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in 30 Volumes

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Volume II

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and  
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# How to use this volume

This is one of the ten volumes of the *Ready Reference and Index*, or Micropædia (Volumes I through X).

**Begin all reference searches here.**

- To satisfy a reference inquiry quickly.
- To learn what *The New Encyclopædia Britannica* contains in its many articles.

**Enter these volumes at any alphabetical point.** The entries have been designed to provide information or to direct readers elsewhere in ways that are self-evident. But knowledge of a few editorial conventions will provide fuller understanding of what is offered:

1. Cross references appear often—identified by *see*, *see also*, or *q.v.* (*quod vide*, for “which see”), or as RELATED ENTRIES—and always refer to other entries in the *Ready Reference and Index* in alphabetical order (Volumes I-X).
2. Entries are alphabetized as if they were one word, up to the comma, regardless of the number of words in the title. Thus *mountaineering* precedes *mountain goat*, whereas *charge*, *electron* precedes *chargé d'affaires*.
3. Directions, or *Index* references, are given to the page in the Macropædia (Volumes 1-19) on which a subject or aspect of a subject may be found in the longer articles.

Volume and page numbers immediately following the title of an entry always refer to a comprehensive article in volumes 1 through 19.

All other volume and page references follow the text and cite *sections* of the longer (Macropædia) articles: the small, or lowercase, letters following page numbers—a, b, c, d, and e, f, g, h—identify the quarter of the column in which a reference begins. See marginal illustration.

Another point about index references: *Major ref.* (for “major reference”) followed by a volume and page number always cites a reference that is more comprehensive than the references following and should be considered the principal place to look for broad coverage of the topic under discussion.

All other references carry brief descriptive phrases so that the reader may know what he may expect to find.

Index volume-and-page references are preceded by a small dot [.]. Underscored phrases are headings under which several index references are grouped.

**ephedrine**, an alkaloid compound formerly derived from the leaves of several species of Chinese shrubs of the genus *Ephedra* of the family Ephedraceae (*q.v.*, order Gnetales), but now made synthetically. It is used as a decongestant drug (*q.v.*).

**Johnson, Samuel 10:244** (b. Sept. 18, 1709, Lichfield, Staffordshire—d. Dec. 13, 1784, London), poet, essayist, critic, journalist, lexicographer, and conversationalist, is one of the outstanding figures of English 18th-century life and letters.

- REFERENCES in other text articles:
- Addison's prose style and fame **1:84a**
  - advertising criticism **1:103h**
  - book publishing history **15:228e**
  - Boswell's friendship and biographical work **3:61h**

a	e
b	f
c	g
d	h

**Anglo-Norman literature**, the writings in the French dialect of medieval England, also known as Norman-French or Anglo-French. Beginning effectively with the Norman Conquest (1066), it became the vernacular of the court, the law, the church, the schools and universities, Parliament, and, later, of municipalities and trade. *Major ref.* **10:1105d**.  
• chansons de geste and the Tristan tale **15:1021d passim** to 1022g



**Bibai**, city, Hokkaido, Japan, located between Asahigawa (northeast) and Sapporo (southwest). It was settled in 1891 by Japanese farmer-soldiers (*tondenhei*) and has been the main rice-producing centre of the Sorachi region since 1901. Development was spurred by the opening of a national road (1890) and a railway line (1891). Exploitation of the Ishikari Coalfield on nearby Bibai-yama (Mt. Bibai) began in 1913, but the decline in yield brought a decrease in population in the 1960s. Bibai produces electrical appliances and concrete. Pop. (1980 prelim.) 38,554. 43°19' N, 141°52' E

·map, Japan 10:36

**Bibān al-Harīm** (Egypt): see Valley of the Tombs of the Queens.

**Bibān al-Mulūk** (Egypt): see Valley of the Tombs of the Kings.

**Bibaud, Michel** (b. Jan. 19, 1782, Côte des Neiges, near Montreal—d. Aug. 3, 1857,



Bibaud, engraving by an unknown artist

By courtesy of the Public Archives of Canada

Montreal), author of French Canada's first volume of poetry and the first substantial history of Canada. He was educated at the Collège Saint-Raphaël and then became a school teacher and journalist. Bibaud wrote an arithmetic textbook and edited several periodicals, of which *La Bibliothèque canadienne*, containing some of his own historical writing, was the best known. His first historical work, *Histoire du Canada, sous la domination française* (1837), covers the period from the founding of Canada to 1731; a second volume (1844) brings the story to 1830. (A third volume, treating events from 1830 to 1837, was written by his son.) The history was poorly received in his time, for it was unimaginative and reflected pro-British sympathies. Though some of his sources were undigested, Bibaud's observations provide a good record of the period. Bibaud's volume of didactic poetry, *Épîtres, satires, chansons, épigrammes, et autres pièces de vers* (1830), contains four satires on ignorance, avarice, laziness, and envy.

**Biber, Heinrich (Ignaz Franz von)** (b. Aug. 12, 1644, Wartenberg, Bohemia—d. May 3, 1704, Salzburg, Austria), composer and one of the outstanding violin virtuosos of the Baroque era. He spent most of his life at the court of the archbishop of Salzburg, rising from a humble position to that of high steward and musical director (1676). He travelled widely as a virtuoso.

Biber composed mainly for his own instrument. His sonatas for violin and clavier and his solo sonatas with continuo are well constructed and of some technical difficulty. They show development of the violin's resources, especially the use of *scordatura* (abnormal tuning for special effects). His most famous works are the 15 *Mystery Sonatas* on events in the life of Mary, and his *Passacaglia in G Minor* for unaccompanied violin. He also composed chamber works, concerti, and a few stage works, including an opera, *Chi la dura, la vince* (1687).

·sonata style synthesis 17:8a

·variation use in G Minor Passacaglia 19:28h

**Bibiena, Alessandro Galli** (b. 1687, Parma—d. 1769), eldest son of Ferdinando Bibiena. In 1719 he became architect and painter at the court of the elector of the Palatinate. Among his works were the right wing of the *Schloss* and the opera house (both burned 1795) and the Jesuit church at Mannheim.

**Bibiena, Antonio Galli** (1700–1774), third son of Ferdinando Bibiena, was the architect of the Academia Virgiliana at Mantua and of the Teatro Comunale at Bologna. He was also employed at the court of Vienna.

**Bibiena, Carlo Galli** (b. 1728, Vienna—d. 1787, Florence), son of Giuseppe Bibiena. This last of the theatrical Bibienas traveled farther than any. He worked in Germany, France, and the Netherlands (1746–60); London (1763); Naples (1772), where he published five opera sets; Stockholm (1774); and St. Petersburg until 1778.

**Bibiena, Ferdinando Galli** (b. 1657, Bologna, Italy—d. 1743), was the son of Giovanni Maria Bibiena. He entered the service of the duke of Parma. His chief work at this period was the villa and garden of Colorno, but he soon established a reputation for scenic designs and worked for the theatre. In 1708 he was called to Barcelona to arrange the decorations in connection with the wedding festivities of the future emperor, Charles VI; when this prince ascended the imperial throne, Ferdinando went to Vienna and was there employed on designs of scenery and decorations for festivities at the court and at the opera. On his return to Bologna in 1717 he was elected a member of the Academia Clementina. In 1731 he built the royal theatre of Mantua, burned in 1781. He produced several books: *L'Architettura civile* (1711), reissued under various titles, and *Varie opere di prospettiva* (1703–08).

**Bibiena, Francesco Galli** (b. 1659, Bologna, Italy—d. 1739), was the second son of Giovanni Maria Bibiena. After a stay in Genoa and Naples he was called to Vienna, where he built a large theatre. He was architect of the great theatre at Nancy; of the Teatro Filarmonico at Verona, which Milizia calls the finest theatre in Italy; and of the Teatro Aliberti in Rome. In 1726 he returned to Bologna and directed the Academia Clementina.

**Bibiena (BIBBIENA), Galli da**, a family of Italian artists of the 17th and 18th centuries, who took their name from the birthplace of their progenitor, Giovanni Maria Galli (b. 1625, Bibbiena—d. 1665). He studied painting under Francesco Albani and first laid the foundations of an artistry which was carried on by his descendants, who devoted themselves to scenic work for the theatre.

Employing freely the highly ornate style of the Italian Late Baroque architecture and sculpture, the various members of the family produced a series of designs which are amazing for their splendour and spacious proportions achieved by intricate perspective. From about 1690 to 1787 eight Bibienas enchanted most of the courts of Europe with dazzling settings for operas, funerals, and weddings. The Habsburgs were their most lavish patrons.

·puppet theatre scenery design 15:294e

·scene design use of perspective 17:540e

**Bibiena, Giuseppe Galli** (b. Jan. 5, 1696, Parma—d. 1757, Berlin), second son of Ferdinando Bibiena, was the most distinguished artist of the family. In Vienna he became the chief organizer of splendid court festivities and functions. He designed catafalques for the funerals of more than 30 nobles and sovereigns, and scenery for plays and dances. In 1722 he worked in Munich and in 1723 in Prague. In 1742 he designed the decorations for the Vienna opera; in 1747 he was employed at the opera in Dresden; in 1748 he designed the interior of the theatre at Bayreuth

and in 1750 renovated the Dresden opera, burned 1849. He published his stage sets in three series of engravings: *Alcina* (1716); *Costanza e Fortezza* (1723); *Architettura e prospettiva* (1740–44).

**Bibila lace**, rather coarse type of needle-made lace produced in islands of the eastern Mediterranean, especially Cyprus and Rhodes. Solid-looking flowers are worked in a close texture with detached petals, set in a background of bars, or brides (*q.v.*), and closely worked curving stems. The lace is sometimes worked in coloured thread.

**Bible**: see biblical literature.

**Bible, translations of the**, date back more than 2,000 years to the Septuagint (*q.v.*), a translation of the Hebrew Bible into Greek beginning in the 3rd century BC. About AD 1450, the time of the invention of printing, the number of translations was 33, and by about 1800 the number had risen to 71. By the end of 1971 parts of the Bible had been published in 1,457 languages, and the entire Bible in 253 languages.

In the early Christian Church, the most important translation was the Latin version known as the Vulgate (*q.v.*), by St. Jerome. It is the official Latin Bible of the Roman Catholic Church and has been the basis for translations into many other languages, including the Douay Version (N.T. 1582; O.T. 1609–10), the only authorized Bible in English for Roman Catholics until the 20th century.

The new learning in the 15th and 16th centuries revived the study of Greek and led to new translations. Very important was the work of Erasmus, whose first edition of the New Testament, containing the Greek text, his own translation into Latin, and his commentary, was published in 1516; further editions followed.

The first complete English version of the Bible dates from 1382 and was credited to John Wycliffe and his followers. A revision was completed in 1388. But it was the work of William Tyndale, a reformer and scholar, that was the model for a series of subsequent English translations. From 1525 to 1535 he translated the New Testament and part of the Old Testament. Subsequent English translations, including the Coverdale Version (1535), the Matthew's (1537), the Great (1539), the Geneva (1560), and the Bishops' (1568, revised 1572) Bibles, were to some degree dependent on Tyndale's work.

All previous English translations culminated in the King James Version (1611; known in England as the Authorized Version), prepared by 54 scholars appointed by King James I. Avoiding strict literalism in favour of extensive use of synonym, it was a masterpiece of English prose and the principal Bible used by English-speaking Protestants for 270 years.

In the 19th century, a British committee produced the Revised Version (N.T. 1881; O.T. 1885; the Apocrypha 1895), a revision of the King James Version. In the U.S. a committee working closely with the British revision committee produced the American Standard Version (1901). These versions were used for academic study but rarely replaced the King James Version in worship services.

In the 20th century, many translations have been made. The Revised Standard Version (N.T. 1946; O.T. 1952; Apocrypha 1957) was widely accepted by Protestants in the U.S. The New English Bible (N.T., 1st edition 1961, 2nd edition 1970; O.T. and Apocrypha 1970) was prepared by an interdenominational committee of British and Irish Anglican and Protestant scholars.

Several private versions in modern English have been prepared by individuals or by a few scholars. These include James Moffatt's version (N.T. 1913, O.T. 1924; revisions 1935); a translation by Ronald Knox (N.T. 1945; O.T.



1949), which is officially approved by the Roman Catholic Church; and *The New Testament in Modern English* (1958) by J.B. Phillips.

Under the sponsorship of the American Bishops' Committee of the Confraternity of Christian Doctrine, Roman Catholics published the Confraternity Version (N.T. only, 1941), which was based on the Vulgate. A new translation was begun after Pope Pius XII approved translation from the original languages. The New American Bible was published in sections beginning in 1948; the complete version appeared in 1970. It is approved for use in the mass.

In Europe, the outstanding Protestant translation was that of Martin Luther (N.T. 1522, complete Bible 1534), the first complete translation from the original Hebrew and Greek into a modern European language. Still the official Bible for German Protestants, it was the basis for Danish, Icelandic, Swedish, and other translations. A widely acclaimed modern translation in French, *La Bible de Jerusalem* (1956), was prepared by Dominican scholars in Jerusalem. A parallel translation in English was published as *The Jerusalem Bible* (1966). *Major ref.* 2:885d

- Arian Gothic translation of Ulfilas 8:19e
- Bible paper characteristics and use 13:976d
- Buber's and Mendelssohn's translations 3:358h
- calligraphy remains and codex form 3:646e
- Complutensian Polyglot Bible creation 10:223c
- German translation of Mendelssohn 10:322g
- Greek calligraphic codices 3:648c; illus.
- Luther's translation at Wartburg 11:193b
- New Testament early versions 2:944f
- Protestant biblical emphasis 15:109f
- Ptolemy II's sponsorship of Septuagint 6:482e
- publishing history of various editions 15:224f
- qualification as early indexed work 9:571b
- rabbinic reception of Septuagint 10:312h
- St. Jerome's biblical scholarship 10:138c
- Scandinavian linguistic effects 8:27f
- translation and spread in early Church 4:464g
- translation difficulties 10:656h
- Wycliffe's impetus for new translations 19:1051b

**Bible Belt**, region chiefly in the U.S. South, so called by the critic H.L. Mencken in the 1920s for its denizens who held that the Bible is literally true.

• Oklahoma inclusion reasons 13:543h

**Bible Christians** (religious denomination): see Methodist Church, The (British Isles).

**Bible Communists** (utopian religious group): see Oneida Community.

**bible leaf** (herb): see costmary.

**Biblia Pauperum**, medieval picture books of Christian typology.

• linear illustration of the Middle Ages 5:999h

**Biblia regia**, an eight-volume polyglot Bible published 1568-73 by the firm founded by Christophe Plantin in Antwerp.

• printing and publishing 15:226h

**biblical criticism** (scholarship): see exegesis and hermeneutics, biblical.

**biblical literature** 2:879, the sacred scriptures of Judaism and Christianity, divided into three sections: (1) The Hebrew Bible, or Old Testament, is canonical (authoritative) to both Jews and Christians. (2) Intertestamental literature, including what is sometimes called the Apocrypha ("hidden" books), is deuterocanonical in Roman Catholicism, canonical in Eastern Orthodoxy, and non-canonical in Judaism and Protestantism; the Pseudepigrapha (books wrongly ascribed to a biblical author) are noncanonical in all groups; and Qumran literature (or the Dead Sea Scrolls), also noncanonical. (3) The New Testament is canonical in Christianity only.

Also covered is the New Testament apocrypha (*i.e.*, various noncanonical works that were accepted in some early churches or heretical groups).

Containing religious ideas shared by both Jews and Christians—*e.g.*, the one and only God, the Creator of all that exists; the unity of all mankind; a Covenant people to serve God's will toward all nations; the individual's sacred right to be protected from abuse, exploitation, or neglect by the rich and powerful or by society itself; and the future as God's time in which his rule will be fully established—biblical literature has played a special role in the history and culture of the world, especially in the West. See also exegesis and hermeneutics, biblical.

TEXT ARTICLE COVERS:

- Nature and significance 2:880c
- Old Testament canon, texts, and versions 881g
- Old Testament history 895g
- Old Testament literature 898c
- Intertestamental literature 931a
- New Testament canon, texts, and versions 938g
- New Testament history 945g
- New Testament literature 948h
- New Testament Apocrypha 973a
- Biblical literature in liturgy 974a

REFERENCES in other text articles:

apocrypha of the New Testament

- Gnostic apocrypha 13:1079d
- Manichaean Gnostic background 11:445b
- patristic apocrypha 13:1078g
- traditions about Peter 14:157a
- canon
- Christian revelation controversy and canon fixing 4:483h
- Christian version's relation to Jewish scriptures 4:497g
- Ethiopian tradition 6:141f
- Irenaeus' defense of Old Testament 9:889h
- Jewish and Christian canon-fixing 16:127d
- Nestorian version 6:138f
- Roman Catholicism, revelation, and tradition 15:993d
- Sadducee-Pharisee dispute 10:311b
- canon law's early sources in Scripture 3:774a
- Christian and Mahāyāna revelation ideas 15:599g
- chronological sources of Jewish history 4:577e
- constitution foundation in covenant 5:94a
- covenant concept origins in Near East 5:227e
- dairying and dairy product evidence 5:425a
- David's career and influence 5:518b
- divination devices and use 7:866h
- dreams as source of divination 5:1011d
- eclipse references 6:195g
- educational role 15:640d
- eschatological faith in Promised Land 6:961d
- interpretation and attitudes
- Augustine's scriptural commentaries 2:366b
- authority in early Christianity 4:537e
- Baptist stress on scriptural authority 2:716g
- Böhme's Paracelsian interpretation 2:1202h
- Bruno's unorthodox cosmological views 3:346d
- Christian ecclesiological importance 4:491b
- Christian mystics and personal revelation 4:548c
- Christian philosophy of revelation 4:555a
- passim to 558b
- Christian providence concept basis 15:134h
- Christian role in worship and life 4:474h
- Deist views of Scripture interpretation 5:562g
- D.H. Lawrence on Book of Revelation 10:723g
- Disciples of Christ reliance on scriptural authority 5:834d
- Erasmus' New Testament exegesis 6:953b
- Evangelical emphasis on full inspiration 7:777c
- passim to 779d
- Friends' quietist-Evangelist tension 7:743c
- passim to 744d
- Jehovah's Witnesses' interpretation 10:132f
- Jewish and Christian attitudes toward interpretation 3:1085a
- Jewish philosophy and interpretation 10:208c
- Jewish speculative reliance 10:184a
- passim to 188f
- Jewish traditional concepts 10:286g
- Lutheran interpretation and doctrines 11:196h
- Mennonite method of interpretation 11:905d
- Menno's appraisal of biblical authority 11:906d

• Mesopotamian history source materials 11:965c

• Mesopotamian influences 11:1008b

• Origen's Hexapla and other exegesis 13:735c

• Pietist interpretation and use 14:456a

passim to 460d

• protective use by Mashriq Jews 11:576c

• Protestant emphasis on Bible 15:103b

• Protestants, inspiration, and interpretation 15:117g

• Rationalist challenge to faith 15:530f

• St. Jerome's scholarship 10:137c

• spiritualist key to its mysteries 17:511h

• Talmudic and Midrashic traditions 17:1006c

• Torah scholarship role in Jewish history 15:644a

• tribal cult orientation 18:699g

intertestamental literature

• angels in the Book of Tobit 1:873h

• Ezra in apocryphal writings 7:128a

• Jewish angelology and demonology 10:292g

• Jewish heritage of Christianity 10:300e

• literary history and development 10:1088h

• liturgical cycle in synagogue worship 10:295d

• Luther's German translation 15:551e

• Mesopotamian influences 11:1008a

• monotheism and monolatry in Judaism 12:383d

• mythic contacts, contexts, and contents 4:551e

passim to 553h

• natural law and revelation 12:864c

• Near Eastern traditional background 12:916f

passim to 921b

New Testament

• antimythological tendency 12:798c

• Bultmann's demythologized theology 3:478h

• canonical and apocryphal texts 16:127d

• Christian canon concepts 4:497g

• covenant tradition radical renewal 5:229d

• Dostoyevsky's study in prison 5:967b

• early Christian sources of authority 4:537f

• early writing materials 3:646e

• ecumenism's scriptural basis 6:293h

• Erasmus' Greek-based critical edition 6:953b

• eschatological view of history 6:958h

• Gospel tradition authenticity 4:534d

• impetus to Luther's insight 11:189e

• Jesus' life accounts 10:145f

• Johannine and Pauline political ideas 4:509b

• John the Baptist's portrayal 10:241h

• Luke's contribution and controversy 11:177e

• Luther's translation at Wartburg 11:193b

• Mary, mother of Jesus 11:560g

• millennialism of Book of Revelation 12:200e

• patristic literature 13:1078g

• Peter's character and person 14:153e

• revelation's culmination in Christ 15:784f

• Roman Catholicism's history and development 15:986h

• St. Paul's life and writings 13:1090c

• textual editing methods and problems 18:190d

passim to 193h

Valla's research 8:952c

Old Testament

• Abraham and biblical research 1:11g

• angels and demons in the Bible 1:875a

• basic genealogy type and object 7:991f

• biblical Judaism 10:303a

• Canaanite scriptural influence 17:939a

• Christian attitude and acceptance 4:497d

• Christian concepts and relationships 4:466a

• Christian versions in early church 4:537e

• creation story Mosaic origin 6:74e

• Egyptian religious influence 6:504g

• eschatology of covenant and Exodus 6:961d

• Ezekiel's ministry and writings 7:126h

• Ezra's basis for reforms 7:127g

• historical-theological orientation 10:284d

• historiographic purpose in Christianity 8:948a

• immanence and transcendence of Yahweh 13:951d

• Irenaeus' defense against Gnostics 9:889h

• Isaiah's life and teaching 9:908h

• Jeremiah's prophetic career 10:134e

• literary history and development 10:1089a

• miracles in Judaic traditions 12:272e

• Moses' historical records 12:487b

• musical references 10:206f

• mythical and legendary material 10:191e

• mythological material 12:798c

• Nebuchadnezzar in the Bible 12:926c

• prophetic contributions 15:62b

passim to 65a

• prophetic mission 10:306d

passim to 310a

• prophets' reapplication of myths 7:64h

- Samuel's prophetic career 16:207g
- Saul's kingship in two traditions 16:281f
- Sennacherib in Jewish tradition 16:543a
- Septuagint's Egyptian background 6:482e
- short story literary form 16:712e
- Solomon in the Bible 16:1044d
- tribal people's use for new religious movements 18:699b
- Zoroastrian influence on Isaiah 19:1176a
- parable form development 7:135h *passim* to 137b
- Pietist interpretation and use of Bible 14:456a *passim* to 14:460d
- prayer forms and concepts 14:952e
- Satan figure development 4:479g
- Shakespeare's style and allusions 16:629g
- Syro-Palestinian parallelism in religious concepts 17:967h *passim* to 969e
- Ugarit and written patriarchal record 18:833a

RELATED ENTRIES in the *Ready Reference and Index*: for

*biblical books (Old Testament)*: see Amos, Book of; Chronicles, books of the; Daniel, Book of; Deuteronomy; Ecclesiastes; Esther, Book of; Exodus; Ezekiel, Book of; Ezra and Nehemiah, books of; Genesis; Habakkuk, Book of; Haggai, Book of; Hosea, Book of; Isaiah, Book of; Jeremiah, Book of; Job, Book of; Joel, Book of; Jonah, Book of; Joshua, Book of; Judges, Book of; Kings, books of; Lamentations of Jeremiah; Leviticus; Malachi, Book of; Micah, Book of; Nahum, Book of; Numbers; Obadiah, Book of; Proverbs; Psalms; Ruth, Book of; Samuel, books of; Solomon, Song of; Zechariah, Book of; Zephaniah, Book of

*biblical books (New Testament)*: Acts of the Apostles; Colossians, Letter of Paul to the; Corinthians, letters of Paul to the; Ephesians, Letter of Paul to the; Galatians, Letter of Paul to the; Hebrews, Letter to the; James, Letter of; John, Gospel According to; John, letters of; Jude, Letter of; Luke, Gospel According to; Mark, Gospel According to; Matthew, Gospel According to; Peter, letters of; Philemon, Letter of Paul to; Philippians, Letter of Paul to the; Revelation to John; Romans, Letter of Paul to the; Thessalonians, letters of Paul to the; Timothy, letters of Paul to; Titus, Letter of Paul to

*Apocrypha in the Roman Catholic canon*: Apocrypha; Baruch; Daniel, Additions to; Ecclesiasticus; Esdras, First Book of; Esdras, Second Book of; Jeremiah, Letter of; Judith; Maccabees, First Book of; Maccabees, Second Book of; Manasseh, Prayer of; Solomon, Wisdom of; Tobit

*New Testament Apocrypha*: Barnabas, Letter of; John, Acts of; Paul, Acts of; Peter, Acts of; Peter, Apocalypse of; Peter, Gospel of; Philip, Acts of; Philip, Gospel of; Protevangelium of James; Thaddaeus, Acts of; Thomas, Acts of; Thomas, Gospel of; Truth, Gospel of

*Pseudepigrapha*: Adam and Eve, Life of; Ahikar, The Story of; Aristaeus, Letter of; Baruch, Apocalypse of; Damascus Document; Dead Sea Scrolls; Enoch, First Book of; Enoch, Second Book of; Genesis Apocryphon; Isaiah, Ascension of; Jubilees, Book of; Maccabees, Third Book of; Maccabees, Fourth Book of; Manual of Discipline; Moses, Assumption of; Prophets, The Lives of the; Pseudepigrapha; Solomon, Psalms of; Twelve Patriarchs, Testaments of the; War of the Sons of Light against the Sons of Darkness, The

*biblical peoples*: Amalekites; Ammonites; Kenites; Midianites; Moabites; Rechabites

*events*: Armageddon; Babel, Tower of; Beatitudes; Bethel; Eden, Garden of; Exile, Babylonian; Gethsemane; golden calf; Golgotha; Lord's Prayer; Magnificat; Shiloh; Sodom and Gomorrah; Ten Commandments

*translations and recensions*: Bible, translations of the; Diatessaron; Hexapla; Peshitta; Septuagint; Targum; Vulgate

*other*: apocalyptic literature; Gospels; Jasher, Book of; Jerusalem, Council of; logia; synoptic gospels; Ten Lost Tribes of Israel; Torah; Wars of Yahweh, Book of the

**biblical uncial**, type of writing used in three great vellum codices of the Bible prepared in the 4th and 5th centuries.

• Greek calligraphic style development 3:648c; illus.

**Bibliographical Center for Research, Rocky Mountain Region, Inc.**, an interlibrary service organization founded in 1935

and affiliated with the Denver, Colo., Public Library. The centre maintains a union catalog (more than 5,000,000 cards) of member libraries in Colorado and neighbouring states. Similar centres in the U.S. include the Pacific North West Bibliographical Center at the University of Washington, Seattle, and the Union Library Catalog at the University of Pennsylvania, Philadelphia.

• distinction and holdings volume 4:909e

**Bibliographical Society**, organization founded in London in 1892 to promote research on bibliography, printing, publishing, and allied subjects.

• publications concerning literary study 2:981a

**Bibliographic classification**: see Bliss classification.

**Bibliographie de la France** (first published in 1811), French national bibliography.

• publication procedures 2:979a

**bibliography** 2:978 (in its literal sense, from the Greek *bibliographia*, meaning the writing of books), the art or science of the description of books.

The text article covers the two most important forms of bibliography: (1) descriptive bibliography, the systematic listing of books on a particular subject or by a particular author, and (2) critical bibliography, the study of the contents of books and the bibliographical deductions (such as textual accuracy, authorship, and dating) that can be derived from those features.

REFERENCES in other text articles:

• Gesner's *Bibliotheca universalis* 8:131f

• history of published indexes 9:570h

• history of tables 11:651c

• textual criticism methodology 18:192c

**Biblioteca Apostolica Vaticana**, official library of the Vatican, especially notable as one of the world's richest manuscript depositories. The library is the direct heir of the first library of the Roman pontiffs. Very little is known of the library up to the 13th century, although there is an inventory of the time of Pope Boniface VIII (1294–1303). The present institution derives from the one founded at Rome during the 15th century under the special patronage of Nicholas V (1447–55). At the end of the 16th century, Domenico Fontana erected the present building. The two chief collections, Vatican Latin and Greek, were then formed. By the 1980s the library possessed more than 900,000 printed volumes and 65,000 manuscripts.

**Biblioteca Nazionale Centrale**, library in Florence, Italy, containing about 4,000,000 items, including manuscripts and incunabula.

• rare book collections 7:423e

**biblio-textual criticism**, technique of restoring texts to their earliest forms by studying the circumstances of their early production and propagation.

• manuscript analysis approach 2:980b

• Shakespearean editing 16:630h

• textual criticism developments 18:194b

**Bibliotheca Bibliographica** (1866), bibliography compiled by Julius Petzholdt.

• bibliographic guide development 2:979d

**Bibliotheca Ulpia**, ancient Roman library.

• library history and function 10:857d

**Bibliotheca Universalis**, English UNIVERSAL BIBLIOGRAPHY, one of the earliest general bibliographies in the West; a list of the works of all known Latin, Greek, and Hebrew writers by the German-Swiss naturalist Conrad Gesner, published in 1545.

• content and significance 8:131f

• unified bibliographic beginnings 2:978d

**Bibliothèque ancienne et moderne**, English ANCIENT AND MODERN LIBRARY (1714–30), encyclopaedia edited by Jean Leclerc.

• Vico and his contemporaries 19:104e

**Bibliothèque Nationale**, most important library in France and one of the oldest in the world. The first royal library, the Bibliothèque du Roi, dates from the reign of Charles V (1364–80), who installed 1,200 manuscripts in the Louvre. This library was dispersed, but under Louis XI another was created. In 1544 Francis I moved the library to Fontainebleau, and from 1537 it received a copy of every French publication. The library was moved to Paris between 1567 and 1593. The first real catalog was made in 1622. First opened to the public in 1692, the library was renamed the Bibliothèque Nationale in 1795. During the 19th century, the administrator, Léopold-Victor Delisle, organized the collection of manuscripts. In 1926 a consortium was established consisting of the Bibliothèque Nationale, the Mazarine (established 1643, later part of the Nationale and, from 1945, attached to the Institut de France), the Arsenal (national and public in 1797), the Sainte-Geneviève (1624, a constituent library of Paris University Library), and the library of the Musée de la Grande Guerre (1917, attached to the Bibliothèque de Documentation Internationale Contemporaine). In the 1980s the Bibliothèque Nationale administered the Arsenal Library and the libraries of the Opéra and the Conservatoire National de Musique.

The Bibliothèque Nationale acquires a copy of every publication printed in France (copyright deposit) and publishes the *Bibliographie de la France*. Its foreign acquisitions emphasize the humanities. There are 9,000,000 volumes of printed books, 180,000 bound manuscripts, and more than 5,000,000 prints.

• bibliographic catalog projects 2:978e

• library history and function 10:859f

• Mazarin's use and enlargement 7:638f

• origin of building 11:726c

• programmatic spatial arrangement 19:460h

**Bibliothèque Sainte Geneviève** (1843–50), library designed by Henri Labrousse in Paris, France.

• programmatic spatial arrangement 19:460h

**Bibracte**, ancient Gallic town (modern Mont Beuvray, in Saône-et-Loire, France), capital of the Aedui in the time of Julius Caesar and the site of his defeat of the Helvetii tribe, the climax of his first campaign in Gaul (58 bc). To destroy native traditions, Augustus moved the inhabitants to his new town Augustodunum (Autun) in 12 bc.

**Bibulus**, Marcus Calpurnius (d. 48 bc), Roman politician who, as consul with Julius Caesar in 59, worked with the senatorial conservatives against Caesar's agrarian legislation. During their consulship Bibulus was prevented by mob violence from vetoing Caesar's agrarian proposals in the Senate. He thereupon attempted to prevent the measures from becoming law by announcing that he was looking for omens. According to the constitution, this should have brought all public business to a standstill, but Caesar disregarded the move. Retiring to his house, Bibulus did not emerge for the remaining eight months of his consulship; his only public acts were the issuance of edicts against Caesar's proceedings.

When Caesar and Pompey (Gnaeus Pompeius) quarrelled, Bibulus supported Pompey. During the civil war between Pompey and Caesar, Pompey gave Bibulus the command of a fleet in the Ionian Sea, but Bibulus failed in his strenuous efforts to prevent Caesar from crossing from Italy to Epirus with his army in 49. Exhausted, Bibulus died shortly afterward.

• Caesar's election as consul 3:577c

**bicameral system**, governmental system in which the legislature consists of two houses. Historically, the modern bicameral system



dates from the beginnings of constitutional government in 17th-century England and from developments on the continent of Europe and in the United States in the late 18th century. With the extension of constitutional government throughout the world, most countries set up bicameral legislatures on the English or U.S. models, with one large chamber whose members are chosen by popular vote and another, smaller, chamber whose members are determined by election, appointment, or inheritance. The bicameral plan is usually found in federal governments, such as Argentina, Australia, Brazil, Canada, and the U.S.

Theoretically, this dualism is justified as an application of the principle of checks and balances. A bicameral system is desirable, it has been argued, to avoid hasty and harsh legislation and to secure deliberation. Nevertheless, although bicameralism remained the prevalent practice, the 20th century witnessed a reaction against it. Constitutional trends after World War II reflected a growing preference for the unicameral system in nonfederal states of the world. Unicameral national legislative bodies were set up in many European countries, China, and several Latin American countries. In Britain, where the House of Lords had been weakened, and in France, where the Council of the Republic (renamed the Senate in 1958 with the foundation of the Fifth French Republic) was practically impotent, the legislature was, in effect, unicameral. Coequal bicameralism appears to be incompatible with a Cabinet system of government, which cannot easily tolerate deadlocks between its branches.

·government system indicator 5:90a

**bicarbonate**, alternate name for the hydrogen carbonate or acid carbonate ion  $\text{HCO}_3^-$  and for any member of a class of chemical compounds of which this ion is a constituent, such as sodium hydrogen carbonate  $\text{NaHCO}_3$  (bicarbonate of soda, or baking soda).

- alkaline earths and water hardness 1:592a
- blood transport and excretion 2:1113c
- chemical reactions in lungs and gills 6:720a
- dissociation and equilibrium constant 7:1032d
- fire extinguisher use 7:321b
- fluid and electrolyte disorders in humans 5:843g; table
- freshwater buffering and mineral deposition ; illus. 7:733g *passim* to 736g
- human blood alkalizing agent 7:429g; table
- renal regulation of urine pH 7:38f
- respiratory gas transport function 15:750d
- saliva compositional changes 5:772c

**bicarbonate of soda**: see sodium bicarbonate.

**Bicaz**, town, northwestern Neamț district, Romania, at the southern end of Lake Bicaz, a storage reservoir on the fast-flowing Bistrița River. Bicaz, which became a town in 1960, manufactures cement and asbestos panel. It is a tourist base for the Bicaz Gorges, an impressive region of heavily eroded limestone constructions which have been designated a natural monument.

The Bistrița ("the river of light"), which rises in the Rodna Mountains of the Mureș region, has 13 hydroelectric power stations between Bicaz and Buzău; the largest is at Bicaz. Latest census 9,311.

46°54' N, 26° 05' E  
·map, Romania 15:1048

**biceps muscles**, any muscle with two heads, or points of origin (from Latin *bis*, "two," and *caput*, "head"); in man, the biceps brachii and biceps femoris.

The biceps brachii is a prominent muscle on the front side of the upper arm. Small children show this muscle when boasting of feats of strength. It originates in two places: (1) the coracoid process, a protrusion of the scapula

(shoulder blade); and (2) the upper glenoid cavity, the hollow for the shoulder joint. The tendon of this muscle inserts at (is attached to) the inner protrusion near the head of the radius, a bone of the forearm. The action of the biceps flexes the arm at the elbow and shoulder and supinates the forearm (turns the palm forward or upward).

The biceps femoris is one of the hamstring muscles at the back of the thigh. It originates in two places: the ischium (lower, rear portion of the pelvis, or hipbone) and the back of the femur (thighbone). The fibres of these two origins join and insert at the head of the fibula and tibia, the bones of the lower leg. This muscle extends the thigh, rotates it outward, and flexes the leg at the knee.

- biceps brachii arrangement and advantage 12:639a
- cat trunk muscle and biceps femoris illus. 12:646
- physics principles in arm movement 7:543e

**Bicester**, town, Oxfordshire, England, lies in farming country on the northern edge of the reclaimed marsh of Ot Moor, 13 mi (21 km) north-northeast of Oxford. The name may derive from the Anglo-Saxon *beorna* and *ceaster*, meaning "fort of the warriors." Bicester appears as Berncestre, Burencestre, Bissiter, in the Domesday Book (1086), the record of the land survey ordered by William I the Conqueror. An Augustinian priory (1182) was dissolved there in 1538, and is now in ruins. Richard II granted a fair and a market, and in 1440 an additional market was granted. In the 16th century a cattle market was also established. The church contains examples of Saxon, Norman, and later architectural styles.

A nearby large army ordnance depot has brought many employees into the area. Bicester is the centre of a famous fox hunt dating from the 18th century, and now known as the Bicester and Warden Hill Hunt. The town, which trades in agricultural produce, has more than doubled its population since 1961. Pop. (1971) 12,355.

51°53' N, 1°09' W

**Bichat, Marie-François-Xavier** (b. Nov. 11/14, 1771, Thoirre, Fr.—d. July 22, 1802, Lyons), anatomist and physiologist whose systematic study of human tissues helped found the science of histology. Without knowledge of the cell as the functional unit of living things, Bichat was among the first to visualize the organs of the body as being formed through differentiation of simple,



Bichat, detail of an engraving by an unknown artist  
H. Roger-Viollet

functional units, or organ precursors. This view he developed in *Traité des membranes* (1800). Although Bichat did not use the microscope, he distinguished 21 kinds of tissues that enter into different combinations in forming the organs of the body.

Bichat studied anatomy and surgery under Marc-Antoine Petit, chief surgeon at the Hôtel Dieu, Lyons. In 1793 he became a pupil, then assistant, of Pierre-Joseph Desault, surgeon and anatomist in Paris. After his death in 1795, Bichat completed the fourth volume of Desault's *Journal de chirurgie*, adding a biographical memoir of its author. In addition to observations at the bedsides of his patients, as physician at the Hôtel Dieu he studied the postmortem changes induced in various or-

gans by disease. His *Récherches physiologiques sur la vie et la mort* (1800) was followed by *Anatomie générale* (1801). He published the first two volumes of *Anatomie descriptive* (1801–03). The third was completed by his pupils after his death. By order of Napoleon his bust, along with that of Desault, was placed in the Hôtel Dieu.

·embryologic theory contribution 19:1166a

**Bicheno**, coastal town, east Tasmania, Australia. The state's first whaling station was established there on Peggy Point in 1803; permanent settlement was not made until 1849, when a coal mine was opened along the nearby (north) Douglas River. It was named after James Ebenezer Bicheno, then colonial secretary. A second mine was sunk on the Denison River in 1854, but all mining activity ceased by 1860 as the workers left for the Victorian goldfields on the mainland. Bicheno, on the Tasman Highway to Hobart (114 mi [183 km] southwest), was resurrected as a game and deep-sea-fishing resort just before World War II. Some crayfishing is carried out from its harbour. Pop. (1971 prelim.) 284.  
41°53' S, 148°18' E

**bichir**, or LOBEFIN, tropical African fish, *Polypterus*. Bichirs and the eellike reedfish, *Calamoichthys* (sometime called *Erpetoichthys calabaricus*), are of the family Polypteridae, order Polypteriformes; like the sturgeons and paddlefishes, they are members of the superorder Chondrostei.



Bichir (*Polypterus delhezi*)  
Gene Wolfheimer

About 0.6 to 0.9 metre long, bichirs, of which there are about ten species, and the reedfish prey on worms, small fishes, and other animals. They apparently spawn in swamps during floods. They have fleshy lobes in the pectoral fins, thick ganoid (hard, rhombic, enamelled) scales, and functional lungs. The dorsal fin is a series of sharp spines, each with a flaglike end cluster of fin rays. The bichir is eaten in some areas.

- circulatory system anatomy 4:627e
- pectoral fin components 16:825h
- polypteriformes
- characteristics and classification 7:342f; illus. 339
- classification and general features 4:439b
- traits, behaviour, and classification 4:436f; illus.

**Bickerdyke, Mary Ann**, née BALL (b. July 19, 1817, Knox County, Ohio—d. Nov. 8, 1901, Bunker Hill, Kan.), organizer and chief



Mary Ann Bickerdyke

By courtesy of the Library of Congress, Washington, D.C.



of nursing, hospital, and welfare services for the western armies under the command of Gen. Ulysses S. Grant during the U.S. Civil War. She attended Oberlin College and later studied nursing. Early in the war Mrs. Bickerdyke, then a widow, set herself up as a "botanic physician" in Galesburg, Ill., and then attracted the attention of General Grant by her unofficial efforts at the Cairo, Ill., military installations. Thereafter she received Grant's sanction for her efforts and served throughout the war. She followed his army down the Mississippi, setting up hospitals as they were needed, and later accompanied the forces of Gen. W.T. Sherman on their march through Georgia to the sea. Through her efforts, provisions were made for frequent medical examinations and for transporting men who could no longer walk. Under Mrs. Bickerdyke's supervision, about 300 field hospitals were built with the help of U.S. Sanitary Commission agents. After the war she became a pension attorney for veterans and also organized veterans' homestead plans. An account of her work is given in Marjorie Barstow Greenbie's *Lincoln's Daughter of Mercy* (1944).

**Bickerstaff, Isaac**, pseudonym used in *The Tatler* (1709) by Richard Steele.  
·pseudonym's origin 17:636d

**Bickerstaffe, Isaac** (b. c. 1735, Ireland—d. c. 1812), Irish playwright whose farces and comic operas were popular in the late 18th century. There is no apparent connection between his name and the pseudonym earlier adopted by Swift and also used by Addison and Steele for *The Tatler*. The real Isaac Bickerstaffe's first theatrical success, *Love in a Village* (1762), was followed by many others, including *The Maid of the Mill* (based on Richardson's *Pamela*), *The Padlock*, and *The Hypocrite*. A frank plagiarist, he depended for his success on his lively lyrics and his sparkling dialogue.

Bickerstaffe's future appeared bright until 1772, when he was forced into exile by allegations of sodomy, then a capital offense. He lived in great poverty for many years, probably in France. The exact date and place of his death are unknown.

**Bickerstaff pamphlets** (1708–09), series of pamphlets written by Jonathan Swift that put an end to the career of John Partridge, an astrologer.

·Partridge career termination 17:857h

**Bickerton, Alexander William** (1842–1929), British astronomer.

·cosmogony of the solar system 18:1010e

**Bickford, William** (1794–1834), English inventor.

·explosive safety fuse development 7:84b

**Bicol** (people): *see* Bikol.

**Bicol Peninsula**, southeastern Luzon, Philippines, is irregular in form, with several deep coastal bays, large subpeninsulas, and a lengthy coastline. Topographically it comprises a large lowland area (the Bicol Plain) and volcanic highlands; politically it embraces Albay, Camarines Sur, Camarines Norte, and Sorsogon provinces (*qq.v.*). With a well-watered area of 4,661 sq mi (12,073 sq km), it is densely populated although largely rural and agricultural. The peninsula is the homeland of the Bikolanos, the fifth largest ethnolinguistic group in the Philippines, whose political, educational, and commercial centre is Naga City in Camarines Sur. Bicol National Park occupies an area of 12,855 ac (5,201 ha) in Camarines Sur and Camarines Norte provinces.  
13°40' N, 123°00' E

**bicorn**, also called **COCKED HAT**, in geometry, an algebraic curve of the fourth order.

·analytic geometry fundamentals 7:1089d

**bicornuate uterus**, a uterus with two horns, or cornua, found in many mammals including

hoofed animals, whales, most carnivores, and bats.

·animal reproductive system

·comparisons 15:713a

·mammalian reproductive tract variations 11:408d; *illus.*

**bicuspid teeth**: *see* premolar teeth.

**bicycle** 2:981, two-wheeled vehicle propelled by its rider, first made in the early 19th century and developed as an important means of transportation and recreation in many countries.

The text article reviews the bicycle's development and describes the two basic designs of the modern bicycle—the diamond frame and cross frame—their transmissions, braking systems, and accessories.

REFERENCES in other text articles:

·automotive industry development 2:528b

·ball bearing development 11:249g

·cycle camping popularization 3:709a

·cycling use and structure differences 5:390e

·roadway development in the 1800s 15:895f

·social aspects 7:872g

**bicycle racing**: *see* cycling.

**Bicycle Thief, The** (1948), film directed by Vittorio De Sica.

·plot and neorealist theme 12:534f

**bicycle touring**, travelling or sight-seeing by bicycle. The bicycle remains a principal means of transportation in many parts of the world, including sections of Europe and Asia. In other areas, such as the United States, increased affluence and interest in health, ecology, and recreation fostered a revival of bicycle touring in the 1960s and early 1970s. Bicycle sales grew, and membership in cycling clubs such as the League of American Wheelmen again approached the levels of the 1890s, when the bicycle had its greatest U.S. vogue. Many U.S. cities and parks built paths and roadways reserved for bicycle traffic.

·European and U.S. popularity 5:392c

**Bida**, town and traditional emirate, Niger State, west central Nigeria. The town is situated on the Bako River, a minor tributary of the Niger, and lies at the intersection of roads from Jebba and Raba, Zungeru, and Agaie. Originally a small settlement of the Beni (Bini), a subtribe of the Nupe, it was captured c. 1531 by Tsoede (Edegi), the founder of the Nupe kingdom and the first *etsu Nupe* ("king of the Nupe people"). When the kingdom was conquered c. 1806 by Fulani warriors led by Malam Dendo, its central region was incorporated as the Nupe emirate under the Emir of Gwandu (Gando), the Fulani Empire's overlord of the western emirates. Emir Usman Zaki proclaimed himself *etsu Nupe* in 1835; and, after defeating Umar Baushe, a rival Fulani emir, in the Nupe civil war (1847–56) at Bida, he named Bida to replace the emirate's old capital at Raba (Rabba), 67 mi (110 km) west.

The town wall, which now encloses 5 sq mi (13 sq km), was begun in the 1850s. During Emir Masaba's second reign (1859–73), when Nupe became the most powerful kingdom in central Nigeria, Bida's three royal palaces, the night market, and the central mosque were constructed. Trade relations with the British Royal Niger Company were established in 1871—guns proving a favourite commodity—through the post at Eggan, 30 mi southeast, on the Niger. Later disputes over both trade and slave dealing led to a British campaign against Nupe and the defeat of the Fulani army at Bida in 1897. The reinstatement by Nupe of the Fulani emir ousted by the company led to British occupation of the town in 1901.

Under British rule, Nupe emirate became known as Bida emirate; and in 1908 it was incorporated into the newly created Niger province. Bida's emir now resides in a palace (in traditional northern architectural style, completed 1935) outside the west gate. The ruins of Gbara, a Nupe *ezi'tsu* ("king's town") dat-

ing from the 16th century, are near Jimanli, 15 mi southwest, on the Kaduna River.

Modern Bida is famous for its crafts, notably brass and copper goblets, other metal products, glass beads and bangles, raffia hats and mats, and locally dyed cotton and silk cloth. The craftsmen work by hand on their own premises in distinctive wards and are organized into close-knit guilds that originated in the emir's military requirements. Most of the town's predominantly Nupe population live in mud houses that are grouped into customary compounds. The town itself is well shaded by trees and is divided roughly into four parts by two main streets. Besides the great mosque, Bida is served by an Anglican mission school (1913), a government secondary school, a teacher-training college, a craft centre, and a farm institute. It also has a hospital, a health office, and a dispensary.

Bida is the chief collecting point for the swamp rice cultivated in the *fadamas* ("flood-plains") of the Niger and Kaduna rivers. Rice is grown both on peasant farms in the vicinity and at the government's major irrigated rice projects at Edozhigi (10 mi west) and Badeggi (10 mi east). A rice research institute is at Badeggi, a collecting point on the Baro-Minna railway, and an agricultural research station at Mokwa, 65 mi west-northwest. Bida also trades in yams, guinea corn, millet, shea nuts, tobacco, cotton, peanuts (groundnuts), palm oil and kernels, onions, indigo, sugarcane, fruits, goats, sheep, and pottery. Pop. (1972 est.) town, 68,186.

·map, Nigeria 13:86

**Bida** (Qatar): *see* ad-Dawḥah.

**bid'ah**, in Islām, any innovation that has no roots in the traditional practice (*sunnah*) of the Muslim community. The strictest and most orthodox legal school in Islām, the Ḥanbali (and its modern survivor, the Wahhābiyah sect of Saudi Arabia), rejected *bid'ah* completely, arguing that the duty of a Muslim was to follow the example set by the Prophet (*sunnah*) and not try to improve on it.

Most Muslims, however, agreed that it was impossible to adapt to changing conditions without introducing some types of innovations. As a safeguard against any excesses, *bid'ahs* were classified as good (*ḥasan*) or praiseworthy (*maḥmūdah*), or bad (*sayy'ah*) or blameworthy (*madhmūmah*). They were further grouped under the five categories of Muslim law as follows: (1) among *bid'ahs* required of the Muslim community (*farḍ kifāyah*) are the study of Arabic grammar and philology as tools for the proper understanding of the Qur'ān and tradition, evaluation of *ḥadīths* (traditions or sayings of the Prophet Muḥammad) to determine their validity, the refutation of heretics, and the codification of law; (2) strictly forbidden (*muḥarramah*) are *bid'ahs* that undermine the principles of orthodoxy and thus constitute unbelief (*kufr*); (3) recommended (*mandūb*) is the founding of schools and religious houses; (4) disapproved (*makrūh*) is the ornamentation of mosques and the decoration of the Qur'ān; (5) finally, the law is indifferent (*mubāḥah*) to the *bid'ahs* of fine clothing and good food.

**Bidar**, town, administrative headquarters of Bidar District, northeastern Karnataka, formerly Mysore, state, southern India. At 2,300 ft (700 m) above sea level, the town is reached by the Hydrābād-Bombay road and railway. Since the 14th century, Bidar has been noted for its Bidri ware—metal articles damascened (with wavy lines) in floral and geometric designs with silver wire.

Bidar was important under the medieval Hindu dynasties, when it became the Bahmani capital (c. 1425). It was an independent sultanate under the Barid Shāhi dynasty (1531). After annexation by Bijāpur (1619–20), it fell



to the Mughals (1657) and to Hydrābād (1724). When Hydrābād was partitioned in 1956, the town and district were transferred to Mysore (now Karnataka). Architectural relics include Ahmad Shāh Bahmani's triple-moat fortress (1428) containing the Rangin Mahal (meaning "painted palace") and the Takht Mahal, or throne room. Another Bahmani monument is the ruined *madrasah*, or college (built 1472–81). The domed tombs of 12 Bahmani kings and the royal necropolis of the Barid sultans are nearby. Several colleges are affiliated with Gulbarga University, established in 1980.

The lowland district (2,105 sq mi [5,451 sq km]) is drained by the Karanja River and produces millet, wheat, and oilseeds. Soapstone, laterite, and black basalt building stone are extracted. Kalyāni, 42 mi (68 km) west of Bidar town, was capital of the second Cālukya dynasty (10th–12th centuries). Apart from Bidar town, the main population centres are Santpur, Bhālki, and Homnābād. Pop. (1981 prelim.) town, 78,866; district, 994,106. 17°54' N, 77°33' E

·Bahmani political decline 9:372e

·Islamic tomb decoration 17:182c

·map, India 9:279

**Bidault, Georges** (b. Oct. 5, 1899, Moulins, Fr.—d. Jan. 26/27, 1983, Cambo-les-Bains, near Bayonne), French Resistance leader during World War II and three times minister of foreign affairs, who late in his career vigorously opposed Gen. Charles de Gaulle's Algerian policy and went into exile.



Bidault

Harlingue—H. Roger-Viollet

Bidault attended an Italian Jesuit school, served briefly with the French Army of Occupation in the Ruhr in 1919, and returned to the Sorbonne, receiving a degree in history and geography in 1925. He founded the leftist Catholic daily *L'Aube* ("The Dawn") in 1932, for which he wrote a foreign affairs column until 1939. Imprisoned in Germany (1940), he returned to France in 1941 and began working with the National Council of Resistance, which he headed in 1943. He was discovered by the Gestapo in 1944 but managed to avoid arrest, meanwhile founding the Mouvement Républicain Populaire, a Christian-Democratic party.

As foreign minister in de Gaulle's provisional government in 1944, Bidault signed the Franco-Soviet alliance in December and in the following year supported the Yalta plan for international security, concluded economic agreements with the Benelux countries, and signed the United Nations Charter. After heading the provisional government in 1946, he again became foreign minister in 1947–48. His policy consistently favoured containment of Germany and European union, including Communist participation in the U.S. Marshall Plan for European redevelopment. After the Communist takeover in Czechoslovakia in 1948, however, he began negotiations for a strong West European customs union and an Atlantic defense alliance, which ultimately became the North Atlantic Treaty Organization.

As defense minister (1951–52) and foreign minister (1953–54), Bidault, fearful of Arab nationalism and Communism, supported French dominance in Algeria and Indochina. He went into bitter opposition to de Gaulle's policy after the collapse of the Fourth Republic in 1958 and founded a new, right-wing Christian-Democratic Party the same year. When de Gaulle put down a coup and negotiated Algerian independence in 1961, Bidault created a national council of resistance and went underground, claiming the illegality of de Gaulle's government. Charged with conspiracy, he took refuge in Brazil from 1963 to 1967, returning in 1968 to live in Paris, after the warrant for his arrest was suspended.

·Joliot-Curies' removal from positions 5:374a

**Biddeford**, city, York County, southwestern Maine, U.S., at the falls of the Saco River, opposite Saco. Englishmen led by Richard Vines settled the area in 1630 and named it for their home in Bidford, Devon. The communities on the two sides of the river separated in 1762. Industrial growth was spurred by the availability of waterpower; lumber and cotton textiles remain the most important manufactures. St. Francis College was founded in 1953. The nearby communities of Biddeford Pool, Fortunes Rocks, and Hills Beach are resort areas. Inc. town, 1718; city, 1855. Pop. (1980) 19,638.

43°30' N, 70°26' W

·map, United States 18:909

**bidding prayer**, various sets of prayers used by Anglicans and Lutherans in which the minister tells the congregation what to pray for. Such formulas of exhortation are of great antiquity in both Eastern and Western churches. One of the oldest surviving forms is that traditionally appointed for Good Friday. Bidding prayers include intercessions for the church, the state, the Jews, and the ministry of the church. Originally "bid" meant to pray, but this has become obsolete, and the "bidding" has come to mean the exhortation itself.

**Biddle, Francis** (1886–1968), U.S. lawyer, attorney general (1941–45), and judge at the Nuremberg trials.

·Nuremberg trial role 19:555f

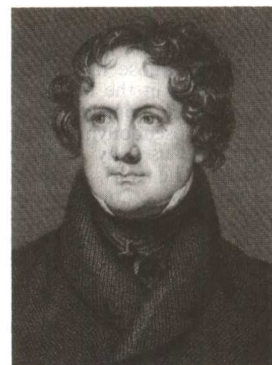
**Biddle, James** (1783–1848), U.S. naval officer who in 1846 negotiated the first treaty between the United States and China.

·Japanese rejection of trade offer 10:78b

**Biddle, John** (b. 1615, Wotton-under-Edge, Gloucestershire—d. Sept. 22, 1662, London), controversial lay theologian who was often imprisoned for his antitrinitarian views and who became known as the father of English Unitarianism. His reputation as a heretic in Anglican eyes originated with his manuscript of about 1644, *Twelve Arguments Against the Deity of the Holy Ghost*, which was given to magistrates by a treacherous friend. In 1645 Biddle was summoned before the parliamentary committee, then sitting at Gloucester, and committed to prison. He was released on bail in 1647, but the publication of his manuscript the same year brought another parliamentary inquiry. Biddle was once again taken into custody, and his *Twelve Arguments* was seized and burned. Two additional tracts were subsequently suppressed for attacking the doctrine that the three Persons of the Trinity—Father, Son, and Holy Ghost—were co-equal. Biddle chose to elevate the Father and to consider the other two Persons as subordinate to him. Under pressure from the Westminster Assembly, originally convened to reform the Church of England, Parliament in 1648 made this heresy a cause for the death penalty, but influential friends made it possible for Biddle to live in Staffordshire under surveillance until 1652, when he was again imprisoned. Freed in the same year under the protectorate of Oliver Cromwell, Biddle and his adherents, called Biddellians, or Unitarians, began to meet regularly for Sunday worship. For the resemblance of their views to

those of the Italian antitrinitarian Faustus Socinus (1539–1604), they were also known as Socinians. Soon after Biddle's translation of a biography by S. Przytykowski (*Life of Socinus*, 1653) and publication of his own *Two-Fold Catechism* (1654), Biddle was summoned before Parliament in December 1654 and imprisoned; his *Catechism* was burned by the common hangman. When Parliament was dissolved the next month, Biddle was free briefly but was then rearrested and tried for heresy. Reluctant to see him executed, Cromwell rescued Biddle and sent him to one of the Scilly Isles in October 1655. In 1658 some of Biddle's friends sought and obtained his release, and he retired to the country to teach. On his return to London as a preacher in 1662 he was again arrested and fined £100. Unable to pay, he was immediately confined to prison, where he died.

**Biddle, Nicholas** (b. Jan. 8, 1786, Philadelphia—d. Feb. 27, 1844, Philadelphia), financier who as president of the Second Bank of the United States (1823–36) made it the first effective central bank in U.S. history. He was Pres. Andrew Jackson's chief antagonist in a conflict (1832–36) that resulted in termination of the bank.



Nicholas Biddle

By courtesy of the Library of Congress, Washington, D.C.

A contributor to and later (1812) editor of *Port Folio*, the first U.S. literary journal, Biddle served as secretary to Pres. James Monroe (1806–07), then minister to England; afterward, while practicing law in the United States, he wrote *History of the Expedition of Captains Lewis and Clark* (1814) from the explorers' notes. In 1815, as a member of the state senate (1814–18), he drafted and wrote Pennsylvania's rejection of the Hartford Convention's proposed constitutional amendments to limit the powers of Congress and of the executive. In 1819 President Monroe commissioned him to compile a digest of foreign legislation affecting U.S. trade and appointed him one of the directors of the Second Bank of the United States.

As president of the bank, Biddle sponsored policies that restrained the supply of credit to the nation's banks; stabilized the investment, money, and discount markets; regulated the money supply; and safeguarded government deposits. Between 1832 and 1836 the bank came under the attack of Jackson's Democratic Party, which sought to eliminate it; the Whigs supported it. After Jackson won termination of the bank's national charter in 1836, Biddle became president of the rechartered Bank of the United States of Pennsylvania. After retiring in 1839, Biddle helped to establish Girard College in Philadelphia and held celebrated literary salons at Andalusia, his country estate.

·conflict with Jackson 10:4c

**Bideford**, small port, Torridge district, near the (Bristol Channel) coast of northern Devon, England, at the lowest bridging point of the Torridge Estuary. Recorded as Bedeford in Domesday Book (1086), the record of the land survey ordered by William I the Con-



queror, the community later grew mainly as a result of the wool trade. Bideford received its charter as a market town in 1573; the coming of the railway (1856) increased its importance as a resort; its industry includes shipbuilding and glove making. The town and the surrounding district appear in the novel *Westward Ho!* (1855) by Charles Kingsley. Pop. (1981 prelim.) 12,211.

51°01' N, 4°13' W

·map, United Kingdom 18:867

**Bidens**, genus of weedy herbs in the family Asteraceae, about 230 species, commonly



*Bidens cernua*

Dorothea W. Woodruff—EB Inc.

called bur-marigold, sticktight, beggar-ticks, or tickseed-sunflowers, distributed throughout the world. Some have divided leaves with toothed segments and long ray flowers; others have undivided, lance-shaped leaves and short ray flowers or none at all. All species have yellow disc flowers and fruits with two to four barbed bristles that become attached to animal coats or to human clothing. One species, *B. ferulaefolia*, is cultivated as a garden ornamental.

·beggar's tick flower structure 2:214f; illus.

·beggar's tick seed and fruit dispersal illus. 16:483

**Bidermann, Samuel** (1540–1622), German musical instrument maker.

·mechanical spinet construction 10:445h

**Bidlack Treaty**, also called **NEW GRANADA TREATY** (Dec. 12, 1846), a pact signed by New Granada (now Colombia and Panama) and the United States, which granted the U.S. a right of way across the Isthmus of Panama in exchange for a U.S. guarantee of neutrality for the isthmus and the sovereignty of New Granada thereafter. The treaty was named for the U.S. chargé d'affaires in New Granada, Benjamin Alden Bidlack. The threat of British intrusion on the coast of Central America had shown the need for such a pact.

After gold was discovered in California in 1848, a U.S. company began to construct a transisthmian railroad, which was completed in 1855. Thereafter, U.S. influence in the region increased because the Colombian government often called upon the United States to prevent closing of the isthmus route during civil wars. In 1902 the U.S. Congress authorized the President to spend \$40,000,000 to obtain rights held by the French New Panama Canal Co. for building a canal. The act stipulated that Colombia concede a strip of territory across the isthmus "within a reasonable time"; in the event that Colombia refused to

make such a concession, the President was permitted to negotiate with Nicaragua for a right of way across its territory. Accordingly, Pres. Theodore Roosevelt bought the French company's rights, and in 1903 the Hay-Herrán treaty was concluded between the United States and Colombia. The Colombian senate, however, withheld ratification to secure better terms. Thereupon the U.S. government engineered the secession of Panama from Colombia and then reached an agreement (Hay-Bunau-Varilla Treaty) with the new Republic of Panama, by which Panama became a U.S. protectorate and the U.S. government gained exclusive control of the Panama Canal Zone and permission to construct a canal.

·isthmus neutrality guarantee 4:1116g

**bidonville**, name given, especially in former French North Africa, to the poorest slum quarters of rapidly-growing, unplanned cities. Chiefly inhabited by largely unemployed squatters, the area's housing is extremely primitive. The name comes from the North African custom of using discarded oil drums (French *bidons*) as building material. Large *bidonvilles* are found at Casablanca and Rabat (Morocco) and Algiers (Algeria). Similar housing patterns, using other makeshift materials, are found in other parts of the world. Examples are the *bustees* of Indian cities, the *favelas* of Rio de Janeiro and São Paulo (Brazil), the *barriadas* of Lima (Peru), and the *tiao-ching-ling* of Hong Kong.

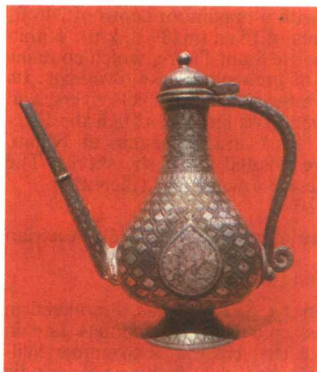
·Casablanca's immigrant community 3:977d

·Moroccan resettlement attempts 12:448b

**Bidpai, The Fables of:** see Pañca-tantra.

**Bidri ware**, metal decorative objects ornamented with a type of Indian inlay work. The ware derives its name from the town of Bidar, in Andhra Pradesh, though it is not made exclusively in that town; Lucknow and Murshidābād are also very important centres of Bidri manufacture.

The metal commonly used is an alloy composed of zinc with some copper, darkened to achieve a black colour that does not fade. There are two main types of Bidri work. In the first type, the pattern is deeply incised, then silver or gold is cut to the exact size, the shape of the incised pattern is embedded in the incision, and the surface is finally smoothed and polished. In the second, encrusted type, the outline of the design is engraved and shaped gold or silver leaf affixed after the cavities have been filled with lead.



Bidri ewer from Andhra Pradesh, 19th century; in the Prince of Wales Museum of Western India, Bombay  
M. Chandra

Bidri ware generally consists of hookah bases, dishes, cups, vases, jars, and spice boxes. The commonest patterns are diapers (overall diamond patterns) and a variety of floral sprays, leaves, fishes, and lozenges. Ambitious large works are no longer attempted, modern production chiefly consisting of cigarette cases, ashtrays, and jewelry.

·Islamic art in India 17:204g

**Bidyasagar, Isvarcandra** (1820–91): see Vidyasagar, Isvar Chandra.

**Bié**, province, central Angola, on the elevated Bié Plateau, drained by northward-flowing branches of the Rio Cuanza. Its area is 27,150 sq mi (70,300 sq km). It is largely upland savanna. The climate is tempered by altitude. Crops, grown chiefly in the central section, include corn (maize), sisal, coffee, and sugarcane. The capital and largest settlement is Silva Porto (*q.v.*). Bié district is bisected from east to west by the Benguela Railway. Pop. (1970) 650,337.

·area and population table 1:892

**Biedermeier style**, in art, the transitional period between Neoclassicism and Romanticism as it was interpreted by the bourgeoisie,



"Girl Embroidering," Biedermeier-style painting by Georg Friedrich Kersting, oil on canvas, c. 1814; in the Kunstsammlungen, Weimar

By courtesy of the Kunstsammlungen, Weimar; photograph, Klaus G. Beyer, Weimar

particularly in Germany, Austria, northern Italy, and the Scandinavian countries. Following the Napoleonic sieges, the Biedermeier style grew during a period of economic impoverishment from 1825 to 1835. The term Biedermeier is derogatory, because it is based on the caricature "Papa Biedermeier," a comic symbol of middle class comfort. Such comfort emphasized family life and private activities, especially letter writing (giving prominence to the secretary desk) and the pursuit of hobbies. No Biedermeier household was complete without a piano as an indispensable part of the popularized soiree. It was at such gatherings that the compositions of Brahms, Schubert, Schumann, and Chopin were first heard. Soirees perpetuated the rising middle class's cultural interests in books, writing, dance, poetry readings—all subject matter for Biedermeier painting, which was either genre or historical and most often sentimentally treated. The best representative painters include Franz Krüger, Georg Friedrich Kersting, Julius Oldach, Carl Spitzweg, and Ferdinand Georg Waldmüller.

Biedermeier furniture derives essentially from the Empire and Directoire styles; while plump and naïvely grotesque at its worst, it did often reach remarkable simplicity, sophistication, and functionality. Stylistically, Biedermeier furniture softened the rigidity of Empire style and added weight to Directoire; it made the elevation of Empire realistic and the delicacy of Directoire durable. While Empire was grandiose and usually of dark woods with ormolu mounts, Biedermeier—identifying



more closely with Directoire in this sense—was executed in light, native woods and avoided the use of metal ornamentation. Surfaces were modulated with natural grains, knotholes, or ebonized accents for contrast; though modest, inlay was occasionally used. An identifying feature is the extremely restrained geometric appearance that later influenced art nouveau and modern Scandinavian furniture designs. Some furniture took on new roles; for example, the table *à milieu*, rather than an isolated centrepiece, became the family table, around which chairs were set for evening activities.

In general, the Biedermeier style offered visual evidence of the conflict of ideas between Classicism and Romanticism that continued during the first half of the 19th century. With time, the Biedermeier style was romanticized: straight lines became curved and serpentine; simple surfaces became more and more embellished beyond the natural materials; humanistic form became more fantastic; and textures became more experimental. Yet the original focus on lightness, utilitarianism, and individuality characterized the revival of the Biedermeier style during the mid-1960s.

·art style as expression of attitude 2:131c  
·origin, name, design, and veneer woods 7:803f

**Biegg-olmai**: see Ilmarinen.

**Biel**, French BIENNE, town, Bern canton, northwestern Switzerland, at the northeastern end of Lake Biel (Bieler See), where the canalized river Suze (Schlöss) issues from a deep cleft (the Taubenloch) in the Jura range, northwest of Bern city. Of Celtic origin (Bele-nus) and inhabited in Roman times, the town dates from the 11th century and was chartered in 1275. It was for centuries under the jurisdiction of the prince-bishops of Basel. In 1279 (permanently in 1352) it made alliance



Swiss watchmakers, Biel, Switz.  
By courtesy of the Swiss National Tourist Office

with Bern, in 1334 and 1344 with Solothurn, and in 1311 and 1382 with Fribourg. Although it failed to gain admission into the Swiss Confederation, it was closely associated with the Protestant cantons after it adopted the Reformation in 1528. Seized by the French in 1798, it became part of Bern canton in 1815. Situated on the language boundary, Biel's population is two-thirds German speaking and one-third French speaking. It is the only officially bilingual town in Switzerland.

Medieval landmarks include the late-Gothic town church of St. Benedict (1451; restored 1775), with fine 15th-century stained glass, and the town hall (1534). The Museum Schwab has a collection of artifacts from the lake pile dwellings of the La Tène (Iron Age) period. The West Cantonal Technical Insti-

tute is also in the town. The chief industries are watchmaking and the manufacture of chains and machinery. Two funicular railways lead up the Jura to the nearby health resorts of Évillard (Leubringen) and Magglingen (Macolin). Pop. (1980) 53,793.

47°10' N, 7°12' E  
·map, Switzerland 17:868

**Biel, Gabriel** (b. c. 1420, Speyer—d. Dec. 7, 1495, Tübingen, both now in West Germany), philosopher, economist, and one of the most distinguished scholastic theologians of the late Middle Ages.

Having studied at various German universities, he became vicar and cathedral preacher at Mainz c. 1460. In 1468 he entered the Order of the Brothers of the Common Life, a religious community devoted to education and the care of the poor, and was made prior of the brotherhouse at Butzbach (1470) and then at Urach (1479). He became professor of philosophy and theology at Tübingen in 1484, where he served as rector in 1485 and 1489. He was named prior of Schönbuch in 1492.

Biel's *Collectorium circa IV libros Sententiarum*, a classical commentary on the celebrated *Sentences* by Bishop Peter Lombard of Paris, gives a clear and methodical exposition of the teaching of the great English philosopher William of Ockham—whose doctrine Biel supported—and was so influential that Ockhamists at the universities of Erfurt and Wittenberg were known as Gabrielistae. Left unfinished by Biel, *Collectorium* was completed by one of his followers, Wendelin Steinbach, at Tübingen in 1520; the complete work was printed at Brixen (now Bressanone, Italy) in 1574.

A notable political economist, Biel wrote, in addition to theological treatises, a progressive work on economic theory, *De potestate et utilitate monetarum* (printed 1516; Eng. trans. by R.B. Burke, *Treatise on the Power and Utility of Moneys*, 1930), in which, among several other issues, he favours fair taxation and price control. He has been called *ultimus scholasticorum* ("the last of the scholastics"). H.A. Oberman's *The Harvest of Medieval Theology: Gabriel Biel and Late Medieval Nominalism* appeared in 1963.

·influence on Luther's approach to Mass 11:188h

**Biel, Lake**, German BIELERSEE, French LAC DE BIENNE, in western Switzerland, lies at the foot of the Jura Mountains at an altitude of 1,407 ft (429 m) and borders the cantons of Bern and Neuchâtel. It is 9½ mi (15 km) long, 2½ mi wide with a maximum depth of 246 ft, and has an area of 15 sq mi (39 sq km). Within the lake is the Île Saint-Pierre, which contains many traces of prehistoric lake dwellings. Its waters receive the Suze and Thièle rivers, and the Aare River flows into it through the Hag-neck Canal (east) and out again at Nidau. Vineyards are planted along the shores. The principal lakeside town is Biel (Bienna).

47°05' N, 7°10' E

**Biel, Wilhelm von** (1782–1856), Austrian astronomer.

·cometary orbit study 4:970h

**Biel's Comet** (1852 III) was discovered in 1846 to have split into two comets late in 1845. In 1826 the Austrian astronomer Wilhelm von Biela had identified it as a periodic comet, returning every 6.7 years, that had been first observed in 1772. After splitting in 1845, it returned on schedule as a double comet in 1852 but has never been seen since. At the time of its scheduled return in 1872, the Earth encountered a strong meteor shower at first called the Bielids, now Andromedids, travelling in the comet's orbit and thought to be composed of fragments resulting from its disintegration.

·meteor stream orbital association 4:970h

**Bielefeld**, city, Nordrhein-Westfalen (North Rhine-Westphalia) *Land* (state), northwestern

West Germany, on the northern edge of the hilly Teutoburger Wald (forest). First mentioned as Bilifelde in the biography of Bishop Meinwerk of Paderborn between 1015 and 1036, the old town was probably founded and chartered in 1214 by Count Hermann of Ravensberg; the "new town" arose from a religious settlement around the Marienkirche (St. Mary's Church, still standing) in the late 13th century. It joined the Hanseatic League in the 14th century and, with the county of Ravensberg, passed to Jülich in 1346 and to Brandenburg in 1647. Heavily damaged in World War II, it has been rebuilt.

Sparrenburg Castle, dating from 1250, was rebuilt after a fire in 1877. Other notable medieval buildings include the Altstadt Nicolaikirche, the Jodokuskirche, and the Gothic Crüwell House (1530). The town has a concert hall, opera, and playhouse, the farmhouse and playing-card museums, a gallery of modern art, and a university (founded in 1966).

The town is the centre of the Ravensberg linen industry, which became important in the 16th century; the first mechanized mills in Germany were established there in 1851. Bielefeld also has silk and plush weaving mills. Other products include clothing, sewing machines, bicycles, cash registers, machine tools, pharmaceuticals, and paper. Pop. (1981 est.) 312,708.

52°01' N, 8°31' E

·map, Federal Republic of Germany 8:46

**Biella**, city of Vercelli province, in the Piemonte (Piedmont) region of northwestern Italy below the Alps on the Torrente Cervo (river), northeast of Torino (Turin). A Gallic and Roman centre, it was a medieval possession of the counts of Vercelli before passing to the House of Savoy in 1379. Biella is divided into Biella Piazze (upper) and Biella Piano (lower) towns, joined by a cable railway. There are many medieval and Renaissance mansions in the upper town, while the lower is distinguished by a cathedral (1402; remodelled) adjoined by the 10th-century baptistery and the Renaissance churches of S. Sebastiano (1504) and S. Girolamo (1512–17). Biella has an archaeological museum, an art gallery, and industrial and commercial institutes. On Alpine slopes above the city is the famous pilgrimage resort of Santuario di Oropa, believed to have been founded in 369 by St. Eusebius. A major centre of the Italian woolen industry, Biella also manufactures cotton, silk, and linen textiles. Pop. (1980 est.) mun., 55,857.

45°34' N, 8°03' E

·map, Italy 9:1088

**Bielsko-Biala**, city and województwo (province), southwestern Poland, in the foothills of the Carpathian Mountains. Incorporated in 1951, the city existed previously as two separate towns on either side of the Biala River. Bielsko originated as a 13th-century settlement around a stronghold and developed during the 16th century through its textile industry.

The province was created in 1975 and has an area of 1,430 sq mi (3,703 sq km). It is the centre of Poland's textile industry. Pop. (1980 est.) city, 160,300; województwo, 820,700.

49°49' N, 19°02' E

·area and population table 14:630

·map, Poland 14:626

**Biencourt, Charles de, baron de Saint-Just** (b. 1591/92, Champagne, Fr.—d. 1623/24, Port Royal, Acadia, now Annapolis Royal, Nova Scotia), French colonizer and trader in New France, who commanded the French colony of Port Royal. In 1606 Biencourt sailed with his father, Jean de Biencourt de Poutrincourt, baron de Saint-Just, to New France (Canada). In 1607 they abandoned their establishment and fort at Port Royal, Acadia, because of insufficient funds. Failing



to obtain a Canadian fur-trade monopoly while in France, father and son returned to Acadia and to Port Royal in 1610. In 1611 Jean de Biencourt was appointed vice admiral of the seas of New France; he placed Port Royal under his son's administration.

Charles was not effective in exerting his authority, especially over the Jesuits. In 1613–14 the English, under Sir Samuel Argall, attacked Port Royal. Jean de Biencourt de Poutrincourt returned to the devastated settlement and made over his holdings to his son, who stayed on with a few colonists. Charles and his colleagues built up the fishing and fur trading business there and established a new company. In 1618 Charles appealed unsuccessfully to Paris for fortification against the English. The settlement did not prosper; trade slackened, and Biencourt took to living with Indians during his last years.

**Bienert, Richard, Freiherr von**, after 1915 GRAF VON BIENERTH-SCHMERLING (b. March 2, 1863, Verona, Italy—d. June 3, 1918, Vienna), Austrian prime minister (1908–11) whose failure to deal effectively with central European conflicts led to his downfall.

After service under the governor of Steiermark, or Styria, Bienert was transferred to the Austrian Ministry of Education (1886), of which in 1905 he was named director and simultaneously elevated to the Privy Council. Appointed minister of the interior for Austria (June 1906), he became a supporter of the ministerial program of suffrage reform. In November 1908, upon the resignation of Max, Freiherr von Beck, and with the patronage of Austria-Hungary's foreign minister, Graf Lexa von Aehrenthal, he succeeded Beck as Austrian prime minister.

In the manner of his predecessor, Bienert planned Czech-German reconciliation in Bohemia through a program of territorial autonomy, but, lacking Beck's competence, he accomplished little toward this end. Unable to command a parliamentary majority after the elections of 1911, he resigned; subsequently he served as *Statthalter* (governor) of lower Austria (1911–15).

·Habsburg nationalities crisis 2:473d

**Bien Hoa**, city and provincial seat of Dong Nai province, northeast of the Mekong Delta, southern Vietnam. Located 19 mi (30 km) northeast of Ho Chi Minh City, on the left bank of the Song Dong Nai (Dong Nai River), Bien Hoa is one of the oldest cities of southern Vietnam. It was conquered in 1861 by the French after prolonged Vietnamese resistance. The modern city has four hospitals and a ceramics school. In the 1960s the city added a 1,263-ac (511-ha) industrial-park district whose industries include steel making, metal products, refrigeration equipment, motorbikes, batteries, paper products, knitting mills, chlorine, caustic soda, and radio-TV assembly. Power is provided by the Dai Nham hydroelectric plant. Older industries include brick, tile, and pottery making, and quarrying and preparation of stone for construction. Granite quarries are worked nearby. Pop. (1971 est.) 177,513.

10°42' N, 106°48' E



The Song Dong Nai (Dong Nai River) at Bien Hoa, southern Vietnam

P. V. Butler—Shostal

·area and population table 19:136  
·map, southern Vietnam 19:135

**Biennie** (Switzerland): see Biel.

**biennial**, in botany, a nonwoody plant that requires two years for the completion of its life cycle (germination, growth, flowering, fruiting, and death). Some plant species are biennial in colder latitudes and annual (*q.v.*) in warmer latitudes.

·life cycle variations in angiosperms 15:725b  
·plant life form categories table 18:147  
·plant life-span categories 13:728d  
·responses to cold 5:959h

**Bienville, Jean-Baptiste Le Moyne, sieur de** (1680–1768), French colonial governor of Louisiana, founded the city of New Orleans.

·Louisiana territory colonization role 11:125f  
·New Orleans foundation role 13:6f  
·New Orleans settlement 4:887c

**Bierce, Ambrose (Gwinnett)** (b. June 24, 1842, Meigs County, Ohio—d. 1914, Mexico?), newspaperman, misanthrope, wit, satirist, and author of sardonic short stories based on themes of death and horror. Reared in Kosciusko County, Ind., he became printer's devil on a Warsaw paper after about a year in high school, then moved to Elkhart. In April 1861 he enlisted in the 9th Indiana Volunteers and fought in a number of Civil War battles, including Shiloh and Chickamauga. He was seriously wounded on Kennesaw Mountain in 1864 and served until January 1865; he received a merit promotion to major in 1867.

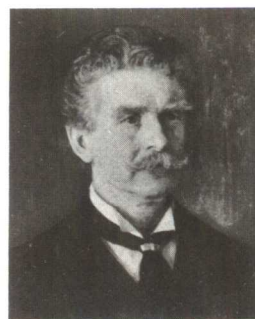
In San Francisco, which was experiencing an artistic renaissance, he began contributing to periodicals, particularly the *News Letter*, of which he became editor in 1868. Bierce was soon the literary arbiter of the West Coast. "The Haunted Valley," his first story, appeared in 1871.

In December 1871 he married Mary Ellen Day, and from 1872 to 1875 the Bierces lived in England, where he wrote for the London magazines *Fun* and *Figaro*, edited the *Lantern* for the exiled French empress Eugénie, and published three books, *The Fiend's Delight* and *Nuggets and Dust Panned Out in California* (both 1872), and *Cobwebs from an Empty Skull* (1874). English friends called him "Bitter Bierce."

In 1877 he became associate editor of the San Francisco *Argonaut* but left it in 1879–80 for an unsuccessful try at placer mining in Rockerville in the Dakota Territory. Thereafter he was editor of the *San Francisco Wasp* for five years. In 1887 he joined the staff of Hearst's *San Francisco Examiner*, for which he wrote the "Prattler" column for 10 years, and continued that association for 20 years. In 1896 Bierce moved to Washington, D.C., where he continued newspaper and magazine writing. In 1913, tired of American life, he went to Mexico, then in the middle of a revolution led by Pancho Villa. His end is a mystery, but a reasonable conjecture is that he was killed in the siege of Ojinaga in January 1914.

A troubled man, Bierce separated from his wife, lost his two sons, and broke many friendships. As a newspaper columnist, he specialized in critical attacks on amateur poets, clergymen, bores, dishonest politicians, money grabbers, pretenders, and frauds of all sorts.

His principal books are *In the Midst of Life* (1891), which included some of his finest stories, such as "An Occurrence at Owl Creek Bridge," "A Horseman in the Sky," "The Eyes of the Panther," and "The Boarded Window"; *Can Such Things Be?* (1893), which included "The Damned Thing" and "Moxon's Master"; and *The Devil's Dictionary* (1906), a volume of ironic definitions, which has been often reprinted. His *Collected Works* was published in 12 volumes, 1909–12. *The Enlarged*



Bierce

By courtesy of the Library of Congress, Washington, D.C.

*Devil's Dictionary*, edited by E.J. Hopkins, appeared in 1967.

**bieri**, wooden mortuary figures of the Fang tribe of Gabon, Africa, that traditionally guarded the skulls of deceased ancestors. These figures were somewhat naturalistic, representing the ancestor whose skull was kept in a small, barrel-shaped bark container to which the figure was traditionally attached.

Because of the spiritual powers attributed to deceased ancestors, these mortuary figures were originally carved to protect the ancestor's bones from possession by evil spirits and to shield the tribesmen from unwittingly coming into contact with the skull's potentially dangerous powers. Through the aesthetic refinement of generations of sculptors, the *bieri* became figures of symbolic rather than



*Bieri*, Fang tribe, Gabon; in the Metropolitan Museum of Art, New York City

By courtesy of the Metropolitan Museum of Art, New York City, The Michael C. Rockefeller Memorial Collection of Primitive Art, gift of Nelson A. Rockefeller, 1965; photograph, Charles Unt

spiritual significance. The somewhat representational features of the *bieri* were abstracted into a more conventionalized figure of greater tension, as the spiritual motivation was replaced by a more aesthetic one.

·African carvings and uses illus. 1:234

**Bierstadt, Albert** (b. Jan. 7, 1830, near Düsseldorf, now in West Germany—d. Feb. 19, 1902, New York City), painter whose tremendous popularity was based on his panoramic landscapes. Among the last generation of painters associated with the Hudson River school, Bierstadt, like Frederick Church and Thomas Moran, covered vast distances in search of more exotic subject matter. His reputation was made by the huge canvases that resulted from his several trips to the Far West—e.g., "The Rocky Mountains" (1863,





"Mount Corcoran," oil painting by Bierstadt, 1875-77; in the Corcoran Gallery of Art, Washington, D.C.

By courtesy of the Corcoran Gallery of Art, Washington, D.C.

Metropolitan Museum of Art, New York) and "Mount Corcoran" (c. 1875-77, Corcoran Gallery of Art, Washington, D.C.). Executed in his studio in New York, the large works do not have the freshness and spontaneity of the small on-the-spot paintings from which they were produced.

In Düsseldorf, where he studied from 1853-57, Bierstadt was trained in the synthetic combination of many closely observed, tightly painted, topographical details. In his paintings, immense in scale and grandiose in effect, he freely altered details of landscape to create the effect of awe and grandeur. His colours were applied more according to a formula than from observation: luscious, green vegetation, ice-blue water, and pale, atmospheric blue-green mountains. The progression from foreground to background was often a dramatic one without the softness and subtlety of a middle distance.

**Bierut, Bolesław** (b. April 18, 1892, Rury Jezuickie, near Lublin, Poland—d. March 12, 1956, Moscow), statesman and Communist Party official who came to be called the Stalin of Poland after playing a major role in his party's takeover of the Polish government after World War II.

Influenced by left socialist ideas, Bierut joined the Polish Communist Party in 1918 and spent the rest of his life organizing and publicizing communist ideas in Poland as well as in Bulgaria, Czechoslovakia, and Austria. Arrested and imprisoned several times in the 1920s and 1930s for his activities in Poland, he went to Russia after his release in 1938 and remained there during most of World War II. He returned to Poland at the end of 1943. With the backing of Stalin and the Soviet Army, Bierut and his fellow Communists were able to dispose of all effective opposition by 1947, and he began his efforts to sovietize all aspects of Polish life. Always a loyal follower of party directives from Moscow, Bierut, who had been president of the Polish republic from 1945, was instrumental in the 1948 deposition of Władysław Gomułka, the secretary of the Polish Workers' Party, who had attempted to bend the Soviet party line to Polish circumstances. Bierut replaced him, and reorganized the party to form the Polish United Workers Party (PZPR) in 1948. In 1952 he left the presidency to become premier, but resigned that post also in 1954. He was attending the Russian Communist party's 20th Congress in Moscow, at which Khrushchev presented his famous "Crimes of the Stalin Era" report, when he died.

·governmental pro-Soviet reorganization 14:653f

**BIF** (geology): *see* banded iron formation.

**bifid bow**, bow of a ship that is divided into two sections by an extension of the keel.

·Minoan hull design development 16:677c

**Bifrost**, Old Norse *Biþröst*, in Norse mythology, the rainbow bridge linking Midgard (the Middle Earth) with Asgard, the abode of the gods. Made and traversed by the gods, the

three-coloured Bifrost was the best and strongest of bridges. Heimdall, the watchman of the gods, guarded it, keeping off the hill giants. At the doom of the gods, it was believed that Bifrost would be destroyed by the sons of Múspell, the realm of fire.

**big apple**, 1930s square-dance version of the jitterbug, named for the Columbia, S.C., club where it originated. Assembled in a large circle, dancers did a basic shuffling step or other jitterbug step like the lindy hop. Directions such as "right foot forward" or "get your girl and take a twirl" were given by a caller, but more enterprising dancers, singly or in couples, frequently broke into brief improvisations.

·folk dance derivation 7:453f



Big apple

By courtesy of the Dance Collection, the New York Public Library at Lincoln Center, Astor, Lenox and Tilden Foundations

**big-bang hypothesis**, in cosmology, a view that the present apparent expansion of the universe started at some at least theoretically definable moment in the past, with the violent expansion of an originally highly compressed and intensely hot homogeneous material containing matter and energy, sometimes called the primordial fireball, primeval atom, or cosmic egg. Since the explosion, this material has continued to expand, meanwhile forming galaxies and stars as local condensations. In some theoretical models of the future, the expansion will continue into an infinite dispersal. In other models it will be slowed and eventually reversed by gravity, and the universe will then collapse catastrophically upon itself and seemingly fuse once more into the primeval atom. This cycle of explosion and collapse may repeat itself, perhaps endlessly.

The big-bang hypothesis was first put forward in 1927 by Georges Lemaitre. It fell from scientific favour for a time, as the age it seemed to indicate for the universe was less than the age of the Earth as indicated by geological evidence, and it has been opposed since 1948 by proponents of the steady-state hypothesis. But in the 1950s a revision upward of extragalactic distance estimates showed that it was not, after all, unworkable, and it is now favoured by most cosmologists. The discovery in 1965 of background radiation thought to be a remnant of the "big bang" tended to support the hypothesis, as did other observations, such as the discovery in 1981 of several previously undetected galaxies about 10,000,000,000 light years from Earth. *Cf.* steady-state hypothesis.

·astronomy theory and research 2:253g  
·cosmological theory problems 12:872a  
·element origin and galaxy evolution 4:122a  
·galaxy origin theory 7:847e  
·interstellar radiation origin theory 9:796h  
·plasma state principles and theories 14:509c  
·radio source research 15:476e  
·relativistic cosmology theory 15:588d  
·universe origin and evolution 18:1007g  
·universe structure and properties 18:1016g;  
table 1017

**Big Belt Mountains**, segment of the northern Rockies, paralleling the eastern bank of the Missouri River for about 80 mi (129 km)

in west central Montana, U.S. Mt. Edith (9,504 ft [2,897 m]) is the highest point. Lying within a division of the Helena National Forest, the area was the scene of much gold prospecting in the late 1860s. A prominent limestone belt encircles the mountains, whence their name.

46°40' N, 111°25' W

**Big Ben**, tower clock famous for its accuracy and for its 13-ton bell, designed by Edmund



Big Ben, London, designed by Edmund Beckett

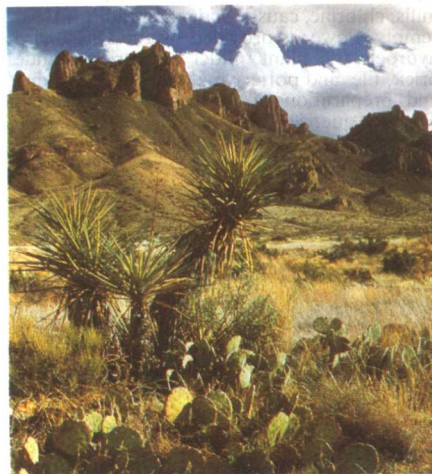
A.F. Kersting

Beckett, 1st baron of Grimthorpe, and housed in the tower at the eastern end of the Houses of Parliament, Westminster, Greater London. The name, for Sir Benjamin Hall, commissioner of works at the time of its installation in 1859, originally applied only to the bell, but eventually came to indicate the clock itself.

·architectural history and features 11:103b;  
illus. 90

·escapement mechanism innovative design 4:745g

**Big Bend National Park**, established 1935 in southwestern Texas, U.S., on the Rio Grande opposite Mexico. It is a remote region occupying 708,221 ac (286,617 ha) 70 mi (113 km) south of Marathon and is named for a wide bend in the river, which skirts its southern edge for 107 mi. It has magnificent moun-



Lost Mine Peak, Chisos Mountains in Big Bend National Park, Texas

David Muench—EB Inc.



tain and desert scenery, deep canyons (Santa Elena, Mariscal, and Boquillas) carved by the Rio Grande, and spectacular geological formations. There are more than 1,000 species of plants, including stunted oak, piñon pine, yucca, strawberry cactus, and creosote bushes. Wildlife includes coyotes, puma, kit foxes, mule deer, cardinals, hummingbirds, and roadrunners. Diversions include boating (for experts only), horseback riding, and hiking.

**Big Bertha**, nickname given to two different sets of German cannon in World War I. The first were 42-centimetre (16.5-inch) howitzers produced at the Skoda works in Austria-Hungary and used by the Germans against Belgian forts in 1914. It was mistakenly thought that this artillery came from the Krupp works in Germany—hence the name, after Frau Bertha von Böhlen, head of the Krupp family.

In 1918 four guns specially built by Krupp shelled Paris at a range, never before attained, of approximately 76 miles (122 kilometres). The guns were fabricated by adding a tube to the barrel of a 15-inch (381-millimetre) naval gun. The barrel thus was elongated to about 110 feet (33.5 metres) and needed supports to hold it straight. Moved to their emplacements on railway tracks, the four "Paris guns" successively carried out an intermittent bombardment that landed 367 shells in or near Paris, killing 256 people.

·range of fire 8:491d

**Big Black Mountain**, highest peak (4,145 ft [1,263 m]) in Kentucky, U.S., in the Pine Mountains section of the Cumberland Plateau (Appalachian Mountains). Heavily wooded, it lies south of Lynch near the Virginia border. 36°54' N, 82°54' W

**Big Black River**, rises in Webster County, Mississippi, U.S., and follows a southwesterly course of 330 mi (530 km) to enter the Mississippi River 23 mi southwest of Vicksburg. 32°00' N, 91°05' W

**Big Black River, Battle of** (1863), Union victory over Confederacy in U.S. Civil War. ·Civil War western campaign map 4:679

**Big Blue River**, in Nebraska and Kansas, U.S., rises in several branches in southeast Nebraska, flows south past Beatrice and crosses into Kansas, where it joins the Little Blue River at Blue Rapids. The combined streams are dammed near Rocky Ford, in Pottawatomie County, to form Tuttle Creek Reservoir, before joining the Kansas River near Manhattan. Total course of the Big Blue River is 300 mi (480 km). 39°11' N, 96°32' W

**Big Boy**, class of large articulated steam locomotives built in the U.S. for the Union Pacific Railroad beginning in 1941 and taken out of regular service in 1959. ·size and power 15:483a; illus.

**Big Candle** (theocratic movement): see Kuga Sorta.

**Big Cypress Swamp**, large forest morass lying mainly in Collier County, southern Florida, U.S., and covering 2,400 sq mi (6,200 sq km). The region is practically inaccessible, and it merges into the swampy Everglades on the east. It is dominated by cypress trees, and wildlife is abundant. Sunniland, a village in the swamp 40 mi (60 km) southeast of Fort Myers, was the site of the first oil wells in Florida. The Seminole Indians have reservations in the area. 26°10' N, 81°38' W

**Big Diomed Island** (Bering Strait, U.S.S.R.): see Diomed Islands.

**Big Dipper** (astronomy): see Ursa Major.

**big-eared bat**: see long-eared bat.

**big-eared fox**: see bat-eared fox.

**Bigelow, Erastus Brigham** (b. April 2, 1814, West Boylston, Mass.—d. Dec. 6, 1879,

Boston), developer of the power carpet loom, industrialist, and a founder of the Massachusetts Institute of Technology. From age ten, he was obliged to work and to forego a formal education. Adept at mathematics and mechanics, at the age of 23 he invented his first loom for lace manufacture. He followed this with other power looms for weaving a variety of figured fabrics, tapestry carpeting, and ingrain carpeting. In 1843 he and his brother Horatio established a gingham mill, around which the town of Clinton, Mass., grew. Several years later, he founded the Bigelow carpet mills there. From 1845 to 1851 he developed his greatest invention, a power loom for the manufacture of Brussels and Wilton carpets. His inventions provided a large impetus to carpet manufacture in Europe as well as in the U.S.

·loom development and weaving techniques 18:178h  
·power loom carpet-weaving development 7:408d

**Bigelow, John** (b. Nov. 25, 1817, Bristol, now Malden-on-Hudson, N.Y.—d. Dec. 19,



John Bigelow

By courtesy of the Library of Congress, Washington, D.C.

1911, New York City), author, journalist, and diplomat, was the discoverer and first editor of Benjamin Franklin's long-lost *Autobiography*. As United States consul in Paris during the American Civil War, he prevented the delivery of warships constructed in France for the Confederacy with the knowledge of the French government.

Called to the New York bar in 1838, Bigelow was managing editor and, with the poet William Cullen Bryant, part owner of the *New York Evening Post* (1849–61). In the election campaign of 1856 he was a principal adviser of the Republican Party's first presidential candidate, John Charles Frémont. After the Civil War he became editor of *The New York Times* (1869).

Appointed consul in Paris (1861), Bigelow adroitly gained support for the Union cause, emphasizing ideological considerations to the French liberal press and the trading potential of the Northern industrial states to French businessmen. In *France and the Confederate Navy, 1862–1868* (1888), he recounted the episode of the French-built warships, which, if manned by Confederate crews, might have broken the Union blockade of the South. As U.S. minister to France (April 1865–September 1866), he dealt tactfully with the problem of the French-backed Mexican empire of Maximilian.

While living in Paris, Bigelow found a manuscript of Franklin's *Autobiography*; he edited this book (1868) as well as Franklin's complete works (10 vol., 1887–88). He also prepared a biography of Samuel Jones Tilden (1895), editions of that U.S. presidential candidate's writings (1885 and 1908), and several works on the theology of Emanuel Swedenborg.

**Bigelow Mountain**, Somerset County, western Maine, U.S., is 4,150 ft (1,265 m) high. It was named for Hosea Bigelow, British officer in the French and Indian War. 45°09' N, 70°13' W

**Big Four**, World War II major powers, United States, United Kingdom, U.S.S.R., and China.

·UN history, membership, and charter 18:894a

**Big-Game Hunting cultures**, ancient North American cultures based on hunting herd animals such as mammoth and bison; remains of these cultures have been found mainly in the North American Plains and in eastern and southwestern North America. Similar or related artifacts have also been found in Middle and South America and in the Arctic. The big-game tradition may date from about 13,000 or 14,000 bc; it began to decline or change after 8000 bc. See also Clovis complex; Folsom complex; Sandia complex.

**Biggar**, town, west central Saskatchewan, Canada. Settled in 1905, the community was named after W.H. Biggar, a Grand Trunk Pacific Railway official. Since 1910 the town has been a railroad divisional point and a marketing centre for a mixed-farming area. Its industries include the production of sodium sulfate and potash, but the railroad remains the largest employer. Inc. village, 1909; town, 1912. Pop. (1971) 2,607.

52°04' N, 108°00' W

·map, Canada 3:716

**Biggleswade**, market town, Bedfordshire, England, situated northwest of London on both the Great North Road and a main English railway route. Biggleswade lies in a district of sandy soils, intensively used to produce vegetables. Straw-plaiting and lace-making, once important local activities, have been replaced by engineering and the manufacture of caravans (trailers). Pop. (1971) 9,605. 52°05' N, 0°17' W

**bighorn**, or MOUNTAIN SHEEP, either of two similar North American sheep: the Canadian bighorn (*Ovis canadensis*) and the Dall sheep (*O. dalli*), family Bovidae (order Artiodactyla). The body is compact and muscular; the muzzle, narrow and pointed; the ears, short and pointed; the tail, very short. Both sexes have transversely ribbed horns that, in the



Bighorn sheep (*Ovis canadensis*)

Harry Engels—National Audubon Society

male, may curve in a spiral more than 1 metre (39 inches) long on the outer curvature. The fur is deerlike and usually a shade of brown with a whitish rump patch; in the Dall sheep it varies from white to almost black. Height at the shoulder is about 1 metre; the weight of rams reaches about 90 kilograms (200 pounds) in the Dall sheep, 155 kilograms (340 pounds) in the Canadian bighorn.

Bighorn live in the remote crags and cliffs of mountainous areas. Formerly the Canadian bighorn ranged from northern Mexico to Canada but is now reduced to small bands protected by inaccessible habitat or by refuges. The Dall sheep range from Alaska to British Columbia.

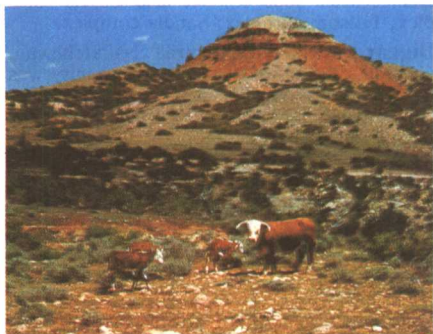
Bighorns feed mainly on grasses, but in the



desert mountains of the Southwest they eat shrubs and even cacti. Surefooted, they leap easily from rock to rock and climb seemingly sheer cliffs. The cloven hooves are sharp edged, elastic, and concave. Bighorns breed in November and December, the rams battling for possession of the ewes. One or sometimes two lambs are born after six months' gestation. Bighorns are gregarious, but in summer the rams live apart from the ewes and lambs.

- Dall sheep seasonal migrations 12:181h
- Wyoming location frequency 19:1052h

**Bighorn Mountains**, range of the northern Rocky Mountains in southern Montana, U.S.,



Yellowtail Reservoir area in the Bighorn Mountains, southern Montana

Roger and Joy Spurr—Bruce Coleman Inc.

extends southeastward in an anticlinal arch for 120 mi (193 km) across north central Wyoming. Varying in width between 30 and 50 mi, the mountains rise abruptly 4,000 to 5,000 ft (1,200 to 1,500 m) above the surrounding Great Plains and Bighorn Basin. Their average height is 8,000 to 13,000 ft, with the highest point being Cloud Peak (13,165 ft) in Wyoming. In addition to the unique geologic formations, the scenic beauty of the mountain slopes is enhanced by the pine, fir, and spruce of the Bighorn National Forest. The Powder River rises in several headstreams in the southern foothills.

44°00' N, 107°30' W

·map, United States 18:908

**Bighorn River**, largest tributary of the Yellowstone, drains west central Wyoming and a small area of south central Montana, U.S. Topographically, it includes three subbasins, known in downstream order as the Wind River (*q.v.*) in Wyoming, the Big Horn in Wyoming and Montana, and the Lower Big Horn in Montana.

Wind River, master stream of the upper basin, originates in the high areas of the Wind River and Absaroka Mountains in northwestern Wyoming. Flowing southeast to a lowland area in west central Wyoming, it is joined by the Popo Agie River (*q.v.*) and Little Wind rivers near Riverton. Turning north, it passes out of the upper basin through Wind River Canyon, a deep, spectacular gorge through the Owl Creek Mountains. Boysen Dam is located in the southern section of the canyon. North of the canyon the stream becomes the Bighorn River. Continuing northward it flows through the Big Horn Basin—collecting its two principal tributaries, the Greybull and Shoshone rivers—to the Wyoming-Montana boundary, where it turns northeastward through Bighorn Canyon to cross the Lower Big Horn Basin and empty into the Yellowstone at Bighorn, Mont., after a course of 461 mi (742 km). The Little Bighorn River (*q.v.*), site of the Custer Battlefield National Monument, joins the main stream at Hardin, Mont. The Bighorn Canyon National Recreation Area stretches along Bighorn Canyon on both sides of the border.

46°09' N, 107°28' W

·map, United States 18:908

**Big Horn Springs**, thermal springs located in Hot Springs State Park on the Bighorn River outside of Thermopolis, Wyoming, U.S.

·discharge and dissolved solids 17:517d

**Big Mac** (Michigan, U.S.): see Mackinac Bridge.

**Bignoniaceae**, the trumpet creeper or catalpa family of the figwort order of flowering plants (Scrophulariales). It contains about 120 genera and 650 species of trees, shrubs, and, most commonly, vines, mostly of tropical America, tropical Africa, and the Indo-Malayan region. They form an important part of the tropical forest vegetation because of the numerous climbing vines. A few are found in temperate regions, notably the catalpa tree (*Catalpa*), the trumpet-creeper (*Campsis*), and the cross-vine (*Bignonia*).

The family is characterized by oppositely paired, usually compound leaves and bell- or funnel-shaped, bisexual flowers having a five-lobed calyx and corolla (fused sepals and petals, respectively); two long and two short, male, pollen-producing structures (stamens) arising from the corolla tube; and a female structure (pistil) positioned above the attachment point of the other flower parts, on a disk, and consisting of two fused, ovule-bearing structures (carpels) enclosing two, or rarely one, chambers that contain many ovules attached along the central axis.

Among the important ornamental and useful members are the African tulip tree (*Spathodea*), calabash tree (*Crescentia cujete*), sausage tree (*Kigelia pinnata*), trumpet vine (*Campsis*), trumpet flower (*Bignonia capreolata*), cat's claw (*Doxantha unguis-cati*), the timber-producing West Indian boxwood



African tulip tree (*Spathodea campanulata*)

W.H. Hodges

(*Tabebuia*), jacaranda (*Jacaranda*), empress tree (*Paulownia*), flowering willow (*Chilopsis*), and the Cape honeysuckle (*Tecomaria capensis*).

·general features and classification 16:417b

·Tahebuia guayacan size and features 16:413e

**Bigo**, ancient city site in western Uganda.

·construction features and significance 6:95h

**Bigod**, also spelled BIGOT, the name of an Anglo-Norman family conspicuous for its opposition to the crown. Hugh (died 1177), created earl of Norfolk by King Stephen, was a leader of the rebellion (1173-74) against Henry II. His son Roger (died 1221) joined the barons against King John (1215), and Roger's grandson Roger (died 1270) opposed Henry III in the Barons' War (1264-67). Roger, 5th earl (died 1306), quarrelled with Edward I and, with the Earl of Hereford, forced him to confirm the charters of liberties (1297). He died childless, and although a cadet branch of the family long survived, it played no part in politics.

**Bigordi, Domenico di Tommaso**: see Ghirlandajo, Domenico.

**Bigot, François** (b. Jan. 30, 1703, Bordeaux, Fr.—d. c. 1777), French civil servant, lawyer, and the last intendant of New France (1748-60), whose corrupt administration aided the British conquest of Canada.

After entering the civil service, Bigot was ap-

pointed naval commissary at Rochefort, Fr., in 1731. He became commissary at Louisbourg, on Cape Breton Island (now in Nova Scotia), in 1739 and may have been responsible for failing to fortify it properly, thus aiding its capture by the British in 1744. In 1745 he returned to France and supervised an unsuccessful expedition against Nova Scotia (1746).

On assuming the powers of the intendant of New France in 1746, Bigot set up partnerships with several companies and individuals in order to control the colony's economy. Arriving in Quebec in 1748 with more power than the governor, he perpetrated enormous frauds: he used a false name to retail goods to the public and the government while making a vast profit; and he appropriated military and Indian supplies. He went to France in 1755 but, reassured of his safety, returned to New France to impose an unjust corn and flour trade policy for his own enrichment. The colony's growing economic chaos seriously weakened its resistance to British attack and led to its surrender in 1760. Bigot returned that year to France, where he was arrested and imprisoned in the Bastille for 11 months, fined, and compelled to make restitution. He was then banished from France and died, probably elsewhere in Europe.

**Big Rapids**, city, seat of Mecosta County, central Michigan, U.S., on the Muskegon River. Settled in 1854, it was known as Leonard, after an early settler, until the present name, denoting its location at the rapids of the river, was adopted. Lumber milling in the 1850s caused such rapid expansion that a severe food shortage resulted in near starvation for the entire town. Natural gas wells, discovered in the 1930s, supply a wide area.

Big Rapids is now an agricultural shipping point (fruit, grain, potatoes, dairy products) and has some light manufacturing. It is the seat of Ferris State College (1884). Nearby is the state fish hatchery. Inc. city, 1869. Pop. (1980) 14,361.

43°42' N, 85°29' W

·map, United States 18:908

**Big River** (Canada): see Grande River, La.

**Big Sandy River**, formed by the confluence of Levisa and Tug forks at Louisa, Lawrence County, eastern Kentucky, U.S. The river, made navigable by a series of locks and dams, flows generally north for 27 mi (43 km) along the Kentucky-West Virginia border to the Ohio River near Catlettsburg, Ky., where the three states, Kentucky, West Virginia, and Ohio, meet. The Breaks of Sandy—5 mi of gorge and rapids—are on Russell Fork, a tributary of Big Sandy.

38°25' N, 82°36' W

**Bigsby, John Jeremiah** (b. Aug. 14, 1792, Nottingham, Eng.—d. Feb. 10, 1881, London), physician and geologist whose extensive geological studies of Canada and New York revealed much of the structure of the underlying rock strata and uncovered many new species of prehistoric life. Having moved to Canada in 1818, he was appointed to report on the geology of Upper Canada the following year. He served as British secretary and medical officer to the Canadian International Boundary Commission from 1822 until he returned to England in 1827. He then practiced medicine in Newark, Essex, until 1846 and in London until 1881. His works include *Thesaurus Siluricus* (1868) and *Thesaurus Devonico-Carboniferus* (1878). In 1877 he established the Bigsby Medal of the Geological Society of London to be awarded biennially to geologists under 46 years of age.

**big-seal style** (calligraphy): see ta Chuan.

**Big Sioux River**, rises in Grant County, north of Watertown, South Dakota, U.S., and flows south and southeast past Sioux Falls, where it drops about 20 ft (6 m), continuing on to enter the Missouri River near Sioux City, Iowa, after a course of 420 mi (676 km). Between Sioux Falls and Sioux City



the river forms the boundary for about 80 mi between Iowa and South Dakota. It is not navigable. Its main tributaries are the Rock and Floyd rivers.  
42°30' N, 96°25' W

**Big Soviet Encyclopaedia:** see Bolshaya Sovyetskaya Entsiklopediya.

**Big Spring**, city, seat (1882) of Howard County, northwestern Texas, U.S., at the foot of the Cap Rock Escarpment. It was named for the "big spring" in nearby Sulphur Draw, discovered (1849) by Capt. R.B. Marcy while on a War Department mission. The settlement, based on cattle and homesteading, developed after the arrival of the Texas and Pacific Railway in May 1881 and became a railroad divisional point. Its growth was accelerated after the discovery of oil in 1925. Refining and the production of petrochemicals and carbon black are basic to the economy, which was considerably boosted by the establishment of Webb Air Force Base during World War II. The city has well-known medical facilities focussing on the Veterans Administration Hospital and Rehabilitation Center, and is the site of Howard County Junior College (1945). Annual events include a Cowboy Reunion and Rodeo and an Old Settlers' Reunion. Inc. 1907. Pop. (1980) 24,804.  
32°15' N, 101°28' W

·map, United States 18:908

**Big Stick Policy**, in U.S. history, reference to a slogan used by Pres. Theodore Roosevelt advocating adequate military (especially naval) preparation to support the nation's diplomatic objectives, presumably rendering hostilities unnecessary. The phrase was drawn from Roosevelt's famous assertion that the country must "speak softly and carry a big stick" and was based on the sea power theories and writings of naval captain Alfred T. Mahan in the 1890s. As assistant secretary of the Navy (1896–98) and as president (1901–09), Roosevelt was in a position to support enthusiastically the sea power concept; by 1907 the American fleet was competing with Germany for second place among the world's naval powers.

An outstanding example of the Big Stick Policy occurred in the first decade of the 20th century when the dominant American naval presence in the Caribbean succeeded in wresting exclusive control of isthmian canal rights from Great Britain and then in guaranteeing Panama's independence movement from Colombia; the U.S. was thus assured of exclusive control over the proposed interoceanic waterway.

**Big Stone Lake**, source of the Minnesota River in the U.S., on the Minnesota–South Dakota boundary, 300 mi (480 km) west-northwest of Minneapolis. Once part of the southern outlet of the extinct glacial Lake Agassiz, its name comes from red granite outcrops in the vicinity. Its waters are impounded in a narrow spillway by the delta of the Whetstone River. The lake is 26 mi long and  $\frac{3}{4}$  to 1½ mi wide. Its level is raised by water diversion from the Whetstone River and regulated by a dam at its outlet near Ortonville. The lake, the lowest point (962 ft [293 m]) in South Dakota, is used for a storage reservoir for spring floodwaters, which otherwise might inundate the Minnesota Valley.  
45°25' N, 96°40' W

**Big Sur**, resort area of western California, known for its rugged beauty.  
·U.S. coastline contrasts illus. 13:175

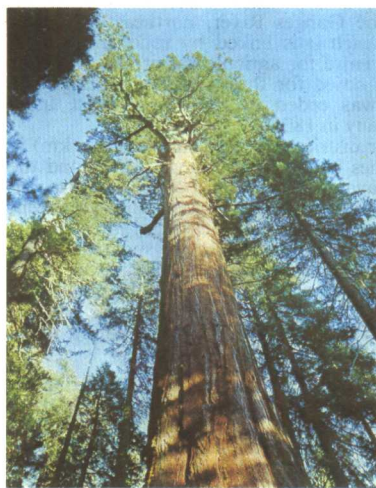
**Big Ten**, also known as the WESTERN CONFERENCE, one of the oldest college football conferences in the United States, formed in 1896 by the universities of Chicago, Illinois, Michigan, Minnesota, Northwestern, Purdue, and Wisconsin. Iowa and Indiana were added in 1899 and Ohio State in 1912. Chicago terminated its football program in 1939 and officially withdrew from the conference in 1946,

and the conference did not again include ten teams until Michigan State was added in 1949. The Big Ten traditionally has been one of the strongest football conferences in the nation and since 1947 has sent a representative team, usually its conference champion, to the Rose Bowl, oldest of the postseason invitational events. Competition among the member schools now extends to many other sports.  
·history of football in America 7:506f

**big top**, main circus tent.

·origin and designs 4:638c

**big tree** (*Sequoiadendron giganteum*), also known as MAMMOTH TREE, GIANT SEQUOIA, WELLINGTONIA, or SIERRA REDWOOD (as distinct from the redwood of coastal areas, genus *Sequoia*), coniferous evergreen of the deciduous cypress family (Taxodiaceae), found in scattered groves on the western slopes of the Sierra Nevada Range of California, at elevations between 900 and 2,600 metres (3,000 to 8,500 feet). The big tree is the largest of all trees in bulk; formerly reputed to be the oldest living thing, the largest stumps examined in tree-ring studies were found to be less than 4,000 years old (bristlecone pines are older).



Big tree (*Sequoiadendron giganteum*)

Grant Heilman—EB Inc.

The big tree is distinguished from the coastal redwood by having uniformly scalelike, or awl-shaped, leaves that lie close against the branches, scaleless winter buds, and cones requiring two seasons to mature; the pyramidal tree shape, reddish-brown, furrowed bark, and drooping branches are common to both genera.

·forestry and conifer economic importance 7:529a

·giant conifer dimensions 5:1d

·gymnosperm representative form illus. 8:519

·longevity comparison table 10:914

·size and distribution 18:689e

**Big Wood River**, rises in the south slopes of the Sawtooth Range in the Sawtooth National Forest, south central Idaho, U.S., and flows south past Sun Valley, Ketchum, and Hailey, then west to join the Snake River near Gooding after a course of about 120 mi (195 km). Magic Reservoir, impounded just above Shoshone Ice Caves, is used for irrigation.  
48°52' N, 114°54' W

**Bihār** 2:984, also spelled BEHAR, constituent state of the Republic of India. Situated in the northeastern part of the country, it is bounded by Nepal (north), by West Bengal (east), by Orissa (south), and by Uttar Pradesh and Madhya Pradesh (west). Its total area is 67,184 sq mi (174,008 sq km). The capital is Patna. Pop. (1971 prelim.) 56,332,246.

The text article covers Bihār's history, physical geography, people, administration, social conditions, economy, and cultural life and traditions.

REFERENCES in other text articles:

·area and population table 9:288

·folk dance preservation 17:164b

·village settlement and caste divisions 3:986d

·West Bengal's post-partition territory 19:786f

**Bihār**, town, Patna district, Bihār state, northeastern India, east of the Paimār Nadi (river), a tributary of the Ganges. It was also called Bihār Sharif and served as the capital of the Pāla dynasty (10th century AD). It contains a 5th-century-AD Gupta pillar and several Muslim mosques and tombs. Nearby lie the remains of a great *vihāra*, or college of Buddhist learning, from which Bihār derives its name. In 1869 it was constituted a municipality. The town is now a road and rail hub, as well as an agricultural trade centre. Pop. (1971 prelim.) 100,052.

25°12' N, 85°33' E

·map, India 9:278

**Bihari language**, eastern Indo-Aryan language spoken by 40,000,000 persons in the state of Bihār, India, and in the Tarai districts of Nepal. There are three main dialects: Maithili (Tirhutia) and Magahi in the east, and Bhojpuri in the west, extending into the southern half of Chota Nāgpur. Maithili, spoken in the old country of Mithilā (Tirhut), was famous from ancient times for its learning and still retains many antiquated linguistic forms. It is the only Bihari dialect with any real literature and has been the object of increasing interest since 1947. Magahi is considered the modern representative of the Māgadhī Prākṛit. The Bihari dialects are linguistically related to Bengali but are culturally identified with Hindi. Very few elements of Bihari vocabulary are derived from Persian, Arabic, or other foreign languages. Most educated Bihari speakers also know Bengali and Hindi.

·Maithili development and major writers 2:987g

·modern Indo-Aryan language table 9:441;

map 442

·prevalence and dialects 9:286a

**Bihārī Mal, Raja**, 16th-century Rājput king of Amber.

·Akbar's feudal policies 1:400c

**Bihor**, district (*judet*), Romania.

·area and population table 15:1051

**Bihor Massif**, Romanian MUNȚII BIHORULUI, in the Western Carpathians of Romania and the highest part of the Apuseni Mountains (*q.v.*), roughly 16 mi (25 km) long northwest-southeast and 9 mi wide. The summit is almost smooth, broken by a few peaks of harder rock. Curbăta Mare, at 6,063 ft (1,848 m), is the highest point. A northern extension, Munții Vlădeasa, is a volcanic range reaching 5,949 ft (1,836 m). These mountains are the source of several important rivers. The Vlădeasa spawns the Crișul Repede and the Someșu Cald in a striking gorge.  
46°40' N, 22°25' E

**Bihu**, Assamese social and cultural festivals celebrated with dancing and singing in April, January, and October.

·Assamese celebration and origin 2:209f

**Bijagós**, Senegambian people of Portuguese Guinea.

·visual art forms 1:262f

**Bijagós**, administrative district, Portuguese Guinea.

11°20' N, 16°00' W

·area and population table 14:875

**Bijagós Islands**, also called BISSAGOS ISLANDS, Portuguese ARQUIPÉLAGO DOS BIJAGÓS, in Portuguese Guinea, lie 30 mi (48 km) off the Guinea coast of West Africa. They compose an archipelago of 15 main islands, among which are Caravela, Carache, Formosa, Uno, Orango, Orangozinho, Bubaque, and Roxa. They are clothed with a lush vegetation, have sandy beaches, and their princi-