

Ancyrospora ampulla Owens, 1971

Plate 1, Fig. 8

Occurrence: This species is very rare and confined to samples of the upper portion of the Devonian in section number two of the Faraghan formation at Tang-e-Zakin, Kuh-e-Faraghan.

Age: From the Frasnian of Arctic Canada (Whiteley, 1980), the Givetian of South Africa (Stapleton, 1977b), and the Frasnian of Canada (Owens, 1971).

Ancyrospora ancyrea (Eisenack) Richardson, 1962

Plate 1, Fig. 9

Occurrence: This species is rare and restricted to samples from the upper portion of the Devonian in section number two of the Faraghan formation.

Age: From the Emsian-Eifelian of Eastern Gaspe, Canada (McGregor, 1973), the Middle Devonian of Britain (Richardson, 1960, 1962), the Givetian of France (Lobozaik and Streef, 1980), the Givetian of South Africa (Stapleton, 1977b), the Upper Devonian of the United States (Von Almen, 1970; Eames, 1974; Wood, 1978) and the Frasnian of Saudi Arabia (Hemer and Nygreen, 1967).

Ancyrospora grandispinosa Richardson, 1960

Plate 2, Fig. 1

Occurrence: This species is very rare, and, like other species of the genus *Ancyrospora*, is confined to the samples from the Upper portion of the Devonian in section number two of the Faraghan formation.

Age: From the Middle Devonian of Britain (Richardson, 1962), and the Emsian-Early Eifelian of Canada (McGregor and Owens, 1966).

Ancyrospora magnifica Owens, 1971

Plate 2, Fig. 4

Occurrence: The species is very rare and restricted to samples from the upper portion of the Devonian in section number two of the Faraghan formation.

Age: The Frasnian of Canada (Owens, 1971).

Ancyrospora langii (Taugourdeau-Lantz) Allen, 1965

Plate 2, Fig. 2

Remarks: This species is common in the Padeha formation and rare in the Khoshyeilagh formation of Kuh-e-Ozom. So far, it has been recorded from Early Frasnian of western Australia, Givetian-Frasnian of France (Loboziak & Streeel, 1981), and Upper Devonian of northern Iran (Kimyai, 1972).

Ancyrospora capillata Dolby and Neves, 1970

Plate 1, Fig. 10

Remarks: This species is rare in both Devonian rock units of Kuh-e-Ozom. So far, it has been recorded from Late Devonian-Early Carboniferous strata of south Ireland (Van der Zwan, 1980).

Genus *Apiculiretusispora* (Streeel) Streeel, 1967*Apiculiretusispora granulata* Owens, 1971

Plate 2, Fig. 8

Occurrence: This species occurs in both sections of the Faraghan Formation, but it is rare in section number one and abundant in section number two.

Age: From the Upper Devonian of Canada (Owens, 1971).

Apiculiretusispra leberidos McGregor, 1982

Plate 2, Fig. 7

Remarks: This species is very rare and confined to the Padeha formation. The specimens of this species are circular to subcircular shape with a distinctive curvaturae which connects the end of laesura. The exine of species is granulate or coni-verrucae with a thickened triangular in the polar view. The encountered species is somehow, similar to the *Apiculiretusispora granulata*, but it differs from the above- mentioned spore species in small size and less concentration of ornaments it exoexine.

Genus *Apiculatisporites* Potonie & Kremp, 1956

***Apiculatisporites adavalensis* De Jersey, 1966**

Plate 2, Fig. 6

Remarks: The specimens of this species are found, only in the upper part of the Padeha formation in Kuh-e-Ozom. So far, it has been known from Lower Frasnian of western Australia (Balme, 1988; De Jersey, 1966).

Genus *Auroraspora* (Hoffmeister, Staplin & Malloy)

emend. Richardson, 1960

***Auroraspora macromanifestus* (Hacquebard)**

emend. Richardson, 1960

Plate 3, Fig. 5

Occurrence: This species is very rare and restricted to a few samples of section number one of Kuh-e-Faraghan.

Age: From the Eifelian-Givetian of north-east Scotland (Richardson, 1960), the Givetian and Frasnian of Arctic Canada (Whiteley, 1980), and the Givetian to Famennian of Canada (Chi and Hills, 1976).

***Auroraspora aurora* Richardson, 1960**

Plate 3, Fig. 4

Occurrence: This species is very rare and confined to a few samples in section number one of the Faraghan formation.

Age: From the Eifelian-Givetian of north-east Scotland (Richardson, 1960).

Genus *Bullatisporites* Allen, 1965

***Bullatisporites bullatus* Allen 1965**

Plate 3, Fig. 9

Occurrence: this species occurs in middle portion of the Devonian in both sections of

Kuh-e-Faraghan and it is very rare in section number one and rare in section two.

Age: From the Siegenian-Eifelian of north and central Vestspitsbergen (Allen, 1965), the Woodford formation of the United States (Von Almen, 1970), the Givetian of South Africa (Stapleton, 1977), the Emsian-Eifelian of West Germany (Riegel, 1973) and the Givetian-Lower Frasnian of France (Loboziak and Streef, 1980).

Genus *Calamospora* Schopf, Wilson & Bentall, 1944

***Calamospora pannucea* Richardson, 1965**

Plate 3, Figs. 11-12

Remarks: This species is rare in the Geirud formation of Hassanakdar area and is similar to those have2 been recorded from Upper Devonian of Australia. So far, it has been recorded from Middle Devonian of England (Richardson, 1965), Early Devonian of Canada (McGregor 1973, 1977), Upper Devonian-Lower Carboniferous of the U.S.A (Eames, 1974), Frasnian of western Australia (Balme, 1988), and Frasnian of Faraghan Formtion in Zagros Basin of Iran (Ghavidel-syooki, 1988).

Genus *Calamospora* Schopf, Wilson & Bentall, 1944

***Calamospora microrugosa* (Ibrahim) Schopf,**

Wilson and Bentall, 1944

Plate 3, Fig. 10

Occurrence: This species is very rare and only found in the Lower Permian of the Chal-i-Sheh area.

Age: The Lower-Upper Permian of Australia (Segroves, 1970), the Uppermost Carboniferous-Lower Permian of Germany (Helby, 1966), and the Early Permian of Turkey (Akyol, 1975).

Genus *Calyptosporites* Richardson, 1962***Calyptosporites velatus* (Eisenack) Richardson, 1962****Plate 4, Fig. 3**

Occurrence: This species is common throughout both sections of the Faraghan formation.

Age: From the Middle Devonian of Britain (Richardson, 1962, 1964), the Frasnian of Saudi Arabia (Hemer and Nygreen, 1967), the Emsian-Early Eifelian of Canada (McGregor and Owens, 1966), the Middle Devonian of Canada.

Calyptosporites proximocavatus* Balme, 1988*Plate 4, Fig. 1**

Remarks: This species is common in the Geirud formation of Hassanakdar area and it is similar to those have been recorded from Upper Devonian of Australia. So far, it has been known from Late Devonian (Frasnian) of Carnarvon Basin, western Australia (Balme, 1988).

Calyptosporites stolidotus* Balme, 1988*Plate 4, Fig. 2**

Remarks: This species is common in the Geirud formation and it is quite similar to those have been reported from Late Devonian of Carnarvon Basin, western Australia (Balme, 1988). So far, this species has known from Frasnian sediments of Carnarvon Basin, western Australia (Balme, 1988), Khoshyeilagh and Padeha formations, eastern Alborz of Iran (Ghavidel-syooki, 1991)

Genus *Camarozonotriletes* (Naumova) Ishchenko, 1952***Camarozonotriletes laevigatus* McGregor & Camfield, 1982****Plate 4, Fig. 4**

Remarks: This species occurs in the member "b" of the Padeha formation in

Kuh-e-Ozom So far, it has been recorded from Middle Devonian of Canada (McGregor & Camfield, 1982).

Camarozonotriletes parvus Owens, 1971

Plate 4, Fig. 5

Remarks: This species is also found in the member "b" of the Padeha formation, in Kuh-e-Ozom. So far it has been known from Middle Devonian of Canada (McGregor & Camfield, 1982).

Genus *Chelinospora* Allen, 1965

Chelinospora concinna Allen, 1965

Plate 16, Fig. 1

Occurrence: This species is rare in both sections of the Faraghan formation and its occurrence is confined to the lower portion of the Devonian in the study sections.

Age: From the Givetian of Spitsbergen (Allen, 1965), the Givetian-Frasnian Boulonnias of France (Loboziak and Streel, 1980, 1981).

Genus *Cyclogranisporites* Potonie & Kremp, 1954

Cyclogranisporites rotundus (Naumova) Allen, 1965

Plate 5, Fig. 2

Occurrence: This species is very rare and its occurrence confined to a few samples in the Devonian portion of the Faraghan formation.

Age: From the Givetian of Spitsbergen (Allen, 1965).

Cyclogranisporites isosticus Balme, 1988

Plate 5, Fig. 1

Remarks: This spores species is common in the Geirud formation and it is quite

similar to those have been recorded from Frasnian sediments of western Australia. So far, it has known from Late Devonian of western Australia (Balme, 1988), Upper Devonian sediments of Padeha and Khoshyeilagh formations of eastern Alborz (Ghavidel-syooki, 1991).

Genus *Cymbosporites* Allen, 1965

***Cymbosporites catillus* Allen, 1965**

Plate 6, Fig. 1

Occurrence: This species is rare in section number one and very rare in section two of the Faraghan formation.

Age : From the Givetian Spitsbergen (Allen, 1965), the Gedinnian of Scotland (Richardson, et al., 1984) and the Givetian-Lower Frasnian Boulonnais of France (Loboziak and Streel, 1980).

***Cymbosporites cyathus* Allen, 1965**

Plate 6, Fig. 2

Remarks: This species occurs in the Padeha formation of the study area. So far, it has known from The Givetian of Spitsbergen (Allen, 1965), Givetian -Lower Frasnian of France (Loboziak & Streel, 1980), and Middle Devonian of China (Lianda, 1981).

***Cymbosporites hormiscoides* Balme, 1988**

Plate 6, Fig. 3

Remarks: The specimens of this species are found in the Padeha formation of Kuh-e-Ozom and it is very rare. So far, it has been recorded from Early Frasnian of western Australia (Balme, 1988).

Genus *Densosporites* (Berry 1937) Potonie & Kremp, 1954***Densosporites devonicus* Richardson, 1960**

Plate 6, Fig. 8

Occurrence: This species is very rare in both sections and confined to few samples in the Devonian portion of the Faraghan formation.

Age: From the Middle Devonian of Britain (Richardson, 1960, 1965), the Emsian-Eifelian of West Germany (Riegel, 1973), the Lower-Middle Devonian of Vestspitsbergen (Allen, 1965) and the Middle Devonian of Canada (McGregor and Camfield, 1982).

Genus *Dibolisporites* Richardson, 1965***Dibolisporites eifeliensis* (Lanninger) McGregor, 1973**

Plate 6, Fig. 9

Occurrence: This species is common in section number one and abundant in section number two of the Faraghan formation.

Age: From the Emsian-Eifelian of eastern Gaspé of Canada (McGregor, 1973), the Lower-Middle Devonian of Poland (Turnau, 1986) and the Early Devonian of central Ellesmere Island, Canadian Arctic (McGregor, 1974).

***Dibolisporites turriculatus* Balme, 1988**

Plate 6, Fig. 10

Remarks: This species is common in the Geirud formation. So far, it has been recorded from Late Devonian Carnarvon Basin of western Australia (Balme, 1988), and Upper Devonian sediments of Padeha and Khoshyeilagh formations, northeastern Iran (Ghavidel-syooki, 1991).

Genus *Dictyotriletes* (Naumova, 1937) Smith & Butherworth, 1967
Dictyotriletes sphaericus Kimyai, 1979

Plate 6, Fig. 15

Remarks: This spore species is common in the Geirud formation. So far, it has been known from Upper Devonian of northern Iran (Kimyai, 1979), Upper Devonian Ohio of the U.S.A (Molineux et al, 1984), Lower-Middle Devonian of Poland (Turnau, 1986), Emsian-Frasnian of Tunisia and Liyba (Loboziak & Streeel, 1989), Early Frasnian of western Australia (Balme, 1988), and Devonian deposits of Faraghan formation, southeastern Iran (Ghavidel-syooki, 1988).

Genus *Diducites* (Kedo) Van Veen 1981
Diducites mucronatus (Kedo) Van Veen, 1981

Plate 7, Fig. 1

Remarks: This species is rare and present in the Geirud formation. So far, it has been reported from Late Devonian-Early Carboniferous strata of southern Ireland (Van Veen, 1981).

Genus *Emphanisporites* McGregor, 1961
Emphanisporites annulatus McGregor, 1961

Plate 7, Fig. 10

Occurrence: The species is very rare and confined to a few samples of the Devonian portion of both sections of the Faraghan formation, in Tang-e-Zakin, Kuh-e-Faraghan.

Age: From the Emsian-Eifelian of eastern Gaspe of Canada (McGregor and Owens, 1966; McGregor, 1973), Eifelian of west Germany (Riegel, 1973), the Lower-Middle Devonian of Poland (Turnau, 1986), the Lower Devonian of Belgium (Streeel, 1967), the Late Devonian - Early Carboniferous of South Ireland (Clayton et al., 1977).

Emphanisporites rotatus McGregor, 1960

Plate 7, Figs. 13-14

Remarks: In the study area, it is present throughout of the Padeha Formation. So far, it has been recorded from Lower and Middle Devonian of Canada (McGregor, 1961), Emsian-Eifelian of Canaa (McGregor & Owens, 1966; McGregor, 1973), Lower and Middle Devonian of Spitsbergen (Allen, 1965), Lower Devonian of Belgium (Streel, 1967), Frasnian of Saudi Arabia (Hemer & Nygreen, 1967), Lower & Upper Devonian of the U.S.A. (Von Almen, 1970), Lower Devonian of Antarctica (Kremp, 1972), Silurian of Libya (Richardson & Ioannides, 1973), Upper Devonian-Lower Carboniferous of Algerian Sahara (Lanzoni & Magloire, 1969), Late Devonian and Early Carboniferous of Irish Republic (Clayton et al., 1977), Upper Devonian of Ohio, the U.S.A. (Molyneux et al., 1984), Lower Devonian of Poland (Turnau, 1986), Devonian rock units of Khoshyeilagh area, northern Iran.

Emphanisporites erraticus (Eisenack) McGregor, 1961

Plate 7, Fig. 11

Occurrence: The species is common in a few samples of the Devonian portion Faraghan formation, in Kuh-e-Faraghan.

Age: From the Emsian-Eifelian of eastern Gaspé Canada (McGregor, 1973), the Lower-Middle Devonian of Poland (Turnau, 1986), and the Emsian of eastern and north Canada (McGregor and Owens, 1966).

Emphanisporites orbicularis Turnau, 1986

Plate 7, Fig. 12

Occurrence: This species is very rare in both sections of Kuh-e-Faraghan and appears at higher stratigraphic levels (Younger sediments) in comparison with other species of the genus *Emphanisporites*.

Age: From the Lower-Middle Devonian of Poland (Turnau, 1986).

Emphanisporites sp.

Plate 16, Fig. 8

Description: Trilete spores with proximal ridges aligned parallel to one another; ridges extend from equator to the margin of commissure and from a "herring-bone" pattern; trilete mark distinct, equal to the radius of the spore; diameter $48-50\mu$ m. Forms similar to this morphotype have been reported from the Devonian of Canada (McGregor, 1961, Plate 1, Fig. 10).

Occurrence: This morphotype is very rare in both sections of the Devonian portion of Faraghan formation (See, Table 2, 5).

Genus *Geminospora* Balme, 1962*Geminospora antaxios* (Chibrikova) Owens, 1971

Plate 8, Fig. 1

Occurrence: This species is very rare in both study sections and confined to few samples from the Devonian portion of the Faraghan formation.

Age: From the Middle and early Upper Devonian of Canada (Owens, 1971).

Geminospora lemurata Balme, 1962

Plate 8, Fig. 2

Occurrence: Abundant in section number one and common in section number two of the Faraghan.

Age: From the Middle and Early Upper Devonian of Canada (Owens, 1971), the Frasnian of western Australia (Balme, 1962), the Frasnian of Poland (Turnau, 1986), the Frasnian-Famennian of France (Loboziak and StreeL, 1980, 1981), the Frasnian of the United States (von Almen, 1970), the Frasnian of Saudi Arabia (Hemer and Nygreen, 1967) and the Frasnian of Canada (McGregor and Owens, 1966).

***Geminospora micropaxilla* (Owens) McGregor and Camfield, 1982**

Plate 8, Fig. 3

Occurrence: This species is rare in both study sections of the Faraghan formation.

Age: From the Middle Devonian of Canada (McGregor, 1982).

***Geminospora punctata* Owens, 1971**

Plate 8, Fig. 4

Occurrence: this species is very rare in section number one and rare in section number two of The Faraghan Farmation in Tang-e-Zakin, Kuh-e-Faraghan.

Genus *Gneudnaspota* Balme, 198***Gneudnaspota kernickii* Balme, 1988.**

Plate 8, Fig. 7

Remarks: This species appears, only in the Padeha formation. of Kuh-e-Ozom. So far, it has been recorded from Early Frasnian of western Australia (Balme, 1988).

Genus *Grandispota* (Hoffmeister, Staplin & Mollay)

Neves and Owens, 1966

***Grandispota fibrilabrata* Balme, 1988**

Plate 8, Figs. 16-17

Remarks: This species is common in the Padeha formation and it is rare in the Khoshyeilagh formation of study areas. So far, it has known from Frasnian of western Australia (Balme, 1988).

***Grandispota megista* Balme, 1988**

Plate 9, Fig. 5

Remarks: This species is common only in the Padeha formation of Kuh-e-Ozom. So far, it has been recorded from Early Frasnian of western Australia (Balme,

1988), Frasnian of Hassanakdar area, northern Iran (Ghavidel-syooki, 1992), and the Devonian rock units of Khoshyeilagh area (Ghavidel-syooki, 1992).

***Grandispora douglastownense* McGregor, 1973**

Plate 9, Fig. 1

Occurrence: This species is rare in section number one, and very rare in section two of The Faraghan formation.

Age: From the Lower and Middle Devonian of eastern Gape Canada (McGregor, 1973), the Middle Devonian of Canada (McGregor, 1982), the Givetian-Frasnian of France (Loboziak and Streef, 1980), and the Late - Early middle Devonian (Van der Zwan, 1980).

***Grandispora longus* Chi & Hills, 1976**

Plate 9, Fig. 2

Occurrence: This species is rare in section number one (1.9%), and very rare (0.7%) in section number two of The Faraghan formation.

Age: From the Middle Devonian of Canada (McGregor, 1982), and the Middle Devonian of Arctic Canada (Chi and Hills, 1976).

***Grandispora macrotuberculata* McGregor, 1973**

Plate 9, Figs. 3-4

Occurrence: This species is rare in section number one and very rare in section two Of The Faraghan formation

Age: From the Lower-Middle Devonian of eastern Gape Canada (McGregor, 1973).

***Grandispora* sp.**

Plate 16, Fig. 12

Description: Subcircular to rounded triangular; exine is cavate with exoexine enclosing a fairly thin intexine; trilete mark distinct, extending to the margin of

the intexine. This species is similar to *Grandispora* sp. A of Segroves (1970), but the Faraghan specimens have straight laesura arms and smaller size than Australian forms.

Genus *Gulisporites* Imgrund, 1960

***Gulisporites cochlearius* Imgrund, 1960**

Plate 16, Fig. 11

Description: The specimens are similar to those which described by Akyol (1975) from Lower Permian sediment of Turkey.

Occurrence: This species is very rare (3 specimens) and it is confined to the Early Permian of Chal-i-Sheh area.

Age: Early Permian of Turkey (Akyol, 1975) and the Upper Carboniferous of Germany and Illinois (Imgrund, 1960).

Genus *Horriditriletes* Bharadwaj & Salujha, 1964

***Horriditriletes ramosus* (Balme & Hennelly)**

Plate 17, Figs. 2-3

Description: The specimens are in agreement with those described and illustrated from both Australia and India. However, some specimens of Faraghan formation have larger spines than those of Australia and India.

Occurrence: This species is rare in the Early Permian of both Faraghan and Chal-i-Sheh areas.

Age: From the Lower Permian of the Congo (Maheshwari, 1969), the Middle-Upper Permian of Australia (Segroves, 1970), and the Early Permian of Southwest of Africa (Stapleton, 1977).

Genus *Hymenozonotriletes* Naumova, 1953

***Hymenozonotriletes explanatus* (Luber) Kedo, 1963**

Plate 9, Fig. 9

Remarks: This species appears in the Khoshyeilagh formation. So far, it has been recorded from Late Devonian-Lower Carboniferous of Irish Republic (Higgs, 1975).

Genus *Hystricosporites* McGregor, 1960

***Hystricosporites corystus* Richardson, 1962**

Plate 9, Fig. 10

Occurrence: This species is rare and confined to the upper portion of the Devonian section number two of the Faraghan formation.

Age: From the Givetian-Frasnian of Britain (Richardson, 1962), the Givetian-Lower Frasnian Boulonnais of France (Loboziak & Streel, 1980, 1981), the Frasnian of Saudi Arabia (Hemer and Nygreen, 1967), and the Lower-Middle Devonian of Vestspitsbergen (Allen, 1965).

***Hystricosporites furcatus* Owens, 1971**

Plate 9, Fig. 11

Remarks: This species is only found in the Geirud formation of the Hassanakdar area and is rare. So far it has been reported, from Frasnian of Canada (Owens, 1971), and Late Givetian-Frasnian Arctic of Canada (Chi & Hills, 1976).

***Hystricosporites porrectus* (Balme, & Hassel) Allen, 1965**

Plate 9, Fig. 12

Remarks: This species is rare and found, only in one sample of the Padeha formation. So far, it has been recorded from Early Frasnian of western Australia (Balme & Hassel, 1962), Givetian-Frasnian of England (Evans, 1968; Martin & Chaloner, 1972) and Upper Devonian of northern Iran (Kinyai, 1972).

Genus *Kraeuselisporites* Leschik, emend. Jonsonius, 1962

***Kraeuselisporites splendens* (Balme & Hennelly) Segroves, 1970**

Plate 17, Fig. 4

Occurrence: This species is abundant and confined to the Lower Permian Faraghan formation at The Chal-i-Sheh area.

Age: From the Lower Permian of Australia (Segroves, 1970), and the Early Permian of Bolivia (Cousminer, 1965).

Genus *Laevigatosporites* Ibrahim emended by Schopf,

Wilson & Bentall, 1944

***Laevigatosporites vulgaris* Ibrahim, 1933**

Plate 10, Fig. 1

Description: The specimens conform to description of Ibrahim (1933), and their morphology are similar to *Laevigatosporites vulgaris* reported from Turkey (Akyol, 1975).

Genus *Lagenicula* (Bennie & Kidston) Potonie & Kremp, 1954

***Lagenicula minutus* Kimyai, 1979**

Plate 10, Fig. 2

Remarks: This species is common in the Geirud formation. So far, it has been known from Upper Devonian strata of Central and North-eastern Alborz-Mountain Ranges (Kimyai, 1979; Ghavidel-syooki, 1991).

Genus *Leiotriletes* Naumova, 1937

emend. by Potonie & Kremp, 1954

***Leiotriletes* sp.**

Plate 17, Fig. 1

Description: Rounded triangular, 40-45 μm , convex interapical; trilete mark distinct,

$2/3$ spore radius in length, never reaching apices; exine thin, infrapunctate. This species is similar to *Leiotriletes* sp. of the Early Permian of Southwest Africa (Stapleton, 1977, Plate 1, Fig. 5)

Occurrence: This species is found in both the Faraghan and Chal-i-Sheh areas, but it is common in the Chal-i-Sheh and very rare in the Lower Permian of Faraghan areas.

Genus *Punctatisporites* (Ibrahim 1933)

emend. Potonie & Kremp, 1954

***Punctatisporites gretensis* Balme & Hennelly 1956b**

Plate 18, Fig. 3

Occurrence: This species is common in the Lower Permian samples of Faraghan formation in the Chal-i-Sheh area, but it is rare and poorly preserved in the Lower Permian part of the Faraghan area.

Age: From the Early Permian of Turkey (Akyol, 1975), the Early Permian of Southwest Africa (Stapleton, 1977), the Early Permian Perth Basin of Australia (Segroves, 1970), the Early Permian of Gabon (Jardine, 1974), the Permian of Australia (Balme & Hennelly, 1954, 1955), the Lower Permian of Tanganyika (Hart, 1963), the Lower Permian of Congo (Bose & Maheshwari, 1968), the Lower Permian of Brazil (Tiwari & Navale, 1967), the Lower Permian of India (Tiwari, 1967) and the Lower-Upper Permian of northeastern Iran (Chataeuneuf and Stampfli, 1979).

Genus *Raistrickia* (Schopf, Wilson, & Bentall)

Potonie & Kremp, 1954

***Raistrickia aratra* Allen, 1965**

Plate 11, Fig. 10

Remarks: This species appears throughout of the Padeha, Khoshyeilagh and

Faraghan formations. The relative frequency of this species reduces from Padeha formation into the Khoshyeilagh formation. So far, it has been recorded from Late Givetian of Vestspitsbergen (Allen, 1965), and Late Givetian and Lower Frasnian of the Faraghan formation southeastern Iran (Ghavidel-syooki, 1988).

Genus *Retispora* Staplin, 1960

***Retispora lepidophyta* (Kedo) Playford, 1976**

Plate 11, Fig. 11

Remarks: This species is found in both Devonian rock units of the Khoshyeilagh area. So far, it has been recorded from Late Famennian-Early Carboniferous of Canada (McGregor, 1970; Winslow, 1962) Upper Devonian of Russia (Kedo, 1957), Late Devonian -Lower Carboniferous of Irish Republic (Calyton et al., 1977), Frasnian -Famennian of Poland (Turnau, 1978), Upper Devonian-Lower Carboniferous of western Australia (Playford, 1976), Upper Devonian- Lower Carboniferous of Irish Republic (Van Veen, 1981) Upper Devonian of Khoshyeilagh formation (Coquel et al., 1977), Late Devonian-Lower Carboniferous of Algeria (Lanzoni & Magloire, 1969), Frasnian of Faraghan formation, southeastern Iran (Ghavidel-syooki, 1988).

Genus *Retusotriletes* (Naumova) Richardson, 1965

***Retusotriletes avonensis* Playford, 1964**

Plate 11, Fig. 12

Remarks: This species is rare and present in the Geirud formation. So far, it has been known from Frasnian of Central Alborz (Kimyai, 1979), and Mississippian sediments of Horton Group (Playford, 1964).

Retusotriletes distinctus Richardson, 1965

Plate 12, Fig. 1

Remarks: This morphotype species is common in the Geirud formation. So far, it has been reported from Middle Devonian of England (Richardson, 1965), Middle-Early Upper Devonian of Canada (Owens, 1971), Givetian-Early Frasnian of Canada (Chi & Hills, 1976), Early Devonian of Canada (McGregor, 1974), Early Frasnian of Australia (Balme, 1988), and Givetian-Frasnian of Faraghan formation, southeastern Iran (Ghavidel-syooki, 1988).

Retusotriletes pychovii Naumov, 1953

Plate 12, Fig. 5

Remarks: This species is common in the Geirud formation. So far, it has been known from Upper Devonian (Frasnian) of western Australia (Balme, 1962, 1988), Upper Devonian of Canadian Arctic (McGregor & Camfield, 1982), and Frasnian of Russia (Naumova, 1953).

Retusotriletes rotundus (Streel) Streel, 1967

Plate 12, Fig. 3

Remarks: This species is rare in the Geirud formation. So far, it has been recorded from Emsian-Givetian of Belgium (Streel, 1964, 1967), Gedinnian-Givetian of the U.S.A. (Von Almen, 1970), Lower-Middle Devonian of Canada (McGregor, 1973, 1974).

Retusotriletes rugulatus Riegel, 1973

Plate 12, Fig. 4

Remarks: This species appears and disappears in the Padeha formation of study area. So far, it has been recorded from Emsian-Eifelian of Germany (Riegel, 1973), Givetian-Lower Frasnian of France (Loboziak & Streel, 1981), Middle

Devonian of Canada (McGregor & Camfield, 1982), and Lower-Middle Devonian of Poland (Turnau, 1986).

Lower-Middle Devonian of southern Ireland (Van der Zwan, 1980), Middle Devonian of Canada (McGregor & Camfield, 1982). Lower Frasnian of Australia (Balme, 1988), and Givetian-Frasnian of Faraghan formation, southeastern Iran (Ghavidel-syooki, 1988).

***Retusotriletes dittonensis* Richardson & Lister, 1969**

Plate 11, Fig. 13

Occurrence: This species is rare and confined to a few samples in section number two of the Faraghan formation.

Age: From the Siegenian-Emsian of Canada (McGregor, 1970), and the Gedinnian of Britain (Richardson & Lister, 1969).

***Retusotriletes dubiosus* McGregor, 1973**

Plate 12, Fig. 2

Occurrence: This species is rare in both study sections of Kuh-e-Faraghan and confined to many samples of section number one and few samples of section number two.

Age: From the Middle Devonian of Canada (McGregor & Camfield, 1982), the Late Early Middle Devonian of southwest Ireland (Van der Zwan, 1980), and the Lower-Middle Devonian of Canada (McGregor, 1973).

Genus *Rhabdosporites* Richardson, 1960

***Rhabdosporites langii* (Eisenack) Richardson, 1960**

Plat 12, Figs. 6-7

Occurrence: This species is common throughout both study sections of Kuh-e-Faraghan.

Age: From the Givetian of France (Loboziak and Streel, 1980, 1981), the Middle

Devonian-Early Upper Devonian of Canada (Owens, 1971), the Middle Devonian of Poland (Turnau, 1986), the Middle Devonian of Britain (Richardson, 1965), the Givetian of Canada (McGregor, et al., 1970), the Late Middle Devonian of the United States (Streel, 1972), the Middle Devonian of Canada (McGregor, & Camfield, 1982), the Lower Givetian of Britain (Richardson, 1960), the Givetian (McGregor & Owens, 1965),

Genus *Rugospora* Neves & Owens, 1966

***Rugospora flexuosa* (Juschko) Streel, 1974**

Plate 12, Fig. 8

Occurrence: This species is very rare and confined to a few samples in section number one of the Faraghan formation, at Kuh-e-Faraghan.

Age: From the Upper Devonian and Basal Dinantian of Belgium (Becker et al., 1974), the Late Devonian and Early Carboniferous of the Irish Republic (Van der Zwan, 1980), and Late Devonian and Early Carboniferous of the Irish Republic (Van Veen, 1981).

Genus *Rugulatisporites* Ghavidel-syooki gen. nov.

***Rusulatisporites iranica* Ghavidel-syooki sp. nov.**

Plate 18, Fig. 11

Remarks: This species is subtriangular shape. The laesurae is distinct and wide in the polar view. The exine is ornamented by rugulate elements. In the study area, it is restricted to the Padeha formation, the size of this species ranges from 20 to 30 micrometers.

Genus *Samarisporites* Richardson, 1960

***Samarisporites triangulatus* Allen, 1965**

Plate 13, Figs. 2-3

Remarks : This species is common throughout the Geirud formation of Hassanakdar

area. So far, it has been known from Upper Devonian of Belgium (Becker et al., 1974), Givetian-Frasnian of France (Loboziak & StreeI, 1980, 1981), Frasnian of Faraghan formation, southerastern Iran (Ghavidel-syooki, 1988, 1991), and Givetian-Frasnian of Libya and Tunisia (Loboziak & StreeI, 1989).

Genus *Spinozonotriletes* (Hacquebard, 1957)

emend. Neves & Owens, 1966

***Spinozonotriletes naumovii* (Kedo) Richardson, 1965**

Plate 13, Fig. 4

Occurrence: This species is very rare in both sections from Tang-e-Zakin of Kuh-e-Faraghan.

Age: From the Frasnian of Saudi Arabia (Hemer & Nygreen, 1967), the Middle Devonian of Britain (Richardson, 1965), the Givetian of Canada (McGregor, et al., 1970), and the Late Middle Devonian of the United States (StreeI, 1972).

Genus *Thymospora* Wilson & Venkatachala, 1963

***Thymospora perverrucosa* (Alpern) Wilson & Bentall, 1944**

Plate 18, Fig. 13

Occurrence: This species is common and confined to the Faraghan Formation in Chal-i-Sheh area.

Age: The Early Permian of Turkey (Akyol, 1975), and Lower Permian of Faraghan formation. (Ghavidel-syooki, 1988).

Genus *Tiwariaspuris* Maheshwari & Kar, 1967

***Tiwariaspuris flavatus* Maheshwari & Kar, 1967**

Plate 18, Fig. 14

Description: The specimens conform to the description of Maheshwari & Kar, 1967 except that a monolete mark was not observed in the Faraghan specimens.

Occurrence: This species is very rare and restricted to the Lower Permian portion of the Faraghan sections.

Age: The Lower Permian of the Congo (Maheshwari & Kar, 1967).

***Tiwariaspis gondwanensis* (Tiwari) Maheshwari & Kar, 1967**

Plate 18, Fig. 10

Description: The specimens conform to the description of (Tiwari) Maheshwari & Kar, 1967. The miospores reported in here are the same size as Indian forms, but they are smaller than the specimens of the Congo.

Occurrence: This species is rare and confined to the Lower Permian portion of the Faraghan formation in Faraghan area.

Age: From the Lower Permian of the Congo (Maheshwari & Kar, 1967) and the Lower Permian of India (Tiwari, 1967).

Genus *Vallatisporites* Hacquebard, 1957

***Vallatisporites vallatus* Hacquebard, 1957**

Plate 14, Figs. 8 & 9

Remarks: This species occurs in the Khoshyeilagh formation of Kuh-e-Ozom. So far, it has been recorded from Late Devonian-Early Mississippian of Nova Scotia (Hacquebard, 1957), and Late Devonian-Early Carboniferous of Ireland (Van Veen, 1981; Van der Zwan, 1980).

***Vallatisporites verrucosus* Hacquebard, 1957**

Plate 14, Figs. 10 & 11

Remarks: This species is confined to the Khosheilagh formation, in Kuh-e-Ozom. It is common in the Khoshyeilagh formation and associated with *Retispora lepidophyta*, *Diducites mucronatus* and *Hymenozonotriletes explanatus*. So far, it has been recorded from Latest Famennian-Lower Carboniferous of

Ireland (Van Veen 1981 ; Van der Zwan, 1980), and Lower Mississippian of Nova Scotia (Hacquebard 1957).

Genus *Verrucosisporites* (Ibrahim 1933) Potonie & Kremp, 1954

***Verrucosisporites* sp.**

Plate 14, Fig. 12

Remarks: This species is rare and present in the Geirud formation. The species is circular to subcircular with verrucose ornamentation. The trilete-mark indistinct and exoexine and endoexine is not differentiated.

**Alphabetical arrangement and worldwide records of
Pollen grain taxa**

Genus *Boutakoffites* Bose & Kar, 1966
***Boutakoffites elongatus* Bose & Kar, 1966**

Plate 3, Fig. 8

Description: The specimens conform to the description of Bose & Kar 1966. Central body specimens of Faraghan formation appears leathery; 6-12 grooves on the central body with minor foldings.

Occurrence: This species is rare and confined to the Lower Permian samples of Faraghan formation in Tang-e-Zakin, Kuh-e-Faraghan.

Age: From the Lower Permian of the Congo (Bose & Kar, 1966; Bose & Maheshwari, 1968).

***Boutakoffites quibus* Bose & Kar, 1966**

Plate 3, Fig. 7

Description: The specimens conform to the description of Bose & Kar, 1966, except that the central body of Faraghan specimens is denser than the monosaccus and the number horizontal grooves vary from 10-20.

Occurrence: This species is very rare and restricted to the Lower Permian samples of the Faraghan formation in Kuh-e-Faraghan.

Age: From the Lower Permian of the Congo (Bose & Kar, 1966; Maheshwari, 1969).

Genus *Caheniasaccites* Bose & Kar, 1966
***Caheniasaccites ellipticus* Bose & Kar, 1966**

Plate 16, Fig. 5

Occurrence: This species is rare and confined to the Lower Permian part of the Faraghan Formation in Kuh-e-Faraghan.

Age: From the Lower Permian of the Congo (Bose & Kar, 1966; Bose & Maheshwari, 1968; Maheshwari & Bose, 1969) and the Lower Permian of Gabon (Jardine, 1974).

Genus *Complexisporites* Jizba, 1962

***Complexisporites polymorphus* Jizba, 1962**

Plate 4, Fig. 10

Occurrence: This species is abundant in the Lower Permian part of the Faraghan Formation in Kuh-e-Faraghan.

Age: From the Early Permian of Texas, U.S.A. (Tschudy & Kosanke, 1962), and the Lower Permian of the United States (Jizba, 1962).

Genus *Corisaccites* Venkatachala & Kar, 1966

***Corisaccites alutas* Venkatachala & Kar, 1966**

Plate 16, Fig. 4

Occurrence: This species is very rare throughout Lower Permian Part of the Faraghan formation and it is confined to Kuh-e-Faraghan.

Age: The Lower Permian of Pakistan (Balme, 1970), the Lower Permian West Pakistan (Venkatachala & Kar, 1967, 1966), the Lower Permian of India (Lele & Chandra, 1966), and the Lower Permian of Australia (Segroves, 1969) and the Lower Permian of Rhodesia (Chandra, Kar & Lacey, 1977)

Genus *Costapollenites* Tschudy & Kosanke, 1966

***Costapollenites ellipticus* Tschudy & Kosanke, 1966**

Plate 16, Fig. 2

Occurrence: This species is rare and confined to the Lower Permian portion of Faraghan formation in Kuh-e-Faraghan.

Age: From the Early Permian of Texas, U.S.A. (Tschudy & Kosanke, 1966) and the Lower Permian of Gabon (Jardine, 1974).