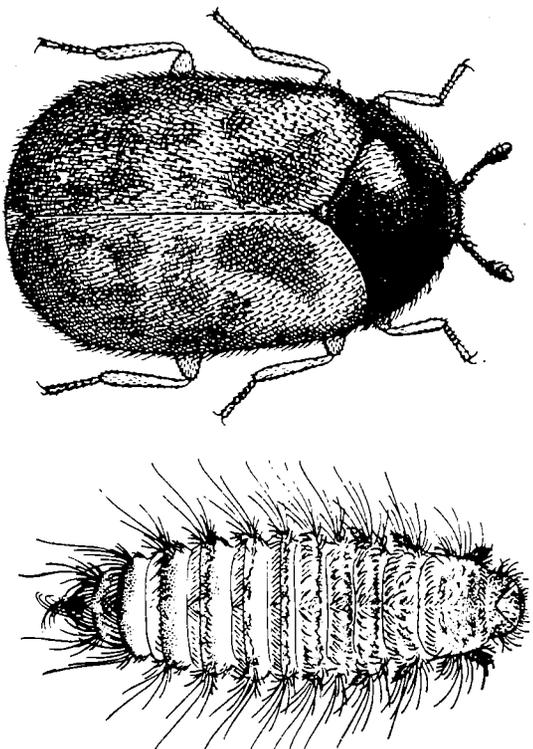


ISRAEL JOURNAL OF ENTOMOLOGY

מכון וולקני לחקר החקלאות
עפרות תני"ד, תל אביב-יפו
בית דגן



תורגמו ונערכו על ידי
ד"ר משה גורן
בית דגן

VOLUME XI 1976

THE ENTOMOLOGICAL SOCIETY
OF ISRAEL

The front page picture shows *Trogoderma granaria* Everts which is the subject of some of the papers in this issue.

ISRAEL JOURNAL OF ENTOMOLOGY

EDITORS

H. Bytinski-Salz
University of Tel Aviv
Tel Aviv

U. Gerson
Faculty of Agriculture
Hebrew University of Jerusalem
Rehovot Campus

A.S. Tahori
Israel Institute for
Biological Research
Ness Ziona

A journal devoted to all aspects of Entomology. Authors are entirely responsible for statements, whether of fact or opinion.

Subscription: Members of the Israel Entomological Society: IL. 15.- (Membership fees - additional IL 50.-). Non-members \$10.00 + postage. Correspondence for subscription: Secretary, Entomological Society, Israel c/o Volcani Institute of Agricultural Research, Bet-Dagan, P.O.Box 6, Israel.

Manuscripts, in English only, are considered on the understanding that their contents should not be published elsewhere in substantially the same form; if a preliminary announcement relating to the contents of the paper has already been published, this must be stated.

Papers should be concisely written; the 'Style Manual for Biological Journals' contains much useful guidance. Manuscripts must be typed, with double spacing, on one side of paper of uniform size. Titles should be concise, followed by a short descriptive Abstract, indicative of the aspects of the subject dealt with but not summarizing the results or conclusions.

Scientific names should be underlined and followed by the name of the first describer (written out in full, except for Linnaeus (L.) and Fabricius (F.).)

Tables should be kept to a minimum and, unless very short, must be typed on separate sheets, their approximate position being indicated in the manuscript. The same data should not be given both in tables and graphs.

All references cited in the text must be included in the list of references at the end of the paper. They should be arranged in alphabetical order as follows:

De Bach, P. 1969. Uniparental, sibling and semi-species in relation to taxonomy and biological control. *Israel J. Entomol.* 4:11-28.

Tables and periodicals must be abbreviated as laid down in World List of Scientific Periodicals 4th Edition. 1964.

Authors are entitled to receive 30 copies of their paper free of charge. Additional copies may be ordered before publication.

TABLE OF CONTENTS

	Page
PROF. E.D. BERGMANN - Obituary	1
BERGMANN, E.D. - The future of insecticides - a problem of human environment	5
BERGMANN, E.D., I. PINSKY, Z. AIZENSHTAT and M. BAR-ZEEV - Study of synthetic compounds as repellents against the mosquitoes <i>Culex pipiens molestus</i> and <i>Aedes aegypti</i>	15
TAHORI, A.S. and R. GALUN - The rise and fall of DDT	33
BORKOVEC, A.B. - Aziridines as insect chemosterilants.	53
BAR-ZEEV; M. - Materials attractive or repellent to larvae of <i>Trogoderma granarium</i>	61
STANIC, V., A. SHULOV, A. MARKUS and R. IKAN - The effect of steroidal aziridines on development and oviposition of <i>Trogoderma granarium</i>	73
SHAAYA, E., G. GROSSMAN AND R. IKAN. The effect of straight chain fatty acids on growth of <i>Calandra oryzae</i>	81
KULKARNI, A.P., and E. HODGSON - Microsomal electron transport system in the housefly <i>Musca domestica</i> , a model for the study of detoxication systems in insects.	93
AKOV, S. - Morphogenetic effects of the polychlorinated biphenyl Aroclor 1254 and phenobarbital on <i>Aedes aegypti</i> larvae.	109
HAYES, D.K., M.S. SCHECHTER and R. MOFFITT - Pigment extraction from insect heads and hemolymph.	125
SCHECHTER, M.S., W.N. SULLIVAN, B.M. CAULEY, N.O. MORGAN, R. WATERS, C.M. AMYX and J. KENNEDY - Gas-propelled aerosols and micronized dusts for control of insects in aircraft and vans.	133
KALIR, A. and D. BALDERMAN - Reaction of α - trihalomethylbenzhydrols with sulfuric acid-hydrogen azide.	147

The Israel Entomological Society is proud to dedicate the 1976 issue of its Journal to the memory of Prof. Ernst David Bergmann. Professor Bergmann was a source of stimulation and inspiration to chemists and entomologists in Israel to study insect toxicology and physiology. He believed that a basic understanding in these fields would eventually lead to the development of novel approaches to insect control.

The Israel Entomological Society is thankful to the following Organizations and Institutions for their generous financial support for this issue:

The Israel Academy of Sciences and Humanities,
The Hebrew University, Jerusalem,
Israel Foundations Trustees,
The Harry S. Truman Research Institute,
The Hebrew University, Jerusalem.
The Jocheved and A.S. Cohen Foundation.

The Editors

ERNST DAVID BERGMANN

An Obituary



Ernst David Bergmann, Israel's outstanding chemist and undisputed scientific leader for many years, died on 6 April 1975. E.D.B. was born in Karlsruhe, Germany, on 18 October 1903. A few years later his father, Rabbi Judah Bergmann, was called to serve a congregation in Berlin, and it was there that E.D.B. received his primary and secondary education. In 1921 E.D.B. commenced his studies at Berlin University. In 1924, at the young age of 21, he began his doctoral work and was awarded the Doctor of Philosophy degree, *summa cum laude*, in 1925, for a thesis under the supervision of W. Schlenk, with whom he was later to compose the impressive textbook "Ausführliches Lehrbuch der Organischen Chemie." In 1928 he became Privat Dozent, and in the following year he was proposed by the eminent chemist Richard Willstätter as his successor to the chair of organic chemistry at the Eidgenössische Technische Hochschule (E.T.H.). Although Ruzicka was actually appointed to the chair, the suggested nomination was a clear indication of the esteem E.D.B. already enjoyed, at the age of 26, among the top men in his field. Another proposed appointment, namely, to the chair of organic chemistry at the famous Technische Hochschule at Charlottenburg, in 1932 (as successor to Pschorr, another famous chemist), had no chance being approved in Germany, where the Nazis were soon to come to power.

E.D.B. left Germany in 1933 and although he was invited by Robinson to become a member of the latter's team in Oxford, he preferred Chaim Weizmann's offer to serve as the director of the projected Sieff Institute in Rehovot. He joined Weizmann in London and worked with him at the Featherstone Laboratories, at the same time recruiting staff and assembling equipment for the new Institute. E.D.B. arrived in Palestine (now Israel) on 1 January 1934 to direct and do research at the Sieff Institute (now the Weizmann Institute of Science). In addition, he devoted himself to his permanent beloved second task – scientific work for the defence forces: first for the "Hagana" (from 1936) and later, after the foundation of the State, for the Ministry of Defence. During World War II, E.D.B. worked (from 1940) in association with Weizmann in both England and the U.S.A. on numerous industrial projects for the allied war effort, returning to this country in 1946. He was soon thereafter (1948) appointed Scientific Director of Research of the Science Corps ("Hemed") of the Israel Defence Forces, and later coordinated the work of the research laboratories of the Scientific Department of the Ministry of Defence (until 1966), a task to which he devoted a great part of his time and energy, especially after 1951, when he left the Weizmann Institute. In 1952, E.D.B. was appointed to a chair in organic chemistry at the Hebrew University of Jerusalem. Subsequently he also served as Deputy President of the Hebrew University during the years 1972-1975. He was associated, too, with the Technion – Israel Institute of Technology at Haifa and, later, with the Ben Gurion University at Be'er Sheva', of which he was honorary president from January 1974.

Apart from this, E.D.B. served as scientific advisor to the Minister of Defence, and rendered outstanding service as Head of the Israel Atomic Energy Commission during the years 1952-1966. Though not a physicist, he had an immediate grasp of the intricacies of this subject and a clear vision of the paramount importance and potential of peace-time application of atomic energy, even for a small country such as Israel.

His foresight in other fields was equally striking: he predicted the oil crisis in his 1947 article "Carbohydrates as an alternative source to petroleum for organic chemicals" (*Chemistry Ind.* 1947, 769) and pointed to agricultural products as raw material for the chemical industry at a U.N. Scientific Conference in 1950.

E.D.B. was duly honored by academies, learned societies and universities, both abroad and locally. He was an indefatigable worker, as

all those associated with him knew from personal experience: his 20-hour working day had to be seen to be believed.

From the lists of his publications available to us, it can be calculated that E.D.B. published, alone or in collaboration with others, more than 650 papers, and was the author of several books, and a number of exhaustive reviews. E.D.B.'s publications dealt mainly with the following subjects: theoretical problems of organic chemistry; polycyclic aromatic compounds; chemistry of substituted fulvenes and heptafulvenes (in close collaboration with the Pullmanns at Paris); organofluorine compounds; acetylene chemistry; synthesis of chloromycetin; and, finally, steroid chemistry.

E.D.B. became interested rather early in the biological implications of his syntheses and in biologically active compounds, as can be witnessed from his joint study with B. Zondek in 1938 on phenol methyl ethers as oestrogenic agents (*Biochem. J.* 32, 641). Later, E.D.B. and the biologists collaborating with him were interested in metabolic processes in *E.coli* bacteria, e.g. purine formation and its precursor, 4-aminoimidazole-5-carboxamide; they investigated both the lethal effect of oxygen on lyophilized *E.coli* and substances providing protection against this effect. Work was carried out on the mode of action of chloromycetin and other antibiotics in bacteria, and on the response of *p*-amino benzoic acid-requiring organisms to *p*-amino-phenylalanine. Important investigations were done on the mammalian toxicity of alkyl fluoroacetates and on the influence of acetamide on fluoroacetate poisoning.

Finally, E.D.B. showed a vivid interest in insect physiology and toxicology. In his last year, E.D.B. was actively engaged in selecting the basic personnel for two new scientific groups at the Hebrew University of Jerusalem: one to work on novel methods of insect control, and the other to search for alternative sources of energy.

Ernst David Bergmann was one of the few scientific titans, human volcanoes of activity and born organizers, we were privileged to witness in our lifetime. His death is a great loss to both the nation and the international scientific community.

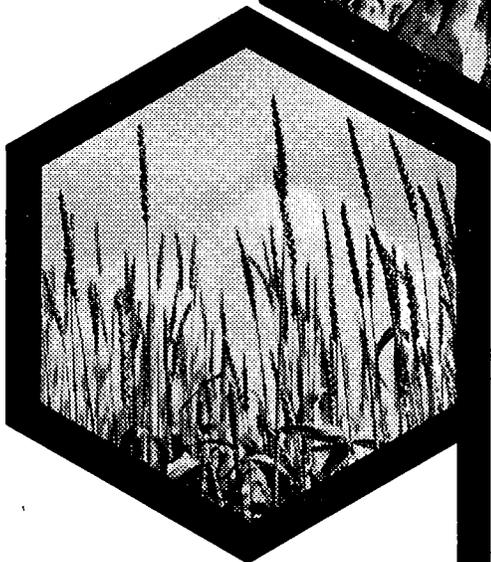
K.R.S. Ascher

The Volcani Center, ARO, Bet Dagan

E. Shaaya

Laboratory of Insect Physiology,
The Hebrew University of Jerusalem

Reprinted with the kind permission of the editors of *Phytoparasitica*,
from vol. 3 (2), 1975.



**a young
tender seedling**

**a healthy
abundant
crop**

**ANYWHERE IN THE
WORLD...**

**MAKHTESHIM-AGAN crop protection chemicals help
increase the world's food production capacity...**

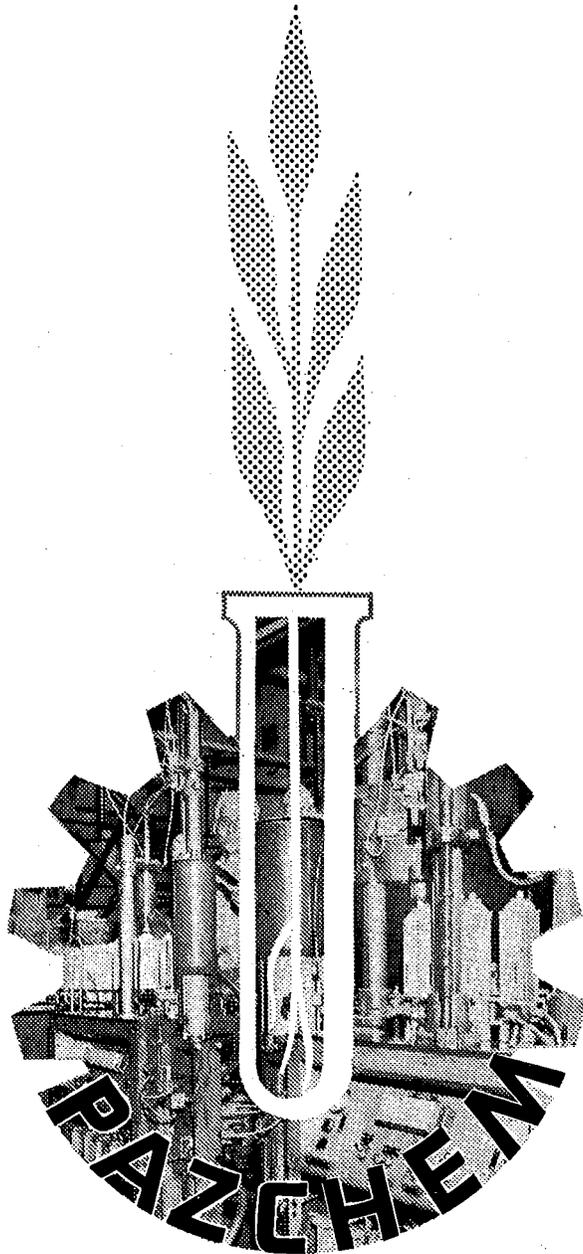
Keep crops insect-free with our internationally
field-proven insecticides:
Bromex (naled), Cotnion (azinphos), Danex (trichlorfon),
Diazol (diazinon), Divipan (dichlorvos), Monocron (mono-
crotophos), Ravyon (carbaryl), Thionex (endosulfan).

MAKHTESHIM-AGAN

Export Offices:
P.O.B. 60 Beer-Sheva, ISRAEL
Telex: 5276
Cables: MCHM IL



BRITISH-HEAVY



PAZCHEM LTD.

INTERNATIONAL EXPORT
OF AGRICULTURAL INSECTICIDES

EXPORT INQUIRIES: PAZCHEM LTD., P.O.B. 1977, TEL AVIV, ISRAEL

CTS

FORMULATORS AND DISTRIBUTORS
OF AGRICULTURAL CHEMICALS.

REPRESENTING :

- * CIBA-GEIGY
- * SCHERING
- * FISON
- * MURPHY
- * ANSUL
- * CELA-MERK
- * KENOGARD

AT YOUR SERVICE WITH THE BEST OF :

- * ACARICIDES
- * FUNGICIDES
- * HERBICIDES
- * INSECTICIDES
- * NEMATOCIDES
- * GROWTH-REGULATORS



CHEMICALS & TECHNICAL SUPPLIES LTD.

Head Office:

100, Jabotinsky Road, Petah-Tikva

Phones: 03-924416 03-921756

Postal Address: P.O.B. 10. Tel-Aviv

MANUFACTURES & EXPORTERS

of

Citrus & Deciduous Fruit Sprays

Against Black Scale, Red Scale, Parlatoria Scale etc.

Agricultural Insecticides

Malathion, Parathion, Lindane, Toxaphene,
Heptachlor, Dimethoate etc.

Protein Insecticide Bait

Against Mediterranean Fruit Fly and Olive Fruit Fly.



"TARSIS"

AGRICULTURAL & INDUSTRIAL CHEMICALS CO. LTD.

Offices:

Plant & Main Office: Kiriat Arie, Petah Tikva. Tel. 923785-6

Telex: 3-2470 COIN 16. ATT: TARSIS

P.O.B. 183 Tel-Aviv

Haifa: 59 Haatzmauth St. Tel. 521534

INSECTICIDES & BAITS

ABATE
TEMIK
FOLIMAT
TAMARON
LEBAYCID
MEVINPHOS

PLANT GROWTH REGULATORS

C.C.C.
ETHREL

HERBICIDES

AVENGE
AZOLAN
DIUREX
GATNON
ATRANEX
NEBUREX
PYRAMIN
SIMANEX
TRIBUNIL
WEEDAZOL
TRIFLUREX

FUNGICIDES

ALLISAN
CALIBUS
RONILAN
MANEBGAN
MORESTAN



AGAN

Chemical Manufacturers Ltd.

ASHDOD (INDUSTRIAL CENTRE)

P.O.B. 262 77100

Tel. (055)- 21321

מכון וילנסקי למחקר החקלאות
ספרות המכון למכשורולוגיה
117