

- Famenien**, consisting of two facies, one sandy, the other shaly.
- (b) Psammites du Condros (Condrosien), in which six zones are distinguished (*Cucullæa Hardingii*, *Spirifer Verneuilii*, *Rhynchonella Dumonti*, *Orthis orientaria*, *Phacops latifrons*, *Archæopteris Aibernica*, *Sphenopteris flacotta*, &c.).
- (a) Schistes de Famenne, divisible into four zones (1) that of *Spirifer distans*, (2) of *Rhynchonella letiensis*, (3) of *Rhynchonella Dumonti*, (4) of *Rhynchonella Omaliusi*.
- Frasien**, varying in composition and organic contents in different parts of the Devonian basins. In the Dinant basin it consists of
- (b) Schistes de Matagne (*Goniatites retrorsus*, *Cardium palmatum*, *Camarophoria tumida*, *Bactrites subconicus*, *Entomis* [Cypridina] *serrato-striata*).
- (a) Calcaires et schistes de Frasnè, shales and lenticular limestones, sometimes of great thickness, with abundant fossils (*Bronteus flabellifer*, *Goniatites intumescens*, *Spirifer Verneuilii*, *Sp. pachyrhynchus*, *Sp. orbellianus*, *Spirigera concentrica*, *Atrypa reticularis*, *Rhynchonella cuboides*, *Pentamerus brevirostris*, *Camarophoria formosa*, *Receptaculites Neptuni*).
- Givetien**.—The great limestone of the middle Devonian series, well seen at Givet, above Dinant on the Meuse, 400 metres thick. Among the abundant characteristic fossils are *Spirifer mediotectus*, *Sp. undiferus*, *Stringocephalus Burtini*, *Uncites gryphus*, *Megalodon cucullatus*, *Murchisonia coronata*, *M. bilineata*, *Cyathophyllum quadrigeminum*, *Heliolites porosa*.
- In the basin of Namur the conglomerate of Paury-Bony lies below the limestone, and contains a band of sandstone with plants (*Lepidodendron gaspianum*).
- Eifelien**, Shales (Schistes de Couvin), with *Calceola sandalina*, *Phacops latifrons*, *Bronteus flabellifer*, *Spirifer curvatus*, *Sp. subcuspidatus*, *Sp. elegans*, *Spirigera concentrica*, *Pentamerus galeatus*, *Strophalosta productoides*, &c.
- Coblentzien**, composed of greywacke, sandstones, shales, and conglomerate, having a united thickness of sometimes 7000 or 8000 feet, and divisible into five sub-groups as under:—
5. Greywacke of Hierges with
    - (b) Zone of *Spirifer cultrijugatus*, *Calceola sandalina*.
    - (a) Zone of *Spirifer arduennensis*, *Pterinea lineata*.
  4. Red slates of Vireux and conglomerate of Burnot.
  3. Black sandstone of Vireux (Abrien).
  2. Greywacke of Montigny with *Spirifer paradoxus*, *Athyris undata*, *Strophomena depressa* (Hundersrückien).
  1. Sandstone of Anor (Taunusien).
- Gedinnien**, comprising an upper group of shales and sandstones and a lower group of fossiliferous shales, quartzo-phyllades, quartzites, and conglomerates. The fossils in the lower group comprise *Dalmanites*, *Homalonotus Roemeri*, *Primitia Jonesii*, *Tentaculites grandis*, *T. irregularis*, *Spirifer Merourti*, *Orthis Verneuilii*, *Pterinea ovalis*, &c. The base of the Devonian system lies unconformably on Cambrian rocks.
- Younger group of Cypridina shales**, with *Entomis* (*Cypridina*) *serrato-striata*, *Avicula* (*Postonia*) *venusta*, *Phacops cryptophthalmus*, and limestones (Kramonzelkalk) with numerous *Glymenias* (*C. laevigata*, *C. undulata*, *C. striata*, &c.), and *Goniatites*.
- Brachloped limestone** directly overlying the Middle Devonian limestone, and containing *Rhynchonella cuboides*, *R. pugnus*, *R. acuminata*, *Spirifer Verneuilii*, *Camarophoria formosa*, *Productus subaculeatus*, *Goniatites intumescens*. Iberg limestone of Harz, Adorf limestone of Waldeck, shales of Büdesheim in the Eifel, with *Goniatites intumescens*, *Rhynchonella cuboides*, and *Cardiola retrostriata*. The prevalence of this *Rhynchonella* has led to the group being called the "Cuboides beds," and the *Goniatite* has given the name of, "Intumescens beds."
- (b) **Stringocephalus group**, consisting of the great Eifel limestone with underlying crinoidal beds (*Stringocephalus Burtini*, *Uncites gryphus*, *Spirifer undatus*, *Productus subaculeatus*, *Pentamerus galeatus*, *Atrypa reticularis*, *Macrocheilus arcuatus*, *Pleurotomaria delphinuloides*, *Murchisonia bilineata*, *Megalodon cucullatus*, and many corals and crinoids).
- (a) **Calceola group**,—marly limestones with *Athyris concentrica*, *Camarophoria micro-rhyncha*, *Atrypa reticularis*, *Merista plebsia*, *Spirifer speciosus*, *S. curvatus*, *Pentamerus galeatus*, *Rhynchonella parallelopipeda*, *Orthis striatula*, *Calceola sandalina*, *Cyathophyllum heliantoides*, *Cyathophyllum vesiculosum*, *Heliolites porosa*, *Alveolites*, *Favosites*, *Stromatopora*, *Phacops Schlotheimi*, &c., resting upon impure shaly ferruginous limestone and greywacke, marked by an abundance of *Spirifer cultrijugatus*, *Rhynchonella ordignyana*, *Atrypa reticularis*, *Phacops latifrons*, &c.
- Coblentz group** (*Spirifer* sandstone) divisible into the three following sub-groups:—
- (c) Upper greywacke and slate (Coblentz, Ems, Dalaiden) with *Ctenocrinus decadactylus*, *Spirifer auriculatus*, *S. curvatus*, *S. paradoxus*, *Atrypa reticularis*, *Chonetes dilatatus*, *Homalonotus lewicauda*, *Cryphæus laciniatus*.
  - (b) Coblentz quartzite probably on the horizon of the Burnot conglomerate in the Eifel.
  - (a) Greywacke with *Stropomena laticosta*, *Orthis atricularis*, *Spirifer dunensis*, *Homalonotus ornatus*, *H. crassicauda*.
- Slates (Hundersrück, Taunus) with numerous trilobites (*Homalonotus ornatus*, *Phacops Ferdinandi*, *Cryphæus*, *Dalmanites*, *Orthoceras*, *Goniatites*, &c.)
- Taunus quartzite, Siegen grauwacke (*Spirifer primævus*, *S. hystericus*, *Rensseleria*, &c.)
- Sandstones, slates, phyllites, arkoses, ending downwards in conglomerates.

<sup>140</sup> See especially Gosselet's "Esquisse Géologique," and his great memoir on the Ardennes already cited.

<sup>141</sup> See the series of elaborate papers by E. Kayser in the Zeitschrift Deutsch. Geol. Gesell. vols. xxii. 1870, to xxxiii. 1881.