

REFERENCES

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- Abdel Khalek, M.L. Takla, M.A. Sehim, A. Hamimi, Z. and El Manawi, A.W. ,1992:** Geology and tectonic evolution of Wadi Beitan area, South Eastern Desert, Egypt. *Geology of the Arab World*, Cairo Univ., v.1, p. 369-394.
- Abdel Monem, A. A. and Hurley, P. M. 1979:** U – pb dating of Zircons from psammitic gneisses, Wadi Abu Rusheid – Wadi Sikat area, Egypt. *Instit. Of Appl. Geol. Jaddah, Bull. Vol. 3, No. 2*, 165 – 170.
- Akaad, M. K. and El Ramly, M. F. 1960:** Geological history and classification of the basement rocks of the central Eastern Desert of Egypt. *Geol. Surv. Egypt, Paper No. 9*.
- Akaad, M. K. and Noweir, A. M. 1980:** Geology and lithostratigraphy of the Arabian Desert Orogenic Belt of Egypt between latitudes $25^{\circ} 35'$ and $26^{\circ} 30' N$, In Coory, P. G. and Tahoum, S. A. eds, *Evolution and mineralization of the Arabian – Nubian Shield*. *Inst. Applied Geol. King Abdul Aziz Univ.Jeddah, Bull. 3, Vol. 4*, Oxford, Pergamon press, 127 – 135.
- Akaad, M. K.; El Gaby, S. and Habib, M. S. 1973:** The Barud gneisses and the origin of the grey granite. *Bull. Fac. Sci. Assut. Univ. Vol. I, 2*, 55 – 69.
- Amin, M. S. 1955:** Geology and mineral deposits of Um Rus Sheet. *Geol. Surv. Egypt*.
- Ball, J. 1912:** The geographgy and geology of South – Eastern Egypt. *Survey of Egypt, Cairo*.
- Barker, F. 1979:** Trondhjemite – definition, environment and hypothesis of origin. In: *Trondhjemites, Dacites and Related Rocks* (Edited by Barker, F.), Elsevier, Amsterdam, 1 – 12.
- Batchelor, E. A. and Bowden, P. 1985:** Petrogenesis of granitoid rock series using multi – cationic parameters. *Chem Geol. Vol. 48*, 43 – 88.

- Beccaluva, L.; Chnenstetter, D. and Chnenstetter, M. 1979:** Geochemical discrimination between ocean – floor and island arc tholeiites. Application to some ophiolites. *Can. J. Earth Sci.* Vol. 16, 1874 – 1881.
- Bentor, Y. K. 1985:** The crustal evolution of the Arabo – Nubian massif with special reference to the Sinai Peninsula, *Precamb. Res.* Vol. 28, 21 – 74.
- Bhatia, M. R. 1983:** Plate tectonic and geochemical composition of sandstones. *J. Geol.* Vol. 91, 611 – 627.
- Blatt, H.; Middleton, G. V. and Murrey, R. 1980:** Origin of sedimentary rocks. Prentice – Hall, 782p.
- Bliss, N. W. and Mclean, W. H. 1975:** The paragenesis of zoned chromite from central Manitoba. *Geochem. Cosmochim Acta.* Vol. 39, 973 – 990.
- Bowen, D. R. 1967:** The petrochemistry of some Lewisian granitic rocks. *Miner. Mag.* Vol. 36, 342 – 363.
- Carig, J. R. and Vaughan, D. J. 1994:** Ore microscopy and ore petrology. Wiley interscience Pub. New York, 434p.
- Coleman, R. G. and Peterman, Z. E. 1975:** Oceanic plagiogranite. *J. Geophys. Res.* Vol. 80, 1099 – 1108.
- Combs, D. S.; Wilkinson, J. F. G. 1969:** Lineages and fractionation trends in undersaturated volcanic rocks from the east Otago volcanic province (New Zealand) and related rocks. *J. Petrol.* Vol. 10, 440 – 501.
- Debon, F. and Le Fort, P. 1983:** Achemical mineralogical classification of common plutonic rocks and associations. *Trans. R. Soc. Edinb. Earth Sci.* Vol. 73, 49 – 135.
- Dixon, T. H. 1981:** Age and chemical characteristics of some Pre-Pan African rocks in the Egyptian Shield. *Precamb. Res.* Vol. 14, 119 – 133.

Egyptian Geological Survey and Mining Authority (EGSMA) cooperating with the British Geological Survey (BGS) 1996: The Jabjaba Geological map scale 1:250,000.

Ehlers, E. G. and Blatt, H. 1980: Petrology: Igneous, sedimentary and metamorphic. WH. Freeman and Company, San Francisco.

El Afandy, A. H. 1996: Geology and Geochemistry of the metavolcanics in Abu Brush area. General Emphasis to the magmatic Fractionation. Egyptian Miner. Vol. 8, 107 – 127.

El Amawy, M.A. 1991: Structural and tectonic development of Wadi Beitan-Wadi Rahaba area, South Eastern Desert, Scientific J. Faculty of Science, Menoufia University, Vol. 5, 293 – 334.

El Gaby, S. 1975: Petrochemistry and geochemistry of some granites from Egypt. N. Jb. Miner. Abh. Vol. 124, 147 – 189.

El Gaby, S. 1983: Achitecture of the Egyptian basement complex Proceed. 5th . internat. Conf. On Basement tectonics, Cairo.

El Gaby, S. and Ahmed, A. A. 1980: The Feiran – Solaf gneiss belt, SW Sinai, Egypt. Ins. Appl. Geol. Jaddah, Bull. 3, Vol. 4, 95 – 105.

El Gaby, S.; List, K. F. and Tehrani, R. 1988: Geology evolution and metallogenesis of the Pan – African belt in Egypt. In: S. El Gaby and R. O. Greilling (eds.): The Pan African of northeast Africa and adjacent areas, Frieder, Vieweg & Shon, Braunschweig, 17 – 68.

El Kazzaz, y. A. 1996: Speculation on the Tectonic Evolution of Central Wadi Allaqi, South Eastern Desert, Egypt. Proc. Geol. Surv. Egypt. Cenn. Conf., 205 – 223.

El Kazzaz, Y. A. and Gordon Taylor, W. E. 1996: A tectonic – Stratigraphy of Neoproterozoic in Wadi Allaqi, South Eastern Desert, Egypt. Proc. Geol. Surv. Egypt. Cenn. Conf., 225 – 262.

El Rahmany, M. M. Rashwan, A. and Masoud, M. S. 1997: Geology, petrography and geochemistry of Um Krush Ultramafic rocks, South Eastern Desert, Egypt. J. Of the Fucultyof Education No. 22, 155 – 194.

- El Ramly, M. F. 1972:** A new geological map for the basement rocks in the eastern and south – western Desert of Egypt. Ann. Geol. Surv. Egypt. Vol. II, 1 – 18.
- El Ramly, M. F.; Greilling, R. O.; Rashwan, A. A. and Rasmy, A. H. 1993:** Explanatory note to accompany the geological and structural maps of Wadi Hafafit.
- El Shatoury, M. H.; Mostafa, E. M. and Nasr, E. F. 1984:** Granites and granitoid rocks in Egypt, a statistical approach of classification. Chem. Erd. Vol. 43, 229 – 246.
- Engel, A. E. J.; Dixon, T. H. and Stern, R. J. 1980:** Late Precambrian evolution of Afro – Arabian crust from ocean arc to craton. Geol. Soc. Am. Bull. Vol. 91, 699 – 706.
- Eskola, P. 1915:** On the relations between the chemical and mineralogical composition in the metamorphic rocks of the Orijarvi region. Bull. Comm. Geol. Finland, Vol. 44, 109 – 145.
- Fullagar, P. P. and Greenberg, J. K. 1978:** Egyptian younger granites: a single period of plutonism? Labs. I. A. G. Res. Ser. Vol. 4, 62 – 63.
- Gass, I. G. 1977:** The evolution of the Pan – African crystalline basement in NE Africa and Saudi Arabia. J. Geol. Soc. London. Vol. 134, 129 – 138.
- Gass, I. G. 1981:** Pan – African (upper Proterozoic) plate tectonics. Elsevier Sci. Pub. Comp. 387 – 405.
- Ghoneim, M. F. and Szederkenyi, T. 1979:** Petrological review of the Ofalu serpentinite, Mecsek mountains, Hungary. Acta Mineralogica – petrographica, Szeged. Vol.. XXIV, 15 – 18.
- Ghoneim, M. F.; Aly, S. M. and Kafafy, A. M. 1984:** The mafic – ultramafic rocks of Ghadir – El Gemal district, Eastern Desert, Egypt Delta J. Sci. Vol. 8, 2, 663 – 684.
- Gill, G. B. 1981:** Orogenic andesites and plate tectonic. New York, Springer, Verlag, 390p.

- Gindy, A. R. 1954:** The plutonic history of the Aswan area. Egypt. Geol. Mag. Vol. 91, 484 – 497.
- Greenwood, W. R.; Hadley, D. G.; Anderson, R. e.; Fleck, R. J. and Schmidt, D. L. 1976:** Late Proterozoic cratonization in south western Saudi Arabia. Philos. Trans. R. Soc. London Vol. 280, 517 – 527.
- Haggerty, S. E. 1976:** Oxidation of opaque mineral oxides in basalts. Min. Soc. Am. Vol. 3, 1 – 100.
- Hamimi, Z. and Kazzaz, Y. 2000:** Field geometry and folding mechanism in Um Krush Klipe, South Eastern Desert, Egypt. Intr. Nat. Con. of the Arab World, Cairo Univ. Vol. II, 605 – 618.
- Hanson, G. N. 1978:** The application of trace elements to the petrogenesis of igneous rocks of granitic composition. Earth Planet. Sci. Lett. Vol. 38, 26 – 43.
- Higazy, M. H. A. 1980:** Remarks on the Petrochemistry of the granitic rocks of Um Huweitat Stock, Safaga District, Eastern Desert, Egypt. Chem. Erde. Vol. 39, 146 – 157.
- Holland, H. D. 1978:** The chemistry of the Atmosphere and Oceans. Wiley., New York, 351p.
- Horninger, G. 1941:** Beobachtungen am Erzinhalt von Gesteinen und an chromerz aus Tampadal in Schlesien. Mineral Petro. Mitt. Vol. 52, 316 – 346.
- Hume, W. F. 1934:** Geology of Egypt. Vol. II, P. I. The metamorphic rocks, survey of Egypt, Cairo.
- Hume, W. F. 1934:** Geology of Egypt. Vol. II, P. II. survey of Egypt, Cairo.
- Hussein, A. A.; Ali, M. M. and El Rmly, M. F. 1982:** A proposed new classification of the granites of Egypt. J. Volanol. And Geotherm. Res. Vol. 14, 187 – 198.
- Hyndman, D. W. 1972:** Petrology of igneous and metamorphic rocks. McGraw – Hill Inc., New York.

- Irvine, T. V. and Baragar, W. R. A. 1971:** Aguide to chemical classification of the common volcanic rocks. Can. J. Earth Sci. Vol. 8, 523 – 548.
- Ishihara, S. 1977:** The magnetite series and the elmenite series granitic rocks. Min. Geol. Vol. 27, 293 – 305.
- James, R. S. and Hamilton, D. L. 1972:** Phase relationship in the system Na Al Si₃O₈ – K Al Si₃O₈ – Ca Al₂ Si₂O₈ – SiO₂ at 1 Kilobar water vapor pressure. Contr. Miner. Petrol. Vol. 21, 111 – 141.
- Jarrar, G. H. 1985:** Late Proterozoic crustal evolution of the Arabian – Nubian Shield in the Wadi Araba area. SW Jordan. Geol. Jb. Bull. 61, 3 – 87, Hannover.
- Jensen, L. S. 1976:** A new cation plot for classifying subalkaline volcanic rocks. Ont. Div. Mines. Misc. paper 66, 22p.
- Khaffagy, M. and Mahfous, S. 1984:** On the geochemical differentiation between ortho- and para- gneisses. Teachers College, Kweit. Vol. I, 23 – 40.
- Khalil, E. 1997:** Ocean arc to continental margin volcanics sequence of the Pan – African Precambrian belt, Egypt: "Geochemical Approach". Egypt. J. Geol. Vol. 41/2B, 477 – 528.
- Kleeman, A. W. 1965:** the origin of granitic magmes. J. Geol. Soc. Australia, Vol. 12, 35 – 52.
- Kroner, A.; Greilling, R.; Reichmann, T.; Hussein, I. M., Stern, R. J.; Durr, S.; Kruger, J. and Zimmer, M. 1987:** Pan – African crustal evolution in the Nubian Segment of northern Africa. Am. Geophy. Union. Geodynamic Series, Vol.. 17, 235 – 257.
- Kroner, A.; Reichmann, T.; Wust, H. J. and Rashwan, A. A. 1988:** Is there any pre – Pan African (> 950 Ma) basement in the Eastern Desert of Egypt? In: S. El Gaby and R. O. Greilling (eds.): The Pan African of northeast Africa and adjacent areas, Frieder, Vieweg & Shon, Braunschweig, 95 – 119.
- Le Maitre, R. W. 1989:** Classification of igneous rocks and Glossary of terms. Black well Sci. Pub. London. 193p.

- Lowell, J. D. 1990:** Structural styles in petroleum exploration, OGCI Publications, 3rd ed., Tulsa, 470p.
- Maniar, P. D. and Piccoli, P. M. 1989:** Tectonic discrimination of granitoids. *Geol. Soc. Am. Bull.* Vol. 101, 635 – 643.
- Mansour, S.; Hamimi, Z. and El Amawy, M.A. 1998:** Geology and structural evolution of Bir Haimur area, South eastern Desert, Egypt. *Ann. Geol. Surv.*, Egypt, Vol. 21, 395-409.
- Meschade, M. 1986:** A method of discriminating between different types of mid ocean ridge basalts and continental tholeiites with the Nb – Zr – Y diagram. *Chem. Geol.* Vol. 56, 207 – 218.
- Middlemost, E. A. K. 1985:** *Magmas and Magmatic Rocks.* Longman, London. 266p.
- Miyashiro, A. 1973:** *Metamorphism and metamorphic belts.* Allen and Unwin, London. 492p.
- Miyashiro, A. 1974:** Volcanic rock series in island arcs and active continental margins. *Am. J. Sci.* Vol. 247, 321 – 355.
- Miyashiro, A. 1978:** Nature of alkalic volcanic rock series. *Contrib. Mineral. Petro.* Vol. 66, 91 – 104.
- Nasr, B. B. and El Sherbini, H. 2001:** Tectonic setting of Gabal Kilkabob alkaline granite, south eastern desert, Egypt. *Ann. Geol. Surv. Egypt*, Vol. XXIV, 115 – 129.
- Nawab, Z. A. H. 1978:** Evolution of the Al Ahmar – Ids as region of the Arabian Shield. Kingdom of Saudi Arabia. Ph. D. thesis, Univ. Western Ontario, London, Canada, 172p.
- Nokolds S. R. and Allen, R. 1953:** The geochemistry of some igneous rocks series. Part 1. *Geochem. Acta* Vol. 4, 105 – 142.
- Noweir, A.M.; El Amawy, M.A.; Rashwan A.A. and Abdel Aziz, A.M. 1996:** Geology and structural evolution of the Pan African basement rocks around Wadi Umm Araka, Northeast Wadi Allaqi, South Eastern Desert, Egypt. *Egypt. J. Geol.*, Vol. 40/2, 477 – 512.

- O'Connor, J. I. 1965:** A classification for quartz rich igneous rocks based on feldspar ratios. U. S. Geol. Surv. Prof. Paper 525- B, 79 – 84.
- Pearce, J. A. 1975:** Basalt Geochemistry used to investigate post tectonic environments in Cyprus. *Tectonophysics*, Vol. 25, 41 – 67.
- Pearce, J. A. 1982:** Trace element characteristics of lava from destructive plate boundaries In: *Andesites and Related Rocks*. R. S. Thorp (Ed.) J. Wiley and Sons. London. 525 – 548.
- Pearce, J. A. and Cann, J. R. 1973:** Tectonic setting of basic volcanic rocks determined using trace element analyses. *Earth Planet. Sci.* Vol. 19, 290 – 300.
- Pearce, J. A. and Gale, G. H. 1977:** Identification of ore deposition environment from trace element geochemistry of associated igneous rocks. In *volcanic processes in ore genesis*. Inst. Of Min. metal. And Geol. Sec. Of London. London, 14 – 25.
- Pearce, J. A. and Morry, M. J. 1979:** Petrogenetic implications of Ti, Zr, Y and Nb variation in volcanic rocks. *Contrib. Miner. Petr.* Vol. 69, 33 – 47.
- Pearce, J. A.; Gorman, B. E. and Birkett, T. C. 1977:** The relationship between major elements chemistry and tectonic environment of basic and intermediate volcanic rocks. *Earth Planet. Sci. Lett.* Vol. 36, 121 – 132.
- Pearce, J. A.; Harris, N. B. W. and Tindle, A. G. 1984:** Trace element discrimination diagrams for the tectonic interpretation of granite rocks. *J. Petrol.* Vol. 25, 956 – 983.
- Petro, W. L.; Vogel, T. A. and Wilband, J. T. 1979:** Major element chemistry of plutonic rock suites from compressional and extensional plate boundaries. *Chem. Geol.* Vol. 26, 217 – 235.
- Ragab, A. I. And El Alfy, Z. 1996:** Arc – arc collision model and its implication on a proposed classification of the Pan – African rocks of the Eastern Desert of Egypt. *M. E. R. C. Ain Shams Univ. Earth Sci. Ser.* 10, 89 – 101.
- Raguin, E. 1965:** *Geology of granite*. Interscience Pub. 1. 20p.

- Ramsay, C. R.; Abdul – Hay, G.; Al Tayyar. J.; Bokhari, M.; Safdar, H. and Sahl, M. 1981:** Geology and mineral potential of the granites of northwest Higaz, intern. Report. No. 3: types, distribution and correlation of northern Midyan granites. Saudi Arabian Deputy Ministry for mineral resources Open-file report DGMR -OF- 01 - 3.
- Rashwan, A. A. 1991:** Petrography, Geochemistry and petrogenesis of the Migif – Hafafit Gneisses at Hafafit mine area, Egypt. Forschungszentrum Julich GmbH, Scientific series of the international Bureau. Vol. 5. (German – Egyptian cooperation).
- Ressetar, R. and Monrad, J. R. 1983:** Chemical composition and tectonic setting of the Dokhan volcanic formation, Eastern Desert, Egypt. J. of Afr. Earth Sci. Vol. 1, No. 2, 103 – 112.
- Ries, A. C.; Shackleton, R. M.; Graham, R. H. and Fitches, W. R. 1983:** Pan – African structures ophiolites and melange in the Eastern Desert of Egypt, a traverse at 26°N. J. Geol. Soc. London. Vol. 140, 75 – 95.
- Sabet, A. H. 1972:** On the stratigraphy of the basement rocks of Egypt. Ann. Geol. Surv. Egypt. Vol. II, 79 – 102.
- Sabet, A. H.; El Gaby, S.; Zalata, A. A. 1972:** Geology of the basement rocks in the northern part of El Shayib and Safaga sheets, Eastern Desert. Ann. Geol. Surv. Egypt. Vol. II, 111 – 128.
- Sadek. M. F. 1995:** Geology, geochemistry and structure of Gabal Muqsim area and environs, South Eastern Desert, Egypt. German-Egyptian cooperation in scientific research and technological development. Scientific series of the international Bureau / Forschungszentrum Jolich GmbH, Vol. 32, 280p.
- Schurmann, H. M. E. 1953:** The Precambrian of the Gulf of Suez area. 19th internat. Geol. Cong. Algeria, C. R. Sect. 1, Fasc. 1, 115 – 135.
- Schurmann, H. M. E. 1955:** The Precambrian history of the Gulf of Suez area. Bull. De la Science de Geographi – d' Egypte. XXVIII, Cairo.
- Schurmann, H. M. E. 1961:** The Riphean of the Red Sea area. Sartryckur geologouska foreningens for handling as Bd. 83, H. 2, 109 – 128.

- Shackleton, R. M.; Ries, A. C.; Graham, R. H. and Fitches, W. R. 1980:** Late Precambrian ophiolitic melange in the E. D. of Egypt. *Nature*, Vol. 285, 472 – 474.
- Shapiro, L. 1975:** Rapid analysis of silicate, carbonate and phosphate rocks. *Bull. U. S. Geol. Surv. Washington, D. C.*, Vol. 20402, 70p.
- Shervais, J. W. 1982:** Ti – V plots and the petrogenesis of modern and phiolitic lavas. *Earth Planet. Sci. Lett.* Vol. 59, 101 – 181.
- Silvester, A. G. and Smith, R. R. 1976:** Tectonic transpression and basement controlled deformaton in San Andreas Zone, Salton trough., California. *Am. Assoc. Petro. Geol. Bull.* Vol. 60, 2081 – 2102.
- Stern, R. J. 1981:** Petrogenesis and tectonic setting of late Precambrian ensimatic volcanic rocks, SED of Egypt. *Precamb. Res.* Vol. 16, 195 – 230.
- Stern, R. J. and Hedge, E. C. 1985:** Geochronologic and isotopic constraints on late Precambrian crustal evolusion in the E. D. of Egypt. *Am J. Sci.* Vol. 285, 97 – 127.
- Stern, R. J.; Kroner, A.; Manton, W. I.; Reischmann, T.; Mansour, M. and Hussein, I. M. 1989:** Geochronology of the late Precambrian Hamisana Shear Zone, Red Sea Hills, Sudan and Egypt. *J. Geol. Soc. London.* Vol. 146, 1017 – 1029.
- Takala, M. A.; El Sharkawy, M. A. and Basta, F. F. 1982:** Petrology of the basement rocks of Gebel Mohagara – Ghadir area, Eastern Desert, Egypt *Ann. Geol. Surv. Egypt.* Vol. 12, 121 – 140.
- Takla, M. A. and Noweir, A. M. 1980:** Mineralogy and mineral chemistry of the ultramafic mass of El Rubshi, Eastern Desert Desert, Egypt. *N. Jbh.* Vol. 140, 17 – 28.
- Takla, M. A.; Bakhit, F. S.; Afandy, A. H.; Mansy, M. M. and Arbab, A. 2001:** The geology, geochemistry and radioactivity of the basement rocks of Gabal El-Umrah area, Eastern Desert, Egypt. *Egypt. J. Geol.* Vol. 45/1A, 213 – 237.
- Takla, M. A.; Basta, E. Z. and Fawzi, E. 1981:** Characterization of the older and younger gabbros of Egypt. *Delta J. Sci.* Vol. 5, 279 – 314.

- Takla, M. A.; Noweir, A. M.; Ghoneim, M. and Aly, S. M. 1975:** Ore mineralogy of the serpentinites Bir El Kubbania Um Khors area, Egypt. *Ghem. Erde Bd.* Vol. 34, H. 3, S, 244 – 250.
- Turner, F. J. and Weiss, L. E. 1963:** Structural analysis of metamorphic tectonics. Mc Graw – Hill Book Company. Inc., New York, 515p.
- Tuttle, O. F. and Bowen, N. L. 1958:** Origin of the granite in the light of experimental studies in the system $\text{Na Al Si}_3\text{O}_8 - \text{K Al Si}_3\text{O}_8 - \text{Si}_2\text{O}_8 - \text{SiO}_2 - \text{H}_2\text{O}$. *Mem. Geol. Soc. Amer.* Vol. 74, 1 – 153.
- Wetait, M. A. 2001:** Geology, geochemistry and tectonic setting of Wadi Abu Had area, South Eastern Desert, Egypt. *Egyptian J. of Geol.* Vol. 45/1, 89 – 106.
- Whalen, J. B.; Currie, K. L. and Chappell, B. W. 1987:** A- type granites: Geochemical characteristics, discrimination and petrogenesis. *Contrib. Mineral. Petrol.* Vol. 95, 407 – 419.
- White, A. J. and Chappell, B. W. 1983:** Granitoid types and their distribution in the Lachlan Fold Belt, south eastern Australia. In: J. A. Roddick (Editor), *Circum – Pacific Plutonic Terranes*. *Geol. Soc. Am. Mem.* Vol. 159, 21 – 34.
- Willcox, R. E.; Harding, T. P. and Seely, D. R. 1977:** Basic wrench tectonics. *Am. Assoc. Petro. Geol. Bull.* Vol. 57, 74 – 96.
- Willson, M. 1989:** Igneous petrogenesis. Academic Division of Unwin. Hyman Ltd. London, 466p.
- Winchester, J. A. and Floyd, P. A. 1977:** Geochemical discrimination of different magma series and their differentiation products using immobile elements. *Chem. Geol.* Vol. 20, 325 – 343.
- Winkler, H. G. F. 1976:** Petrogenesis of metamorphic Rocks. Springer Verlag. 334p.