BIBLIOGRAPHY OF THE GEOLOGY OF CHINA; WITH AN OUTLINE OF
THE GEOLOGICAL FEATURES AND STATEMENT
OF THE PROBLEMS CONNECTED
WITH THE GEOLOGY OF CHINA.

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A THESIS
SUBMITTED TO THE DEPARTMENT OF GEOLOGY AND MINING
AND THE COMMITTEE ON GRADUATE STUDY OF THE LELAND STANFORD
JUNIOR UNIVERSITY IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE
DEGREE OF MASTER OF ARTS.

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By
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Approved for the Department.

Approved for the Committee on Graduate Study.

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Part I

Bibliography of the Geology of China

Part II

Chapter I: The General Geological Features of China

Chapter II: Some of China's Physical and Geological Problems
INTRODUCTION.

In the present bibliography of the Geology of China, effort has been made to give titles relating to all phases of the subject. Hence there are included publications bearing on the geology, paleontology, petrography, mineralogy, seismology, meteorology, mining, metallurgy, coal and iron, and petroleum and natural gas of China.

Owing to the fact that geology includes so many subdivisions, and that the literature of Chinese geology is scattered through a wide range of technical journals (German, French, English, Russian, Italian, Japanese, etc.), the questions as to how much can properly be included or expected, and where to stop, have often confronted the writer. However, he has diligently examined the most important technical and scientific journals published in different parts of the world, and believes that he has not overlooked anything of prime importance.

Apart from the unavoidably omitted works issued during the final stages of compilation of this bibliography, there are many whose titles bear no relation to the subject. The inclusion or omission of those has been more or less fortuitous, depending on references in other works.

The data given in Chapter I are intended to provide
a fairly concise and as full a survey as may be of the possibilities of each province or division. They are compiled from various sources, chiefly Customs Reports, the works of Richthofen, Lampelley, Willis, Blackwelder, Litle, Richard, and others, with no pretense of originality.

Although the work is unavoidably incomplete, the writer hopes that this contribution will be of value to those who are interested in the welfare and the scientific development of China. This work was done under the direction of Professors Bailey Willis and James Merrin Smith, to whom the writer is greatly indebted for advice and direction.
BIBLIOGRAPHY OF THE GEOLOGY OF CHINA.

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Abbadé, R.

   Describes carboniferous fossil plants from the province
   of Shan-si.

Abel-Renusat

2. Sur les Aerolithes de la Chine; Journal des Savans,
   pp. 245-251, Avril, 1819.
   Gives an account of the meteoric stone aerolites of
   China.

Abdusamad, t.R.

3. La Geologie du bassin du lac de la province du e-
   Teshuan, Chine; Rev. Univ. des Mines, June 1906.
   General description of the petrography, geology
   and mineral resources of the Red River Valley of China.

4. La Geologie du bassin du lac de la province du e-
   Teshuan, Chine; Rev. Univ. des Mines, July 1906.
   Continuation of article previously indexed,
   outlining the geology and petrography of the Red River
   Valley of China.

5. La Geologie du bassin du lac de la province du e-
   Teshuan, Chine; Rev. Univ. des Mines, September 1906.
   Continuation of article previously indexed,
   outlining the geology and petrography of the Red River
   Valley of China.

6. La Geologie des Neten Beckens der Provinz Hsichuan
   in China; Zeit. der Deutsch. Geol. Gesells., Vol. 50,
   pp. 197-303, Berlin 1907.
   The geology of "Neten Beckens" in the province
   of Sze-Chuan, with sections and maps.
Abendanon, T.C.


The author describes in detail the structural geology of the gorges of the Yangtzi River about the Red Basin. Map, sections and illustrations.

Adams, A.


General description with special reference to the great mineral wealth.

Ahmert, E.


Describes the Geology of Lanchuria.


Geological investigations in Lanchuria.


Describes the occurrence of carboniferous, jurassic and tertiary coal in Lanchuria. The beds are thin, and do not give promise of a permanent mining industry.

Geological researches in Manchuria in the year of 1901.


Information concerning fossils in the eastern part of China.


Describes the Cambrian trilobites from the region north of Peking China.


Refers to the "Challenger" and the "Artic" Expeditions, the geology of parts of Asiatic Russia (p. 449) and Rechhofen's "China" (p. 447).


The author of the article reviewed is Dr. C. F. Wright.
Anderson, John.

19. "Sandalay to Tientsin; A Narrative of the two Expeditions to Eastern China of 1868 and 1875 under Colonel Col. B. Bladen and Colonel Horace Browne; London 1876.

Contains geological notes of the country explored throughout.

Anderson C. E.


Gives particulars relating to the production of iron and steel in China in 1912.


Gives the notable domestic sources of coal available in China, the uses of the coal in local enterprises, and the modern methods in the iron works.


Information concerning the export of tin from China.


The writer states that the course of exports of tin from Southern China in the immediate future is somewhat uncertain due chiefly to the war.

Anderson J.


Contains notices of the occurrence of coal, sulphur, galena, orpiment, and other minerals, and of their being work in Yunnan.
Anspach, K.

On page 517 the author refers to the production and resources of iron in the province of Shanxi in Northern China.


Contains notes of a journey through the Shantung Peninsula from Tschifu to Taingtau.


Grüdt, Theodor.
II. Die Entwicklung der Kontinente und ihrer Lebensglut; Leipzig, 1907.


Arctov, Jedvin.
II. Voyage dans les confins de la Mongolie occidentale (russe) et Petersbourg, 1901.

Armstrong, Frank.

An extensive account of this typhoon. Illustrated.

Arzuni.

Describes the nephrite of the Puenium Mountains,
Ashburton, Lord


Information concerning the explorations of interior China as the result of Lord Elgin's treaty.


Letter noting the conditions of mining in these two vast countries.


The conditions of the market for these products is discussed, with review of the history of these industries in the countries named, and the changes brought about in China.

Lafer, T. Colborne

36. Travels and researches in western China; Royal Geographical Society Supplementary Papers; Vol. 1, p. i, London.


The information refers especially to the districts of Hunan and Sichuan. The mode of working is described, and the prospect of the mining is discussed.


Comparison of the data of the author and associates, and those of the Jesuit surveyors in regard to the geographical positions of places in western China.

39. An earthquake in Tze-Chuan; Royal Geographical Society, Supplementary Papers, Vol. 1,
Full account of the earthquake that totally destroyed the city of Kiang-tung, Sze-chuan Province.


Information concerning the physical features and social conditions of China.


In a paper illustrating the difficulty of the problem which a traveller in an unexplored country is called upon to examine, the author gave an account of the physiographical features of Western China.

Baker, E. C.


Asbestos of good quality has been found near Lachow in Chungking Province.

Hall, J. Lyer.

4d. History of China; Published by the John Murray Co., London, 1914.

Contains a chapter on the geography of China (pp. 403-407), and a chapter on the geology of China (pp. 387-389).


Gives a short list of Chinese earthquakes and rather fully described.

de Sellors, E. de Lantessaus

4f. Los Tremblements de Terre, Geographie

Information concerning earthquakes:
1. Mongolie, Sanchourie et Cerce
2. Chine et Indo-Chine
   (in French)

Debre, Paul
45. A. Leclerc: Observations in Southern China; Revue Francaise de l'Etanger et des Colonies
April 1901.

Observations made by Leclerc, a mining engineer, noting the orography, communications, population, climate, agriculture and commerce.

Hartfeld, L.

Short Summary of contents of principal work published in 1899 by Russian Scientific Societies.

Harten, Alfred

Describing the geography and physical features of the Yangzte-Fliver and its tributaries and environments.

Bassett-Smith, I. M.
46. Notes on the Geology of the Eastern Coast of China and the adjacent islands.

A hydrographical report on this area, describing the geology of the islands, etc. See Nature vol. 30, p. 163 for abstract.
49. Further Notes on the Geology of the Eastern Coast of China and the Adjacent Islands.

Describing the geology of the Chinese coast, the islands and group of islands; for abstract see Nature, Vol. 30, p. 410.

Lassina.


Information concerning the coal of China.

Repet, Kerman


Information concerning the mineral tin and its metallurgy.

de Saltz, L. one


Some particulars with regards to these deposits, with map showing proposed Eastern Chinese railroad.

Dayna.


The following paleozoic fossils from China are described: (1) Spirifer lincaetus, Martin, sp. (2) Athyris antiquus, Bow, sp. (3) Pecosia carriri, n. sp. (4) Productus davidii, n. sp. (5) Productus costatus, J. de G. Sowerby, var. societas (6) Helioceras tamesiella, W H. T.

Deal, C.

Decker, Henry W. de la.
Ed. China; Geological Manual; Carey & Lea.
Philadelphia, 1852.

Notes on the gaseous exhalations in China.

Decker, W. L.

Specimens collected were from the vicinity of T-chang, on the Yang-tse-kiang. They consisted of mixed ore of copper or dark brown color, being mostly impure oxides with a little unchanged sulphide permeated by streaks of carbonate. The mineral was very heavy, and showed by a rough test about 70% of metallic copper, etc. Also gives other geology of the region.


Quotes Nishidono, supplements and criticises his statements.

Published by: Inst. of Met. London


Includes:
The Chinese System of Mining, p. 88
Modern Methods v. Chinese p. 98

Discussion in same volume, p. 131-141.

Deev, Richard,

China contains quicksilver deposits in 10 out of 16 provinces, the most important being those of the province of Kwei-Tau.

Describes the iron deposits of the Tajeh region, China.

Beharrel, C.
61. Oilfields of Sakhalin and the Concessions of the China Oil Company, Ltd., Sakhalin, China, 1911

Bell, J. L.
62. Travels from St. Petersburg in Russia to Diverse parts of Asia; etc., Glasgow, 1760.


Contains geological notes on pp. 260, 269, 274, etc.

Bell, Mark E.

Contains general geologic notes throughout.

Benecke, C.

Abstract of J. T. Carvall's article on "The Locality of some Fossils Found in the Carboniferous Rocks of Yung-Chau, China.


A review of Baron Richthofen's second volume on "China."
Senior H.

Gives notes on the mineralogy of Tonkin.

Renger I.
68. China's Bergbau, speziell seine Kohlen- und Eisen-industrie; Technische Blatter, p. 377, Nov. 30, 1917.

China's mining, especially its coal and iron industry.

Mason, J.
69. Etude de quelques Trilobites de Chine; Bull. de la Soc. Geol. de France; 3rd Ser., Vol. 27, pp. 429-446; Paris, 1893.

Describes the following genera of trilobites from China: Calymene, Tonicrus, Claenides, Ticadioscolopus, Prenura, and Arthricephalus. Illustrated.


Describes the calcareous fossils from the Cambrian of China.

Berteaux.

Describes the occurrence of iron ore in Shang-Hai, and points out that the expenses attending its extraction, and the disinclination of the natives to work in mines have hitherto prevented the deposits from being developed. (See Jour. Iron & Steel Inst., Vol. 1, p. 362, 1897)

Hotz, P.
72. Ein Ausflug nach den Yangtze-Grotten;
Globus, 78, pp. 37-44, 1902.

A description of the Hangtze gorge.

Boyschlag, Frantz and Vort.


Gives an account of the quicksilver deposits in the province of Ynace-Shao.


Notes on the zinc production of Yunnan, Province, China.

Violeverki, A.


Quotes Humbolt's and Rose's conclusion that some Alten granites are younger than local schists and slates remain indubitable.

Dickere, A.C.

76. Devonian Fossils in China (S.W.S.)

Notes and Queries on China and Japan, 1, pp. 80-81.


Contains some noteworthy remarks on the same in the physical geography of China since her earliest history.


1868.

Describes the geographical, geological, and physiographical features of the country travelled.

Hill, J.  

Geological features are noted throughout.

Hiot, T.  

Treats with the changes of courses of the Yellow River.

62. Note sur la Temperature de la Chine; Culture des Turions, de J. Julien, pp. XIX et. seq., 1837.

63. Catalogue general des tremblements de terre, effondrements et soulèvements de montagnes, observés en Chine, depuis les temps, anciens jusqu'à nos jours; Academie des Sciences, Temps nouveaux, 8, p. 702; Paris, 1838.


Treats with the ancient climate of China.


Describes a severe earthquake in Fensu (?) Hiot stated that it was in Shihli.


Geological information in regard to Talo Lake.
Larkinling, John


Gives an account of the iron industry in north-central and southern China.

Bishop, Isabella


Mentions the geological features of the country through it.

Lockwood, Hilt.

19. Coal Deposits and Methods of Mining in China; Mining Jour., Chicago, Nov. 24, 1907.

A sequel to a review of the geology and early development of coal mines in China.


Includes the following subjects:

Chap. II, Stratigraphy of Shantung.
Chap. V, Reconnaissance in Southest Honan.
Chap. VI, Stratigraphy of Western Honan and Central Chansi.
Chap. VII, Stratigraphy of Central Chansi.
Chap. XII, Stratigraphy of Sichuan.
Chap. XIV, Geology of Chansi.


The Rocks from Northern and Central China are
elaborately treated with respect to their origin, etc., etc.


Includes facts concerning the topography and physiography of Interior China, with special reference to transportation.


The author recognizes the following typical physiographical and geological divisions:

(1) The north-eastern mountain region; (2) The western plain of Hoang-Ho; (3) The west and north-west plateau; (4) the southwestern region; (5) The Szechuan province; (6) the mountain region of Southern China. Sections, map and illustrations.


25. The Ecologic History of China; The Far Eastern Review; Vol. XXXI, No. 3, pp. 61-65; Shanghai, August 1915.

Glenancy, W.

26. In the Coasts of Cathay and Cipango Forty Years Ago; London, (O'Keef), 1908, (XX 384) with maps and pl.

A record of Surveying Service in China, Yellow and Japan Seas, and on the seaboard of Korea and Manchuria.
Biksten, Captain
- Five tenths on the Yangtze; London, 1863.

Blanc, M.

Bleek, A.
- Die Jadeillarerstaten in Upper Burma; Sitz. f. prakt. Geol., Vol. IV, pp. 341-355; Berlin, 1907.

Information included concerning the mineral jade with respect to the Chinese, pp. 344-355.

Bloom, C.
- 100. The iron industry in China. (Aus der Chinesischen Vismindustrie); Stahl und Eisen, Trosseldorf, Germany, Jan. 1, 1908.

Mainly devoted to a description of the Hanyang Iron and Steel works. 1st. A thoroughly modern plant.

101. The Chinese iron and steel industry; Stahl und Eisen, Ind. and Met. Ind., Nov. 1908.

Translation from Stahl und Eisen. An illustrated article giving interesting information concerning the Hanyang works.

Buc, Archivald.

Includes a note stating that in China there are numerous occurrences of siderite in crystalline schists, and in almost every case the mineral is of the coal variety.

Gives the locations and descriptions of copper in the Juen-Lun mountains. (Russian)


Gives preliminary notes concerning the geology of Central Asia, in the vicinity of Tien-Shan, northeastern Tibet, etc.


108. Expedition to Central Asia; Corn. Jour., T. 5, pp. 17-107, 1855.

109. Memoirs on Taelma, Pt. 5; Nova, pp. 57-204, 1848.


Includes stratigraphical information concerning Liao-Tung province.

112. L'inscription géologique de l'extrémité sud de la presqu'île de Liao-Tung, et ses gisements d'or; Mineralogische Gesell., Vol. XX, pp. 1-949, St. Petersburg, 1899.

Information concerning the geology and the gold deposits in Liao-Tung peninsula.

113. Sur le tremblement de terre de Tien-
Contains notes on the geology of Tian-Shan.

Bonhof, Edz.


Describes fossils collected from different localities in Central Asia.

Bonifacq, C.


Describes Bonifacq from a study of the languages of numerous tribes in South China, finds that since a long period of time the people have borne sometimes a Chinese name and sometimes a particular name which varies according to the tribe. They employed worked flint in China 2200 years B.C., when iron was already known.

Bonin, C.


One of the most interesting geographical results of the journey was the discovery that the Bonites north of the Yol-i Tu made an unsuspected great loop to the north.
Occasional geological notes are found.


Information concerning the iron and coal deposits in China; includes analyses. The writer divides the country into five parts; Northern China, Manchuria, and Mongolia; North-East; North-West; South-East and South-West.


The author divides China into five parts, namely Northern China, Manchuria, and Mongolia; North-East; North-West; South-East and South-West, and describes the products etc. of each locality. (See the Jour. of Iron & Steel Industries, Vol. IV., No. 1, p. 609, 1914, London)


Notes de voyage au "deutsch-Eson"; Ann.

173. Les mines d'or du bassin occidental; les données du 18 (1901) 61-62.


Gives geographical, hydrographical, mineralogical and geological notes of the country.


180. Report of a Journey in Southwestern China; Parliamentary Papers, China, No. 1, 1887.

Describes limestone scarp (Jiassic).


British Consular report concerning the famous tin mines in the province of Yunnan.


Gives some account of the new rapid on the Yangtze, caused by a landslip, and geological description of the region.

183. The Trade of Central and Southern China; (ores, coal, etc.) Scot. Geogr. Mag.
Yeats chiefly on the region drained by the Yangtze River, about 600,000 square miles.

Geassignault, and others.

130. Rapport sur un mendre de J.

Gives a memoir of J. Diet, concerning the geological phenomena observed in China.

France.


A review of Schering's description of a fossil named Ciphus.

Branner, E. C.

132. Bibliography of Clays and the Ceramic Arts; Published by the American Ceramic Society, Columbus, Ohio, 1906.

Contains a list of titles on Chinese ceramics.

133. Syllabus of Economic Geology; Published at Stanford University, 3rd Edition, 1911.

References on China throughout.

Brannt, William T.

134. Fire wells; Petroleum and Its Product and Natural Gas; p. 4, London, 1905.

Information concerning the fire wells of China.

135. Artesian Wells; Petroleum and Its

Describes the wells and the method of drilling.

136. Natural Gas in China; Petroleum and Its Products and Natural Gas; p. 84, London, 1895.

Information concerning the natural gas districts of China, namely Tsien-Juen-Tsing and the province of Szchewan.

Braun, Fritz.


Brandenburg.


Brelick, Henry.

139. Chinese methods of mining quicksilver; Trans. Inst. of Min. Install., Vol. 14, p. 483-494,

Published by C. and T. Spen) Inst of Min. Install, London.

Eng a J. Min. Jour., New York, 1876-1879.

Notes refer to quicksilver mining in the province of Freichow. Describes the history, population, the ore deposits, the treatment of the ore and methods of mining. Includes also the mining laws and taxes, and weights, measures and currency. Discussions on pp. 483 and 494. (See also Tin A Sci. Press., Vol. 39, p. 386, 1883)
Gives data relating to the wages, prices, exchange, laws and customs used by the natives of this district in quicksilver mining.

Brenier, Henri.
141. La Mission Lyonnaise d'Exploration Commerciale en Chine, 1838-1839. 800, Lyons, 1876.

Of all the commercial missions to which the immediate prospect of the development of the resources of China by modern methods has recently given rise, this mission is the most fully equipped and that with the most extensive and elaborate programme.

Retzschneider.

Describes the characteristics of the Peking region and the neighboring mountains; map.

143. Celebrated Mountains of China; Jour. A.M., N.Y., XVI, pt. 1, 1852, pp. 223-6. This forms an appendix to Retzschneider's Botanicon Sinicum.


Retzschneider, A.
Presents a history of scientific explorations and observations in China, from 100 to 1898.

Bridgman, C.

147. Topography, Geography, etc., of China; Chinese Rep. XII, XIII, 1882.

Gives the topography, situation, boundaries, area, population, etc. of every province of China.

Brine, Lindsay.


Gives geological and hydrographical notes of the region explored along the river.

Broadfoot, J.

144. Dr. E. A. B. B. Dicken’s Journey in Central Asia; Scientific Results; The Geographical Journal, Vol. LVII, pp. 606-613, 1891.

Gives an outline of the work of Dr. C. B. B. Dicken on Central Asia.

Brommiart, A. J.


Describes the coal plants from the southern part of Hunan, one of the western provinces of China.

Tranilov, V.


153. Coal in China (Anthracite); Report to the Royal Commissioner on Coal Supplies; Final report, part VI, p. 48.

The writer states that over an area of 15,000 square miles there are several almost horizontal seams of anthracite including a persistent main seam 6 to 9 yards in thickness, in Chuxi Province.


Far in the interior of China is a tinfield which can only be reached by 300 miles travel by boat and Aero chair from the Yangtze River. At Shanghai 2 native companies produce 12 tons per month from veins where limestone has been intruded by acid granite.

155. Silver-Lead Mines of Baldwain, Shan States; (See La Touche, U. S.)


157. China; Contributions to the Geology of the Province of Yunnan in Eastern China; Sec. Geol. Surv. of India; Vol. 311, Paris 3 and 4, 75 pp., 1913.

158. Chinese Tin; Chor. Town, Vol. 95

Description of a Chinese method of smelting tin.


Includes information concerning the loess formation, the mineral wealth, and physiography of the country traveled.


Gives and describes a list of Chinese earthquakes.


Production of iron ore of China, 1910-1911.


A sketch of the geography and geology of the Himalaya Ites., and Tibet.

Part I. The high peaks of Tibet.

Part II. The principal mountain ranges of Asia.

Part III. The rivers of the Himalaya and Tibet.

Buchholz, G. Notes of journey outside the great
Describes the physiography and the rock exposures of the country traversed during the journey.

Describes a region called the South-Eastern region, its resources, its economic and political importance.

Gives and describes a list of Chinese earthquakes.

The author begins with a short reference to the political changes in China and then describes the coalfields in that land. There are many coalfields in China and all the various kinds of coal are represented.

Extract of a paper read before the Manchester Coal and Lin. Soc. An account of the Lai Hou Ho coalfield, the method of working and Chinese characteristics.
Geological observations of the mountains in the vicinity of Tachen.

Corpus, Guillaume

Describes the loess deposits in Turkestan; being Quaternary in age and well developed in Central Asia.

Carlassare, L. I.

Contains meteorological observation at Schianfu.

Charles, L.

Gives the geography of the great river, and refers to the journeys to the river by previous explorers.


Information concerning the development of the coal mining industry in North China.

A discussion of the three volumes of von Richthofen's work on China published in 1912, seven years after the great traveller's death.


The author describes the locality from which he obtained some plant remains of apparently Carboniferous age. Mr. Carruthers stated that the specimens belong to a species of Annularia.


Descriptions of the conditions of China labor among the natives, and the labor administrations on the land.


Includes: Archæan of China, 11, 159;
Cambrian, II, 272, 273; Coal, II, 340; Upper Cretaceous, III, 170; Eocene, II, 448; Oligocene, III, 217; Miocene, III, 407; Mississippian, II, 517; Pennsylvanian, III, 244.


Strips are found on boulders to be of the distinctive glacial type in the Yangtze region.

Chamberlin, Rollin I.


The author in starting, give a very vivid physical description of the province.

Chamber, George.


Notes the history of the works, describes the equipment and operations, and gives analyses and productions of the products.

Champion.

180. Industries de l'Empire Chinois; p. 47, 1869.

Reference on tin.

Challoy, E. and E. T. Bright.

181. The Tangshan Colliery, North China; Engineer, London, Nov. 23, 1913.

Illustrates and describes the features of interest in this colliery including the fine generating station, winding engine, ventilators, workshops, etc.
Chavouz, A. S.


Information concerning the climate of Amam.

Chevalier.


Information concerning an earthquake at Chang-pei, and the movement as indicated at the Observatory Yi-ka-wei.

Chisholm, C. C.


Includes:

1. Density of Population.
2. Products and Mineral Resources.
3. Means and Cost of Transportation
4. Inland Waterway
5. Railways and Railway Projects.


Includes (1) Density of Population;
(2) Products and Mineral Resources; (3) Means and Cost of Transport; (4) Inland Waterways;
(5) Railways and Railway Projects.

186. The Chinese Empire; The International Geography, pp. 521-542;
published by J. Appleton ... Co., New York, 1900.

Given the geography of China proper and Chinese dependencies, the geology and mineral of China, the industries and trades of China, means of communication in China, etc.

Cholnoky.


The author's attention was principally directed to the meteorologic structure of the regions visited, and he puts forward some new ideas regarding to the mode of formation of the present surface features, the origin of laterite, etc. The investigations relate chiefly to 3 regions: viz., the plain between Kansu and the lower Yangtze; Southern Lanchuria; and the region of the lower Yangtze-No.


Notes on the geology and other scientific results of Lanchuria, obtained during the years of 1896-1898. Map and sections.

[109.] Verlautiger Bericht uber meine Forschungsreise in China; Peter, litt., 450, p. 6, China, 1899.

The trip was taken particularly to study the Chinese industries, especially architecture.

[110.] Verlautiger Bericht uber meine Forschungsreise in China; Jernschen Mitteilungen, Bd. 48, pp. 9-13, 1899.

The preliminary report of Dr. Cholnoky on the scientific results of his journey in China. His investigations relate chiefly to 3 regions, viz,
the plain between Hangchau and the lower Yang-tze; Southern Han caves; and the region of the lower Kwang-ho.


Church, J.A. 

A letter noting that the Chinese are showing great perseverance in pushing their mining operations.


A discouraging report of the mining outlook in China.


Discussion of paper by Alley Ellis; additional information is given regarding this subject.

Clark, E.L. 

Describes crinoids from 4 distinct coastal regions of Eastern Asia, namely, (1) The East Indian, (2) The Southern Japanese, (3) The
Artic; and (4) The Antarctic.

Clark, Ellis.

Information concerning the development of mining; character of the different ore-deposits; descriptions of the coal, gold, copper, silver-lead and iron districts. Maps of northern China, and maps and plans of mines.

Clark.

Information concerning what the progressive party has been doing to develop the mining resources of the country; coal, gold, silver, copper and lead. Maps of mines.

Clark.

A sketch of the Lung Tu shaft in north China. The vein varies from 4 to 10 feet in width and consists of quartz mineralized in the upper levels with carbonate of iron, and in the depth with pyrites, scheelite, etc. Map shows localities of metalliciferous deposits.

Clark.

Account of the Tung-Tsoen gold district, 20 miles from Hang-foo, and the Mongolian mining region 100 miles off, and with assays.

Clark.
An account of the Jie-hol silver-lead district, and the Sinc-Chuan-Che copper district, Mongolia, and the operations.

Clark, T. C. and Arthur de la Bower.


The fine volume which describes this attempt to explore North China is, to some extent, the record of a Failure. In this expedition organized and financed by Mr. T. C. Clark of New York, it was proposed to start from Tai-Tou Fu in Shensi, and after traversing Shen-tung, to skirt the Tibetan border to Shu-hu-chow, in Chackamai, then to descend the Fu river to Sinkiang and return to Shensi via Sien-tzu. The primary objects were, a careful plane-table survey of the whole route followed, astronomical observation for latitude and longitude at all important towns, to observe the meteorological conditions, to collect specimens, and to use photography in various ways, etc.


This volume tells of the expedition, planned and organized in 1908 by T. C. Clark of New York, for the exploration of the north-western provinces of China. (See the Geographical Journal, Vol. 41, pp. 270-277, 1910.)

Clarke, T. C. F.


(Abridged and translated from the Russian by Captain Clarke.) Describes the physical features of the country traversed by the expedition.

Describes the coal pits, the coal, the prices of coal and the means of transportation.


Describes the mineral jadeite from Tibet, with reference to its composition, association, occurrence, etc.


On p. ixvi to lxviii is found the discussion of the swallowing of seas around China.


(Author spent many years in this province and has accurate information, in French) Information concerning the methods of operation, the tools, the industry of the regions, the productions, etc.


A general review of the present condition of the mining industry. 1st."

209. The Importance of the Mining Industry
To China. The Far eastern review; Vol. 7, p. 111, Shanghai, June 1916.

Notes the mineral wealth of China.


Antimony is smelted in native furnaces, using charcoal pots. The Hennemann process is also employed to produce salant; the refined metal. Little attention is paid to the lengthy regulations formulated at Peking.


Referring to Dr. Boley Helin' collection of isolated stones from the Kung tsi Canyon, China.


Information on taking Poan-xa, a native Bokor of China.


Gives a description of "Kien" a native alkali mineral of China.
33.


Treats with the zinc deposits of China.


Describes a Chinese metal, called "Fuk Tong", by F. v. Ingenestr.


Describes ferrolite, a meteoric stone.


A catalogue containing all the earthquakes in China from ancient time to the present.


Describes the gold, silver and copper deposits of China.


Lien is an alkaline substance used by the Chinese for medicinal purposes.


The last named substance is used by the Chinese for medical purposes.


Information concerning the borax deposits in long-cha China.


Notes the copper, red lead, and matchwood of China.


An account of the coal in China.

Thrapowskij, J.


An account of the occurrence of the gold, silver and copper deposits of China.
Collingwood, Euthbert.


Being observations in natural history on the shores and waters during a voyage to China, Formosa, Coree, Singapore, etc., made in Her Majesty's Vessels in 1866 and 1867 by the writer.


The author describes the many new species of marine animals which he found upon the shores of China, Formosa, Coree, and Singapore Straits.

Collins, W. F.


Information concerning the history of the region, the occurrence and nature of the tin ores, mining and concentration, smelting, statistical points, proprietary, mining regulations and customs, and mining laws.


Practically all of the tin produced in China is derived from the Kotieh II mines, 30 miles from the railroad, in the province of Yunnan. Includes also the descriptions of the mines, the method of mining and smelting, the regulations and transportation.

Coleough, A. P.

232. Exploration through the South China border lands, from the mouth of the Hi-Flang.
London, 1887.

One of the several purposes of this exploration
was to collect geographical information which would
prove of value to the Royal Geographical Society and
to the geographical world at large.

233. China in Transformation. Published

Includes a chapter on the geography of
China.

234. China in Transformation. With 10
maps and 1 cut. 1899.

This book opens with a geographic description
of the country, a brief but clear presentation of its
geography, especially with relation to the people
and their industries, etc. Although abounding
in coal and other metals, the development of these deposits
has barely begun.

235. Overland to China. With 35
illustrations and four maps. New York and London,
Harper & Bros. 1900.

This book in the main, devoted to countries
other than China. In 1898-99 the author journeyed
via the Trans-Siberian R. to Lake Tschel; thence
to the desert of Gobi, to Peking, southward to the
Yen-tai, and up that river to the head of navigation;
thence through the southwestern provinces of China
to Kajeng.

Cooke, A. S.

236. Molluscs, etc. The Cambridge
Natural History. Vol. III, pp. 390-318;

The fauna of the Chinese province are
discussed and described. The Province includes
the whole of China, Corea and along the coast as far north as Vladivostok, and bears special marks of individuality in the Felix and Clausilia.


Contains physiographical and slight geological notes.


On pp. 79-91 the iron of China is noted.


Notes the geology and the metalliferous deposits of the Altai Mountains.


Metalliferous lodes and known to exist in China. Also treats of tin deposits.

Describes a new scutellina from Central Asia, Scutellina (Porpitella) Alexatii, n. sp.

Couillon, E.

Note sur la geologie de la region de Ho-Si, Lou-Shan, Ti-Leu, Tou-Tza, Ai-Tcheou (Yunnan.) Ann. des mines, 10e serie., vol. 1, p. 423-446, pl. XII et XIII, 1907.

Geological notes of the regions of Ho-Si, Lou-Shan, Ti-Leu, etc., in the province of Yunnan.

Cordes, E.

Kandelstrassen und Wasserverbindungen von Hankow nach dem Innern von China.
Berlin, 1899.

Credner, Hermann,

China. Elemente der Geologie.
Leipzig, 1887.

Describes the coal-measures (p. 494) and the loess deposit (p. 277) of China (In German.)

Cremer, Oberbergrat.

Bericht über eine Reise in der Chinesischen Provinz Setchuan, etc. Ber.

Crick, C. C.

Straight-shelled Nautiloida.
The specimens were sent from China by Rev. Carling to Dr. Henry Woodward. They belong to the straight-shelled Nautilidea and represent at least 3 distinct species. The locality from which the fossils come is found in Lichtenfenz's Atlas, 'East Shantung plate,' south of Tsing-tchow Fu, 36° 42'. Lat., 118° 40'. Long. This is between Cambrian and Silurian.


Describes the fuel resources of northern China, and the recent developments made by the Pekin Syndicate in connection with the coal deposits of Honan.


Describes the exact status of the gold and coal mining industries in China.


Part 1 contains a review of the course of the winds over the earth's surface. Part 2 treats of their action on the solid land, whether directly or through the medium of the waters of the ocean. Under the former head, the movement of sand, of volcanic dust, etc., is spoken of, special mention being made to the loess of China, which Lichtenfenz attributes to winds. Under the latter come both ordinary marine denudations and the action of wind-drift currents as agents of transport.
Part 3 treats of certain geological phenomena indirectly produced by wind, including the effect of the air-pressure on volcanic eruptions and on earthquakes.

[...]


This volume treats of a survey of the general topography of China and Central Asia, the loess formation of Northern China, the mountain systems of Central Asia, the geography etc., and a review of the loess formation of northern China.

[...]

La structure géologique du continent, sous-océ-anide-Chiné, ilion, pp. 515-515, 1901.

Lanciardi, Antonio.


Gives a general treatment of tin as a total and then of its minerals, cassiterite and stannite, and accompanying minerals. Gives descriptions in Italy, France, Spain, Austria, China, Japan, and other countries, followed by generalizations upon the deposits.

[...]


German iron gravel from Dantzig.

[...]

Describes the following trilobite genera from Liu-Tung: Cenoccephalites, Anomocare, Liostracus, Pterygopyge and Agnostus. These Chinese trilobites present an astonishing resemblance to American forms, as well as to those from Norway and Sweden. (Abstract from Vol. 4 of Nöthofen's "China")

Dana, J. B.

Includes:
Cambrian in China, 482.
Lower Silurian, 532.
Upper Silurian, 564.
Devonian, 683.
Carboniferous, 632, 693, 696.
Cretaceous, 537.
China Sea, 927.

Darwin, C. R.

Includes accounts concerning the Chinese superstitions as to bore 65-70; Chinese theories of tide, 76, 77.

Fattle, G. E.

Tanlo beds—Lower Silurian
Zibinzyi beds—Lower Silurian
Yunying Beds—Upper Silurian
Detwineda—Devonian
Lyand Ryan, Cheleik, Thaba—are not determined.
David Armand.


Though Pere David laid small claim to being a geologist, the story of his travels in China contains many detailed observations upon the rocks which he saw.


A letter on the geology of Yche-Kiang, China.


An abstract of a letter in which the writer describes the coal bearing beds of the mountains of Iean-Chin.


Gives geographical and some geological information, and notices of mines.


The scientific missionary's diary notes are put into shape by Jules Legros. The nature of the soil, the size of the rocks, with other geological notes taken day by day during the exploration, are noticed.
Leidson, Thomas.

264. On Some Fossil Brachiopoda of the
Triasian, and Territorial Journ.
of the Geol. Soc. of London. Vol. 9, pp. 353-

Describes a small collection of Chinese
fossils presented to the British Museum. The
specimens belonged to 8 Triasian species, 7 of
which are common to several European localities.
There are not known all together 10 Chinese
Triasian types.

265. Note on some Carboniferous,
Jurassic, and Cretaceous (p) Brachiopoda,
collected by Captain Cochrane-Auster in the
1866.

The carboniferous series in Tibet consist of:
(1) quartzites; (2) limestones full of
fossils of all kinds; (3) an argillaceous
series; (4) compact limestone with fewer fossils
surmounted by a succession of beds full of
Goniatites. The Jurassic are largely developed
at Pato, in Ladak, and in the Creaticious near
Lachung la. Ten species are described.

Lavie, L. C.

266. A Treatise on Metalliferous
Minerals and Mining. Crosby Lockwood & Co.,
London, 1899.

Information concerning the gold deposits
(p. 26) and the mercury deposits (p. 304) of
China.

Levis, J. X.


On page 339, information referred to the
rainfall in China.

Levis, J. X.

268. A flat-topped range in the Tian
The existing ranges of Tian Shan mountains in central Turkestan result from the elevation and cretaceous or less dissection of a more ancient mountain system that had been previously subdued or worn down to small relief over a large area. Local glaciation in several successive epochs is clearly recognized.

Describes the control of mines, methods of mining, ore dressing, furnaces and the mineral wealth.

Includes information concerning the petroleum industry of China.

Information regarding the salt and petroleum industry in the province of Szechwan.

Facts concerning the petrolierous localities in China, and the proposal of the Chinese American Oil Company.
Benny, Captain.  
274. Tibet and Chinese Turkestan.  

Illustrates one of the most remote and at the same time most interesting geographical areas, regarded politically, in the whole continent of Asia. (See Nature, Vol. 71, p. 653, London, 1901)

Bechevrense, Pierre.  

Earthquakes in the Province of Szechuan, and records of the Si-ka-pei Observatory. (In French)

Bechevrense, Pierre.  

P. Bechevrense, the head of Si-ka-pei Observatory, is the author. It is a series of tables containing all the information that meteorology can supply concerning the climate of Shanghai.

Escarot, L.  
277. Die wasserzweckgruben der Erde.  

Includes information concerning the copper deposits in Yunnan, Koui-Tsheou, and Tien-Fanchung, China.

Canty, Charles.  
278. Natural Gas and Salt Wells in China.  

Includes some interesting information about natural gas and its use in China.

273. Railroad and Mining Concessions in China.  
280. Sur la presence de sediments triasiques ammonitifere sur la feuille de Phen-Fu (Tonkin).

The author describes well preserved but small specimens of ammonites collected in the region of Long-Tien.


Describing a new syenite nephelinique from Tonkin, microscopically.


The eruptive and crystalline schists of Tonkin is described.


Describe the occurrence of the mentioned minerals.


Information concerning the recent epigenetic movement in Asia.

The author shows all characteristic horizons by *Usulinidae* ranging from the *Buccocorinae* to the *Nor- 

mian. Then he presents a certain number of remarks concerning these horizons and their faunas.

287. Sur la présence du réthien marin avec charbons gras sur la bordure occidentale du delta du 

Deprat, et Lammuy.


I. Partie: Géologie générale.

Mémoires du Service Géologique de L'Indo-
china. 1. Atlas.

Vol. II. II. Partie; Paléontologie. Hanoi-
Haipong, 1913.
Vol. III. III. Partie; tude de *Usulinidae* 
de Chine.

II. Contribution à la Géologie du 
Tonkin.

289. Résultats Stratigraphiques Généraux de 
111, pp. 572-574, 1910.

stratigraphical results of the geological 
mission to Yunnan province. Fossils from Cambrian 
to Trias are described.

Volume.

290. Lettres sur le Yunnan (de Yerkalo). 

Contains geological, geographical and petro-
graphical studies of the region.

Dickson, W. C.

291. A Voyage Inland from Canton. The Scotch-
iish Geographical Magazine. Vol. VI, pp. 384-373, 
Edinburgh, 1890.
Within the description of the journey are facts concerning the geology of different localities.


Cites the glacial epoch of the Tien-Shan, its extent, and the development since.


Contains important topographical and geological notes of the journey of Gletscher in central and western Hsian-chang.


The author presents a summary, with the necessary detail, of the Geology of the Himalayan region. The author presents a summary, with the necessary detail, of the Geology of the Himalayan region.

The lower (65-150), middle (100-400), and upper (1250-2750) Triassic localities are taken up in succession, with the necessary detail, of the Geology of the Himalayan region. The author presents a summary, with the necessary detail, of the Geology of the Himalayan region.

And correlation are made with Europe, Siberia, North America, and elsewhere. (See also loc. cit., Geol. Surv. India, 176, part 3, 176 pages, 1912).


Information concerning in mining investigation journey in the province of Chantung.


An account of the primitive methods employed.
slight earthquakes are of common occurrence in Formosa, whereas along the coast of China they are rare and of no importance except to the seismologist.

Observations on researches made at the Hong Kong Observatory in 1893. Hong Kong, 1893.


In a paper on the first iron mine and reduction plant in China.

Information concerning the coal, iron, and tin resources, and the present manner of development. (Abstract of this paper in found in Iron and Coal Trader Rev. p. 491. March 29, 1912).


Discusses the paleontology of China, referring particularly to the work of Shan Kiu of the Ming dynasty (A.D. 960-1127).


The writer advocates the starting of iron-works in Indo-China. Coal is met with in abundance, and the iron ore deposits at Thai- Nguyen, in Yenkin, are well situated for economical working.


Over the trilobites collected from the mountains in the vicinity of Peking.


Some 1050 fossils from the middle Devonian to the time.


Information concerning this famous region, the manner of working and transporting the coal, and matters of technical interest. Sections, maps, and illustrations.


An account of the K'ai-p'ing, Ping-t'ing, and Tae-Chow fields, with general remarks and illustrations.


Information concerning the coal fields in China. (An abstract)

Maps and description of three coal beds and the mines.


An account of the crude methods still used for mining, and a discussion of the various mines being developed.


Considerable advancement in coal mining has been made during the year, and the author describes the development of a number of the principal fields.


Gives a table of the production of coal of the different provinces.


Including in the article "The Coalfields around Tsze-Show, Shansi, China." There is a clause stating that good quality massive limestone occurs in great abundance. This limestone has considerable polish. The marble is crystallized the color has forms of limestone.


Giving chronological list of destructive earthquakes dated as far back as 1831 B.C., and notes concerning the early investigations on Chinese earthquakes, etc.

A continuation of the paper form page 91 giving a supplementary list of destructive earthquakes in China.


Varieties of the coal and their geologic and geographic distribution. Outlines of the more important coal fields with some estimates of the thickness of included coal beds.


Describes the geology, occurrence, character, and production of coal, the different coal fields, and mining developments in China proper. Gives also the estimations for coal reserves, and the operating coal mining companies.

The discussion is mainly confined to coal fields of the 18 provinces of China proper, although a few references to coal in Mongolia are made.

Coal is widely distributed over China. The coal occurs in every period, with the possible exception of the Cretaceous, from the Pennsylvanian to the Tertiary, inclusive.


(abstract) Distribution of the dust storms and their characteristics and modes of occurrence, present and past distributions of the transported materials. Some observations for quantitative estimates of material transported and rates of deposition. Some comparisons with work done by rivers.
**Duclos.**


**Dudgeon, John**


Very interesting paper on the physiography and geography of China's dependencies and colonial possessions which include Manchuria, Mongolia, Tibet, etc.

**Fischer, F.H.**


Describes the colliery of Fung Hsien, which is owned by a Chinese company, and was started to supply coke and coal to the Nanhsing Iron and Steel Works in 1904; and the coal in its vicinity. (See also *Journ. of the Iron and Steel Inst.*, Vol. I, p. 336, 1906)

**Dupont, C.**


**Dupuy.**

Eyre, W.T. Thistleton.

Suggested they might be crystals precipitated by gaseous emissions, but they are organic substances. Very interesting articles.

Eastlake, P.H.

Gives the geology and mineralogy of Hongkong and vicinity. The main structure of the island is of basaltic tuff, granite, and schistose rock. The most interesting mineralogical find is molybdenite.

Ickel, W.C.

Information concerning the industry of iron in China, particularly the Hanyang iron ovens in Hu-pei Province.

Edelstein, J.C.

Information concerning the deposits of gold in Guaniinsani.

Field, J.E.

On a journey from Peking to Menkong, across the great river valleys of the tract between China and India.

Refers to the raised silted tract at the old mouth of the Huangho. 20 pgs.


Describes the coal and the mines.


A paper on the results of an exploration of the new course of the Yellow River made in 1869. Illustrates by a map and describes the physical features.


It is well known that the lower Yellow, flowing through the great eastern plain of China, has many times changed its course during the historic era. So less than 5 such changes are recorded by the Chinese
as having taken place during the last 2500 year, the first dating about 602 B.C. the 9th 1851-3 A.D. etc. Followed up with notes on subsequent visit to the old bed of the Yellow River.

Elliot, C.F. Scott.


This paper contains information concerning the physiography of China, and a short bibliography.

Ehren, R.von.


Elmans, G.


Information concerning the quicksilver deposits in the province of Kwei-chou, China.

Eleyer.


Discusses the petroleum districts in China. Oil is found in the provinces of Hansu, Shen-si, and Sze-chuen.

Gilatrey.

As to the minerals of South China, gold is collected from the beds of almost all the rivers when the water is low. In lupin copper sulphate and carbonate are used, and a little north galena is obtained. Iron ores are plentiful in the Hang-nan-foo district.

Falconer, H.


Describes a hyaena tooth from Tibet.


Describes the fossil bones of rhinoceros from the Medicaid or elevated plain of Tibet at the northerm face of the Himalayas behind the sources of the Ganges.

Laevol, A.A.


The work of the fathers which is most generally known is that carried on at the meteorological observatory at Hsi-ke-wei, a village in the vicinity of Shanghai; but other are strictly geographical results have been obtained from their labors.


On the maps executed by the Jesuit mission in China.
Pawne, Sydney.


Chapter 13 deals with the tin deposits of China and other countries, pp. 139-140.

Boistreantel.


Fiebke, Adolphe.


Notes of a trip up the Han river, 186 miles to Lasa between the Huan-tum and the Tukien provinces.

Liescher, Paul.


Short descriptions of five rock-specimens, showing fossils apparently of Silurian, Carboniferous, Tertiary and Quaternary ages.


Contains palaeontological notes on China throughout.
Fleck,  
354. Er Lupferborsbau in Ostasien,  

Copper mining in China and Japan.

Fliess, 1.  
355. Die Verbreitung des marinen Ober-  
carbon in Sud- und Ost-Asien. Zeit. de Deutschen  

Gives description and the distribution  
of the marine upper carboniferous formation in  
southern and eastern Asia.

356. Ueber obercarboniase faunen aus satv  
und judasien. Palaeontgrphica, Vol. 49, pp. 91-  
136, mit 3 Taf., Stuttgart, 1903.

Describes the carboniferous fauna of satv and  
south asia.

Fleischmann, Otto.  
357. Untersuchungen von Gottein aus den  
nordostlichen chine, (Provinc Chii-li) Hiss., Leipzig,  
1895 (Truck von Gunther, 1903, mit 2 Taf.

Geological studies in north-eastern China  
in the province of Chii-li. (See also Neues Jahrh.  
12, 1907, p. 73-76).

Foo, Young-min.  
358. Silver Lining and Smelting in --.  
J. and Am. jew. VOl. 73, p. 147, New York, Jan.  
24, 1892.

Describes the jhol silver mines, the nature  
method of working, the old dressing, the melting etc.  
Illustrated.

Fowler, J.  
359. Lead and Zinc Mining in Foreign Countries.  
Special Consular Report p. 144-147, April 28, 1894.
accounts the import of lead and zinc at the
ports of Urgo and anchow, China.

360. Memorandum on hi est lines. Diplo-

361. Principal lines in China worked by
Tong H Method. The Far Eastern Review, vol. VIII,
pp. 330-332, Shanghai and Yokohama, Dec. 1911.

list of mines with their owners, localities,
transportation facilities, production etc.

Francis,

The author, a member of the Museum d'Histoire
Naturelle a Paris, is describing and publishing
the extremely rich collections of specimens made by
French missionaries in Yunnan.

Tellers, E.
363. Beschreibung des Jehol-Becktes in der
Provinz Shihli. Botanical Studies in Chinese gan
Lands und Volkskunde, XVI 189, mit 17 Taf. Leipzig
(Neisserich) 1901.

Taulol, in.
364. Der Erdorbau und das Metallhutten-
leben in China, mit besonders Berucksichtigung der
Minergewinnung in der Provinz Yunnan. Botanical

Telling on smelting in Yunnan, China,
where underground mines and thermal methods of smelt-
ing are employed.

Frenck, Fritz.
365. Uber palaeozoische Gneisen aus Asien
und Nordafrica. Neues Jahrh. fur Mineral. Band II of
1895, pp. 45-47, Stuttgart 1895.
escribes the paleozoic formations in
Jiangsu Province, Shantung Province, the Yangtze
Region and Henan Province.


Gives the occurrences of coal in Shantung
Province, and the distribution of the carboniferous
formation.

367. Lethaeos Geognostica 1 Theil.
Lethaeos Palaeozoica, Bd. 11 No. 8
Die Steinkohlen formation. p. 427-488, Stuttgart,
1893.

Carboniferous coal of the coal and coal
fields of Europe.

368. Uber die geologische Entwicklung
S. 504-511, 1910.

Since the cambrian the geological development
of China embraced three great divisions, namely:

The era of submergence (uninterrupted); Cambrian
to Carboniferous.

The era of submergence (changing; to end of
Triassic).

The era of land formation.

369. Die geologische Entwicklung Chinas.
... v. Lichthefen, Zeugen, p. 35-61, 1911.

370. China. Erkenntnisse dieser Leiden
und Kursverdierung der Statt von Lichthefen.
Lichtenfels.
B. Berlin, 1911-12.

This volume is entirely the work of Mr.
Truch, to whom Lichthefen entrusted the
elaboration of the palaeontological material collect-
ed by him. The descriptions of the fossils are
supplemented by a series of essays on the distributions
and development of the different rock systems
in China and Eastern Asia, and by a general review of
the geological evolution and the geological history
of sea and land in China.

Gives information concerning the occurrence of the "Stringocepha lone-limestone", "upper Devonian in Hunan, and descriptions of several fossil gastropods. Illustration.

Friedrichsen, 1.


Describes in detail the morphology, orography in the geology of Vien-schan.


Gives the geology of the Hien-hai-formation in western China.


Notes the journey of P. Utterens thru Asia.


Investigations in Central Hien-schan and Neumomische Bla-tou in the year of 1902 (See also Mitt d. Ges. f. Erdk. in Hamburg, 1903).


Describe the peneplain formation in central Tien-schan.


The geography of Asia (Geogr. J., 1904, vol. XI, 176-207, 331-361)


Contributions to the morphology of Tien-schan.


Includes glacial information concerning Tien-schan.

Brisach, K.


Vol. I pp. 140-174
Vol. II pp. 1-40, 41-63, 140-188
Vol. III No. 5, 6, 49, No. 8, pp. 36
Vol. IV No. 3, pp. 14, 15, 63, 149-185
Vol. V No. 5, p. 27, No. 7, p. 14, 15, 8, p. 32
Vol. VI No. 3, p. 5

403. Uber die Bestimmung der geographischen Lange und Breite und der drei Elemente des magnetismus durch Beobachtung zu hange sowie andere und geographische Messungen an mehr als tausend verschiedenen Orten in cien und europa ausgefiihrt in den Jahren 1861-1891, 8 vo., p. 110, St. Petersburg 1893.

Sukuchi, R.


The following topics are discussed; reconnaissance, geography, geology, economic resources. (Japanese)

Ritterer, Karl.


Includes the phisiographical positions of the hien-shan, kuen-lun, and other mountain ranges; the geological development, the mineral occurrences etc. of central Asia and China.

Describes the coal in the northern provinces of China, and the occurrences of coal in the provinces of K'o-chuan, Hunan, Kwangsi, Kwantung, Yenen, and others.


Contains geological observations in extreme western China.


Includes information concerning the region of Tien-Shan.


Describes the country and people of north-eastern Tibet.


Describes the structure and form of a geological ground-plan in Central Asia.


Scientific investigations (including geology) in Central Asia, Northwestern Tibet and Interior China.

Contains several observations in Tibet and northern China.

413. Geographische Skizze der wuste Soli zwischen Semni und Su-Tschou A. Petersmann's Lit., Ergänzungen. 1o. 139, 34 S., 1 Karte. Leipsig, 1902.

A geographical sketch of the Soli Desert between Semni and Su-Tschou.


Describes northeastern Tibet geologically and topographically.


Futterer-Beetling.


Notes in regard to the geology of Tienschan.

Futterer, Andree, and Holderer.

Chapters VII-XII contain geological information of China and Tibet.


Information concerning the mineral resources of that district.
describes the Han-yue Steelworks, near Bankow, which was initiated by Ching-chi-tung, under the auspices of the Chinese Government.


In this article the writer shows how very much worse situated as regards fuel are the United States and Great Britain than powers indicated in the future of China; and discusses the resources of the different provinces and the foreign relations.


Extracts from the article dealing with Chinese coal, of Mr. Garrison’s article on “The Mining and Industrial Development of China.”

Extract of the section dealing with Chinese coal. Analysis and maps.


An illustrated account of (1) the Chinese coal industry, with special reference to the province of Tzechun; (2) the iron industry; includes a mineralogical map of China.


A letter to the editor in regard to the need of a geological survey for China. (See also p. 976)


Synopsis: Consideration of some established facts about the Chinese and their country. Its civilization is the most ancient and its people have developed an anti-military spirit. The country has great agricultural and mineral resources, and economic awakening is likely to make it one of the most important.

Goudry, A.

435. Sur des ossements d'animal post-

Describes bones of the Saurian animal collected by Dr. David. Illustrated.

Gauthier, H.

A list of Chinese earthquakes with remarks dating back to the 11th, 7th B.C.

Geerts, A. J. L.

pp. 81-271, Mineral products; pp. 272-294 Appendix on Coalmines and worked stones; p. 295, "i.e. Born".

Geikie, Archibald.

A discussion on Bornof von Richthofen's second volume on the geology of China.


The following topics are included:
Geological map of part of China plate 10
Outline of China " 439
Map of China " 439
Pre-Cambrian rocks of China " 906
Pre-Paleozoic erosion in China " 908
Caledonian " 932
Carboniferous " 979
Devonian " 996
Carboniferous " 1057

Geikie, James.

In China and the mountains and plateaux of Central Asia, zoic rocks, which are probably of Carboniferous age, are well developed.

During the Mesozoic and Cainozoic times the sea appears to have overflowed vast tracts of land, which are said to have penetrated into what is now the great desert of Tibet.


Under the topic of recession action, the loose deposit in China is described.

Goil, W. S.


Contains geological and physiographical notes thru out.

Garrard, J.


This limestone with orthoceras (probably Devonian) extends over a tract of country, 30 to 40 miles long and 10 miles broad, a few miles above Lienang.

Garvais, Paul.


The re-examination of the fossils from China, referred to Rosprimigenius, show that they belong to the Yak, but indicate an individual much larger than the Yaks which have been seen in Europe. peculiari ties of the teeth are pointed out, and a list of fossil mammals from China is appended.

Information concerning the coal in China.


An account of Lieut. Gill's journey from Shanghai to the Yunnan frontier.


Describes the physiography and geology of the country, and includes a chronology of the itinerary.


Information concerning the drilling of brine wells, oil wells, and the associated products.


Translated by A. G. Someroy from "Les Chinois". Description of these wells and the methods of drilling in the province of T'ai-Truaon by a missionary named Habert.
79.

Cirty, C. H.  


Describes a small number of Carboniferous fossils collected by the Carnegie expedition to China.


The faunas of western North America have a distinctly Asiatic facies; but there Chinese faunas are still distinct, the very features which ally them to the faunas of India and China and in which their Asiatic affinities chiefly reside, aiding prominently in showing their alien character to those of even western America.

Gladyss, E. J.  

Glass, J. C. L.  

Information concerning Coal, Petroleum, and Iron. In general, it is a comprehensive report in the resources of the territories for the commercial exploitation of which the Pekin Syndicate has obtained a concession from the Chinese Government.

The general object of this paper was to furnish information respecting the opening up of the two provinces, Shansi and Honan, and developing the rent and practically imparaleled mineral wealth they contain, by the construction of a system of railways, starting from the Shansi coal fields to Hanking. The paper also gave a description of the bituminous and anthracite coal fields of the provinces, the approximate area, and contents available.


Summary of a paper before the British Association, giving a description of the bituminous and anthracite coal fields of Shansi and Honan, existing means of communication etc.

Ford, Francis Gilvic.


A review of the itinerary of the late Baron von Richthofen's travels in China.

Gott, R. J.


Includes a chapter on the natural resources of China, and Yenesei Valley.

Gotz, E.

Geological and physiographical notes obtained during a journey through Central Tibet.


Includes:


Information concerning the displacing of the American products by other eastern markets.


Describes the mining concessions of the Manchuria Mining Company.


Notes the developments of the Han-yeh-ying Iron and Coal Company, Ltd., in 1911.


Includes canals in China, 286; cinnabar, 304; climate, 139; devastated land, 76; mountain carriers, 52; tin, 389.

Groser, Paul.


Concerning the lower carboniferous faunas of the Tien-Shan.


Describes the carboniferous fossils of north and central Tien-Shan.


The region investigated geologically is between Tien-Shan in the north and Nascaur-Tarim in the south, and between
Aksu in the east and Kashgar in the west.

Grell, E.

Grewe, J. E.

Information concerning the ice-period in northern Mongolia.

Gray, J. R.

Information concerning the geology of China. Part II, pp. 333, 340, 342-345, 353-357.

Grosier, Jean Baptiste Gabriel Alex.

Mentions that iron, lead and tin mines must be very common, since these metals are sold at a low rate throughout the whole empire.

Rosjono, J. A.

description of the great field of
brine-wells which has accumulated a population of a million people in the town of "ze-liu-
tsin."


This volume contains the records of the first year's journey along both slopes of the Tian-man in the cases of cashew, rami, and arcan. with 35 and 50 engravings.


The narrative is an important portion to the geographical literature of Central Asia, and is a book which should be consulted by all students of Central Asia.


Information concerning the anthracite coal in China.


This gives the physiography and hydrography of the Yang-tze, yellow river and tsi-to, together with a table of their water discharged per second, sediment per annum, and ...
Denuation, as compared with the other large rivers of the world.


The denudation of the banks of the Yangtze River is briefly described, geologically.


Geological information concerning the province of Kanton.


Describes some fossil brachiopods from Toungoo, 20 leagues...from Kanton on the Hieren Hiang, and near the West-Karemos frontier.


An account of a destructive earthquake in the province of Yunn, China.
Information concerning the development of coal and coal industry of the Far East, China included.

metallurgischer Teil. In the second Abhand-


In this atlas, in addition to the geographic maps, are 13 large maps covering an area of 78,000 square kilometers, on which the boundaries of the principal geological divisions of Northern China are illustrated with great current precision. Scale of maps is 1 : 750,000.
contains notes on the mining and metallurgy of china.

LADDEN, I. C.


Information concerning the occurrence of jade and the associated mineral, the uses, the relation of it to religion, etc.

LADDEN, I. C.


LADDEN, I. C.


Plates of jade from northeastern China with some new, fine types of the general jade. There is however a large development in the northern part of China of the true carboniferous series, with anthracite, and including the remains of plants of that formation.

LADDEN, I. C.

 The occurrence of jade.

Placer mining in various parts of China is noted, as early as the 18th century.

LADDEN, I. C.

 The geology of jade and cat.

A review on "Aurel Stein's "Sand Buried Ruins of Mohenjo-Daro. Personal narrative of a journey of archaeological and geographical exploration in Chinese Turkestan."

November, Deutsche Geowurte.


Concerning the temperature of the sea-water at Peking. (See some publications for current notices of Chinese通报.)

Hamilton, E. J.


The jines in his presidential address to the society mentioned the literature written on the mines of China, especially in silver and gold.

Hane, Julius.


Gives an account of the climate of southern China.


Contains the results of meteorological observations in 1902 and 1903 of Hsin-Hsien River.

gives meteorological observations of
China.

489. Meteorologische Beobachtungen in

Landon, C. H.

500. The Gold and Copper Resources of
the Province of Kansu, China. The Mining

Larras, J. C.

501. Mining enterprises in China; Teochow
silver ind. Am. J., Vol. 47, pp. 36-47, New York,
Jan. 26, 1889.

Notes the location of the mines, and gives
descriptions of the veins and information covering
the future prospects.

Lesseps, A.


Gives notes on the geology and mining of
China.

de Roeprik, J.

503. Gold and Platinum in Ceylon.

information concerning the gold, platinum,
and other metals in the district called the
Uranium.

Levert, J. M.

504. Notes sur le bass Tung-Hee-Andor.
1053-1884.

Contains notes on recent geology in the vicinity of Tseng-ling.


Myers, H. M.


Includes maps, sections, and illustrations.

Myers, H. M., and Anglemont, et al.


In the central mountain region of western Turkestan, describing the geographical position, the physical and chemical features, etc.

Myers, H. M.


Reviews the geological discoveries of Lehman, in the provinces of Tsang, Sinkiang, and Yunnan region, China. Followed by notes on Lehman's work by R. Levis Netter.

Stock, J. H.

Gives the geographical results of a journey through central Asia, including northern Tibet and the upper region of the Yellow River; incidentally touching on the ethnography and ecology.

Notes of the author's scientific journey in Tibet, including geologic and petrographic studies.

Contains a list of papers on tin of China.
less, Franz A.


Part of the area of antimony for European and Japanese saturation are from China.


The tin production of China from 1911-1916.

Leith, J. W.


The manganese production of manganese ore in the year of 1913.

Leith, J. W.


Gives an account of the anthracite and bituminous coalfields and other minerals of the provinces of China and Manchuria.

Schultz, J. W.


p. 145-150. 4th February, 1931. (Russ)

Schultz, J. W.


p. 151-155. 11th July, 1931. (Russ)

Notes on the mines operating by the Japanese as agreed by the exchanges of notes between the


Discussing the Chinese colliery, the Chinese conditions and their production - raw resources, the operations, equipment, transportation, etc.

Callendar, J.


As part of the results of an investigation of the Chinese mountains.

Lenz, K. E.


Information concerning earthquakes in the Chinese interior, Kung-tu, China, and other geological notes.

M. de P. de L. Duriusse Oriente, au


von Heise-Larteguy, 89.

estillane. Art. III-IV, pp. 190-266.

D. P. 1899.

Tallied by J. A. Crespin. The paper
was on the occurrence and mining of coal
in the province of Menghun.

Carbon, 89.

538. Les carboneaux d'or du pots, du chineili
pp. 151-209. 1894.

Describes the occurrence of coal in chineili
and tchakania. The coal deposits of northern China
are of a coalieic formation.

Sukies, 89.

539. Society of China, published by the
Kar tena Review. Shanghai, 1914.

A brief review of the available existing
knowledge of the geology of China required for the
use of geologists, mining engineers, and others
working in China.
The fragments were partially weathered, consisting of cryotephroclastic or micro-
cryotephroclastic siltstone with small areas where the siltstone is of fine in macroscopic character. Features of the fragments can be distinguished in
the present microscopic sections.


Gives the ecology, physiography of Ianao, the routes of communication, between Ianao and the United Provinces, the description of
the population, and the economic importance.
Hirakawa, H. 

This report lists the coal resources of Japan, with special reference to the deposits at Fuchu, where 1,200 millions of tons of coal are in sight, the coal being 50 feet thick and 47 miles long. (See report, Iron Steel Inst., Vol. IV., p. 706, 1936.)

Hirata, Ninomiya. 
Reports of the U.S. A. Survey of Earthquakes, p. 21-120, 1921.

This catalogue compiles a list of Chinese earthquakes from the lists of A. Ninomiya and T. Shiozawa.

Hirata, T. 
1921. The Chinese island region: geology. 

This includes discussions on the hydrology, geography, and the mineralogy of the island region.

Jiang, S. C. T. 
1921. Varieties in mineral. 
Jiangsu, China, 1921.

Catalogue des tremblements de terre circules en Chine. L'epices les sources chinoises. (1921) 
Avant l. C. 1056, apres 1504.

Catalogue des tremblements de terre circules en Chine, 284 pages. Nanjing, 1921.

Compiled from Chinese annals covering a period from 1706 to 1931.
includes the invention of the seismoscope by a Chinese named Chi-o-cho in the year 136 B.C., and the description of it.


These papers constitute a series of reviews and translations into English, and cover more particularly the recent work along the eastern border of the Asiatic continent. The papers reviewed are particularly those of Richter and Ito.


Notes the loss deposits of China, page 297.


Information concerning the use of crystalline fossils for ornamental purposes by the Chinese.


Information concerning the occurrence of petroleum in the provinces of Kansu, by-ehewan and Kansa.

345. Barometric and thermometric observations.

HOLLINGSWORTH and GIBY.
taken during the month of September 1924, with a
view to determine the origin of Loo-shan. Jour.
North China Roy. Asiat. Soc. Vol. VI, No. 1,
p. 143.

Oriental. The origin of zinc smelting. Ng.
New York, June 15, 1913.

Information concerning the origin of zinc
smelting in India, thence it came to China, and
the earliest methods.


Loo-ver Herbert.
547. Metal mining in the provinces of
chi-li and shantung, china. Trans. Inst. of
Met. and Metall., Vol. 8, pp. 343-361.

Published by:
102, and 7, London
Met. of Met.
No. and Jour., New York,

describes the geography, the general geology,
the history of mining, the occurrence of gold, cop or,
silver, lead and zinc, the native methods and the
economic conditions of the two provinces. Discussion
found on page 351.

548. Metal mining in China. Australian

Paper read before the Inst. of Met. and Metall.,
London. According to country, geology, and history
of metal mining in the provinces of chi-li and
shantung. Copper, gold, and silver ore are found
and native methods of mining are described.

549. Present situation of the mining industry

This paper deals chiefly with the
regulations on mining concessions in China.

850. The Laiping Coal Mines and Coal
Field, Shantung Province, North China. Trans.
Inst. of Min. and Metals, vol. 10, p. 419-422.

Published by:

Inst. of Min. and Metals,
New York, 1901-1902.

Includes the location, history and geology
of the region; describes the character of the coal,
the mining methods, the production, the collieries and
the market. Analysis, tables, maps and sections.
Discussions of this article are found in the same
volume pages 427-430.

851. The Laiping Coal Mines and Coal
Field, Shantung Province, North China. Trans.
Min. Jour., vol. 74, p. 149-150. New York,
August 2, 1902.

Abstract of paper read before the Institu-
tions of Mining and Metallurgy, London, June 19,
1902. Describes the history, geology, etc. the
quality of coal, etc. (See Coll. Trans., vol.

Note. "Ect.

... unexplored and unoccupied observed
in China. . . . 30 - 1917. Jour. . . . C.
1. . . . D. , . . . . , Vol. II, Art. IV,
pp. 91-93, 1978.

and rugged in China, . . . 320 to
after the 鉴定圖書集成


In this article the physical features are described.

566. A Journey in south-western China,
    from Szechuan to Canton, Dow. Rec. Roy.
    1846.

gives the physiography of the country traversed.

567. Three Years in Eastern China.

On page 73, 194, 298, are accounts of
    Chinese mineralogy.

568. Three Years in Eastern China.

A narrative of three journeys in Zeechan,
    Hakoo, and Hong. (See above, vol. XXIII.,

569. Zeechan, its people, resources,
    and recent history. Datoo & Co., London,
    1861.

570. A port of the province of Zeechan.

In regard to the coal, he states it varies
    from lignite in the south-west to bituminous in the
    north, and cantracite in the east. The author
    travelled extensively in Zeechan.


Contains some interesting particulars as to the developments of railways and mining in China, with special reference to coal mining.


Contains much information regarding mining industries and mining productions in China.


The salt production and salt revenue of China.

Howe, C. A.


There were no glaciers in Himalayas, Altai, Tungan-Than and Korea.

Hucke, G. G.


Information concerning the physiography of China on p. 123.


On pages 4-9 the author discusses the Chinese
civilization Chinese crystallized culture, and the physical geography of China.


Eastern Asia is a land of high mountains, vast plains, great rivers and large bordering islands, with few forests. The plains are fertile, the climate is mild. These natural features have exerted a profound influence on the races of mankind, etc.

Hufnagl, J.


Huntington, Allsworth.


Describes the lake and includes information concerning the glacial origin of the lake, advances during later glacial epochs; illustrations, sections and map.


Includes: The influences of the physiographic environment upon the migrations of the inhabitants; the effect of glaciers and glaciation upon physiographic forms; the effect of glacial periods on human life; the salt lake of Tung Hui and the lake of Teikol.

In p. 369, the author describes the geological features of the Lop-hov and the basin of the Lop in Chinese Turkistan.

In p. 371, the geology of the basin of Turfan, Chinese Turkistan is described.

The deposits belong to the Pleistocene and Miocene agp.


A section of the history of Chinese cartography, and a brief notice of the latest materials for the compilation of a new map.


The subject is discussed under four sub-sections, namely, the history and development, the distribution and production of antimony ore, the metallurgical treatment, and the uses of antimony.


A very interesting memoir on the mining industry of Haiti.


Information concerning the mineral and the
mining industry in the province of Hang-shing.

Rubert, J.
33. Sur une serie de roches du Tonkin.

Describes a series of rocks from Tonkin, such as granite, rayolite, diorite, gabbro, tessel, gneiss, micropogmatite, etc.

37. Le riche de contact de Yenang-loc et les amphibolites de la province Yung-son (Annam).

Geological studies of the rocks of Hang-shing province.

37. Vingt-trois jours, faits suite a l'ouvrage intitule 'Travaux d'un voyage dans la Cina et la Chine.' A. B. G. Vv.
Paris, 1805, 1806.

Luc, Abe.


Information concerning the oil industry.

Haidlauf.
37. Fire wells. *Asie Centrale.*
Volume III, p. 519.

Information concerning the fire wells of China.

Del. Fire wells. *Asiatic, volume i.,*

p. 238.

Information concerning fire wells of China.
Cumolat, F. K. A. v.
1943. Socie Centrale. S. T. S. vs. eris.
1945.

Gives information of the geology and
climatology of central Asia.

Juran usem, Th.
Fort Irly of 1889, pp. 105-123; Paris and
Lige, 1899.

Abstract by J. Verneiq, on the oce-
occupations of north China, particularly coal, in
the province of Shantung, Manchuria and others.

Laurence.
1914. "Extractions de charbon et de
minier./ Rev. Gen. et Electr. Gen., Vol. 33,
1914, (Russian

Mears, etc.
1925. Description of the Gee-samen
1, 1925.

Describes the methods of boring wells,
the transportation of oil and gas to reservoirs,
the properties of oil, etc.

Meyssy, B.
1907. "A travel Along the Silkine, Taken

Describes the journey, including geological, physiographical information. (Japanese)


Brief summary of the geological reports of many Japanese geologists lately visiting the land, carefully compiled by the author. The rock formations exposed there are as follows:

(i) Cretaceous system, making the foundation of the area.
(ii) Cenozoic-Eocene system
(iii) Cretaceous and Jurassic systems, both with plenty of plant fossils.
(iv) The post-Cretaceous rocks are placed by ages and stories of sandstone and other igneous rocks. While the oldest rocks of the Chian-Tien plain is the most remarkable one of the younger eruptives.


Includes:

1. The geological and geographical distribution of coal.
2. The quality of coal.
3. The quantity of coal.
4. The production of coal.
5. Import and export of coal.

I. Description of the coal-fields:
in the Carboniferous.

out of the coal deposits in China are
artificially in the carboniferous but they are also
found in the post-carboniferous strata, especially
in the Jurassic. Geological age is obscure.

Laoyao and Jiaowu.

Bib.: Geology and Mineral Resources of
south Shantung, lunakan. Trans. Tokyo For.,

Tran., J. Challey,

Bib.: fossils in the Chinese amber.
no. of Nature Afid. Vol. IV, p. 7,

An account of the discovery of fossils
of the amber in a cave on the Yellow River,
with photographs and illustrations.

Laidi, Y.

Bib.: Geology of the environs of Lang-sow-ku,
Shantung, China. Ser. Geol. Soc., Tokyo,
vol. XIII, p. 183, pp. 35-45. Tokyo, Feb. 23,
1901.

Describes the geology and the mineral
resources of the environs of Lang-sow-ku, Shang-
tinghu, province, China. 1 map. (Japanese)

Laidi, Y.

Bib.: The delta and plain of the eastern
Asia, the channels of drainage of Korea.
The geological Map., Geo. Soc. Tokyo, Vol. III,
no. 27, pp. 105-168, Tokyo, Dec. 16, 1895.

Describes the changes that took place in the
region during the different geological periods.
1 map. (Japanese)

Gives a list of localities in Liutang island old ovens. (Japanese)


The author and the leader of a party on a journey, beginning in 1900 to examine certain mining concessions in the province of Shansi in Eastern China.


Jackson has compared to concessions for railways or mines to foreign capital in the provinces.

J. R. 1907. Manufactures, minerals. Coll. Geograph, Fall, 1907, Soc. de
describes a journey into a region little known by Europeans, the Ching-pei-shan or, in particular, and the sources of the river, Tongpi.

Marcel, Maurice.


Information concerning Chinese settlement.

Journal of...


as under the petroleum resources in Szechuan controlled by the Royal British Petroleum Company, which is rapidly developing the oil wells of Ho-ten-nan, near Maok, on the Hsi river.

Journal of...

164. The coal mining. p. 361, distributed by the mining co., etc., in New York, and Boston, 1906.

Information concerning the coal deposits in China.

Jinsei, store.


describes rock-sections of hornblende diorite, diorite, pyroxene diorite, biotite diorite, gneissite,
etc. (Japanese)


Describes a few Chinese precious stones such as the sapphire, agate, etc. (Japanese)


Gives the names of colors used in China, including topaz, sapphire, and sard, etc. (Japanese)


Chamber report referring to the primary uses of Chinese materials and their business in China on a competitive basis, and the Lord and Mrs. W. A. myself have been to the minerals for many years on the Yangtze River. Other minerals noted are salt, iron, and the like, etc.


Contains the anatomy and anticoagulation, association of the blood cells, etc., of voles, insects, etc.


The pathology of voles is discussed under
the following titles:

1. Bassin du Chau.
2. Tabularite de Chau a jour Sen.
3. L'expansion de trois au tour du bassin du Chau, et aprére sur la 
géologie de l'est du Tonkin.

4. Sur la géologie de l'est du Tonkin 

5. Rives geologiques et alicentorale notes 
of China; oils of China and the province of Honan, 
containing the Chinese, etc.


7. Sur la Chine des parois. 

8. Rives Chine: silicoles et manufature of 
China in China, etc, briefly treated.

Correspondant, 13 Nov., September 1870.

Arous from Chinese books, concerning 
the uses of different metals of the Chinese.

10. Contraire de l'agriculture des 
chinois et de ses produits et voisins en 
Terre. En Chine, sur les ouvrages chinois. 

11. Chine: silicoles et manufature by the Chinese.


Vorzein. Berlin, 1870.

Uses of iron and Chinese smelting industry
Hiratschi, A. 


Describes the geological structure of the petrodiferous deposits of oil-car, Central Asia.

Leco, R.


In an authentic account of whatever is most remarkable in regard to persons or things throughout the whole empire of China, with a description of Japan, Corea, Formosa, Yunnan, and Icer, etc.

Rayner, C.

170. Geological Notes on China.


Describes the Chinese carboniferous limestone at Iao-ping.

621. Tambrische Krakenpoden von Liang-Tung.


Contains description of two undescribed species of Limulites, and of a new species of Britains., O. Liminaspis, from the Cambrian strata of Liang-tung. (Abstract from Vol. 4 of Petrethoren's "China")

Gives description of middle and upper Cretaceous fossils from the Vogtland district of Thaurien. These consist of fragmentary trilobites belonging to the genera Cymatia, Atymia, and Rhinus. The brachiopods are represented by the genera Tithia, Leptodora, Spirifera, Hyancinella, etc. (Abstract from Vol. 4 of Wichtofen's "China")


Describes the fossils of Devonian age from south-eastern China. (Abstract from Vol. 4 of Wichtofen's "China")


Describes a few insignificant brachiopods of Devonian and Carboniferous age, found at Thaurien. (Abstract from Vol. 4 of Wichtofen's "China")


Treats of the upper Carboniferous fauna of He-nin. Only fewer than 50 species are recorded from this locality. A remarkable feature of this fauna is the fact that more than one half of the species are identical with the common fossils of the European and American Carboniferous strata. (Abstract from Vol. 4
of Lichtscheen's "China")

**Beidel, W.**


The geological investigation of southern Tian-shan with descriptions of carboniferous Brachiopods from Bukurtuk-Val. with 21 sections.


Concerning a correction of the author's work on Tian-Schan.

**Beidel, W. and Richts, M.**


Studies of Tian-Schan, structurally, petrographically, stratigraphically, etc.
I

Zeilbach, L. 832. Lehrreich der Grundwasser- und

Notes the loose deposits of China.

831. Die Schlammtürbe des Landes.

The amount of silts carried down by the
Tientsin river is treated; analyses and tables.
Abstract is in Neues Jahrbuch für Mineral. etc.,

Rer. I.

832. The world's future coal-depot.

Treats of the coal resources of China
and Russia.

de Lamaroc.

833. Rapport sur l'exploration du
Gleve bois, au Tonkin. Annales des Mines,
7th Ser., vol. 12, p. 5-31, Paris, 1877.

Gives analyses of several samples of
tin ore from Eochius, Toncan, China.

Linder, J. C.

834. Railways and Collieries of North
China. Proc. Inst. Civil Engineer. pp. 375-

Gives and describes the collieries of North
China.

Find, D.

835. Farmers of Forty Centuries, p. 328,
Madison, Wisconsin, 1911.
Information concerning the amount and distribution of rainfall in Shantung Province as indicated by the means of 10 years record at Tsingtau. See also p. 545.

Kingsmill, E. H.


On some outlying coal fields in the southeastern provinces of China.


This paper was read before the Geological Society of Dublin, describing the geology of this region. A range of granite mountains from a few hundred feet to 3000 feet high and from 12 to 30 miles in breadth forms most part of the coast line.

Kingsmill, T. W.


Given the geology of the Chinese coast from Kei-nan to the Peninsula of Shusan (Sorae).


The aim of the author is to throw into some shape the scattered notes of others, and to endeavor to form a connected sequence, for comparison of the rock formation of China and other parts of the world. Describes the granite and coal fields, also.

The paper deals particularly with the Province of the Lower Yang-tze.


Describes in detail the geological relations and geographical extension of the Yang-tsze series (a sedimentary deposit) and the Chung-shan series (sandstones, grits, and conglomerates); gives a sketch of the superficial deposits which occupy an important position in the geology of China, etc.


Includes:
- Richthofen's description of the deposit.
- Evidence of late depression in North China.
- Structure of the Loess.
- Materials of the Loess.
- Easy removal of the loess by rain.
- Sine origin of the Loess.
- Probable geological relationships of the Loess.
  (See also Geol. Mag., Vol. VIII, p. 294, London, 1871.)

account of coal fields in China but gives no definite details of the quantity and quality of the coal.

Province of Kiangsu.


Information concerning the origin of the loess deposits of Shantung. The writer states that the original loess of China must be regarded as a marine deposit.


Kishiwada, K.


Leinschmidt, A. and Hinzbrock.


Petrographic studies of central Kiang-Ssu.

Klotz.


Gives an account of 2 extinct volcanoes in the Chanzai area, in Northern Mongolia.
Mines in China, p. 137, April, 1912; Coal Trade Bull., p. 47, May, 1912.

Koeping Blain, recent developments.


A hydrographic study of the Yang-tze River.


A hydrographic study of the Yang-tze River.


Gives the results of the investigations of the author on the natural gas, petroleum, and salt wells in the provinces of Szechwan, Kwei-chow, Hunan, and Kweichow. (Japanese)


In this report (p. 111) Dr. Koch describes the more important types of rocks collected by Herr Ludwig Loczy, in the provinces of Kweichow, Hsinchi, Anou, Kokonor, and Shaan. The descriptions are rather brief and are usually generalized from several specimens.
Loerfer.

657. Zur Geologie von Schantung nebst

A geological and paleontological account
of Schantung Province with special reference to the
mountains.

Loken, P.

658. Uber fossile Muschthiere aus Chinas.
(Palaont, 6.H. heranzoger. v. Tomes v. Payser, Fr.
Geol. v. Paleon., Vol. 1 of 1886, pp. 461-467,
Stuttgart, 1886.

Describes fossils vertebrate from different
parts of China.

659. Uber triassische Versteinerungen
aus Chinas. I. Jb. f. Min., 1900. I, 1180-115,
2 Taf. Stuttgart, 1900.

Description of a small collection of tri-
sassic fossils from the Province of Kwei-tsoaou.

Kollbeck, Friedrich.

660. Uber Jochulgesteine des Sudostlichen-

The following types of rocks from south-
eastern China are described—Porphyre, Feld-
ites-porphyre, Gneis-porphyre, Gneis-
granophyres, Gneis-schist, Freseion, Saffo.

Lichef.

661. Bericht des Herrn v. Lichthofen uber
Provinz Hunan. Zeit. der Gesell. fur Erdkunde

A review of Lichthofen's geological investi-
gations in the Province of Hunan.
de Koninck, L. C.


The author describes a species of spiker and a Hychnonella from the province of Yuenmou.

Korolkoff, J.


Gives evidence of a glacier in the immanita.

Korolkov, N.


Visit to some glaciers of the tien shan.

Note, Junjirou.


Abstract of T. Tooley's geological exploration in China, giving the geology from Archean to Cenozoic. (Japanese)

Deals with the first genuine occurrence of Nepheline basalt in the Korean-Japanese and Chinese regions.

Kotora, J.

Kotvich and Krasovsky.

A historic-geographical description.
(In Russian).

Kowarzik, J. J.

Leyzof, P. A.

Account of the expedition of P. A. Leyzof.
(In Russian).

Krahmer.

Krausser. 73. Die von... A. Chroatschow in China und Zentralasien 1893-1894 gesammelten fossilen Pflanzen. Zeitschr. d. k. akad. landw. u. forstl. Wiss., 70, 1900, 4, 139-158.

Describes fossil-plants from Kansu Province, Szechuan Province, Kansu Province, ranging from the Paleozoic up.


All regions not over 3000 ft of altitude have been covered either with ice caps on the plateaus or with large glaciers in the alpine tracts, the glaciers descending in the valleys to levels about 1000 feet above sea level. Regions below 2000 ft have probably not been glaciated.


Contains geological descriptions of country explored.


An account of a five-year investigation of the mountains of Asia, including the geography of Eastern Siberia, the plateau regions, the Tian-shan Alpine zone, morphology of structure between Asia and North America, etc.

review of Dr. Uteser's article published in Petermann's Mitteilungen Erganz. No. 119, pp. 54-60, Gotha, 1896, concerning the ore deposits of China.


Kalibin, ...


Information concerning the gold prospecting in Turkestan.


Describes the gold deposits in Kuning Province. In quartz veins, gold schists associated with dikes of diorite, association by antimony and arsenic.

Kanz, George T.


On pages 53, 62, 83 facts are found concerning the mineral jadeite in China.

Kupelwieser, Franz.


A very complete statistical review with results tabulated by countries.

Gives meteorological observations at Peking.


Discussion confined to the Province of Shan-wei. No exclusive right to work on these deposits has been granted to any English subject. Includes the history, quality and quantity of output, mining methods and proposed developments.


Gives the location of the Long Colliery, analyses of the coal, the shafts, methods of working, haulage, output, accidents, ventilation etc.


Includes the location of the mine, description of the underground works, analyses of the coal, wages, and output of coal. Illus. and Maps.
Lacy, E. N.

Information concerning the government ownership of salt production, and the methods of preparation of salt.

Lessarce.

Information concerning the meteorology of the region of northern China.

Liley, F.

Lemery.

Includes
a. The physical geography of the plain which occupies considerable part of the continent of China.
b. describes the Yenisei river, a river which is subject to tidal influence.
c. Information concerning the surface of the soil around Shanghai.
d. The fossil shells in tortuga.

Lemassou, L. B.

Information concerning the gold and its usage etc. by the Chinese.
Lambeck, Alfred.


Describes the rocks of Western Schautung collected by R. Lorenz and R. Bauschmacher, including granite, hornblende-granite, diorite, gabbro, mafite, quartz-porphyry, diabase, and others.

Lambeau, Henry.


Mr. Lambeau's adventurous journey across the western end of Chinese central Asia are undertaken in connection with many a word, but the book incidentally includes a considerable amount of information more or less geological.

Lintenois.


The following topics are discussed: Diluvion, Ouralien-Loumien, Secondary (Trias-Mesot.), Tertiarie, and other eruptives.


Keilhack, Geologisches Centralblatt, Band X 2496, 1908. Abstract of above paper.

La premiere partie de tres important travail est une des plus remarquables contributions a la geologie de l'Indo-Chine parues jusqu'a ce jour.

a-Terrains primaires
b-Terrains secondaires
c-Terrains Tertiaires.

History from Lao-nian up, giving characteristic fossils of different formations.

Including information concerning the sedimentary deposits of Yunnan Province, the age dating from lower Triassic to up to triniac.

Lapparent, H. De.


The following geological facts are printed and described (in French):

Cretaceous, p. 141

Vol. II, Archeen, p. 753, 771
Cambrian, p. 780
Grevissean, p. 607
Othlandian, p. 631
Revonian, p. 632, 636

Vol. III, Ostracods, p. 131
Loess deposits, p. 1607, 1608, 1609, 1616

La Touche, J. G. and Brown, J. S.

Includes: (by La Touche)
The History of Chinese Mining.
Geology of the region.
Ore occurrence.
Future prospects.

(by J. G. Brown)
The ore deposits and slags.
Limits of investigation.
Extent of ore-bearing ground.
Metamorphism of the country rock.
Order of depositions.
Most important minerals.
Notes on slags.
Transportation.

Lauffer, J.

A monograph on jade, remarkably complete and discerning, which will appeal alike to connoisseurs, artists, ethnologists, and students of comparative religion and folklore.

de Launay, J.
762. Histoire géologique de la Mine.

763. Les Généres de l'Asie; le continent Asiatique.

Develope the author's theory of metallogenic provinces as applied to Asia.


A review of Asia's mineral production and possibilities.
705. La volcanie et les richesses mineralo-
es de l'Italie. Ch. de la Made, Italy, 1913.

706. Sulfates et métallurogenie. Sites Miné-
aux et métalliferes. (3 volumes). Paris and
Ligue, 1913.

Vol. 1 General metalliferous provinces of the-
China, p. 377-278.
Diamond of Shantung Province, p. 433
Arsenic, p. 737.
Antimony, p. 740-743.
Silline, p. 604.
Nephrite, p. 530
Vol. II China, p. 4
Yunnan Tin, p. 56-79
Yanshan Tin, p. 131-133, 134.
Nephrite, p. 531.
Iron, p. 830.
Copper in Yunnan, p. 63, 699-694.
Copper in Tsochou, p. 449.
Gold, p. 971, 982, 796-798

Laurent, L.

707. Note a propos de quelques plantes
Fossiles du Japon. Ann. Inst. agr. Fussa, 5,
pp. 143-151, 1908. (Sed. Centralb. Vol. 1, p. 776,
Leipzig, 1901)

Describes 3 species of fossil plants of
tertiary age.

708. Note sur quelques echantillons de
plantes fossiles du Yunnan. Ann. des Mines, 10e
serie, t. XI, p. 499-503, 1907.

Describes without figures a new species of
tertiary plant, "alnus cantonoise".

Leslure.

709. Note sur la location des mines en
Paris, 1890.
The author gives an account of the mining law of China.


711. La nature des gisements miniers en Yunnan. Congres des societes francaises de Geographie, 1906.

Notes the occurrence of minerals in the province of Yunnan.


Leclere's geological survey was made from 1897-99, and affected a junction between the survey in French Cochinchina and those of Mecklenburg, Hesse, in Northern China. They include Yunnan, the southern end of Cochinchina, and finally the provinces of Kweichow and Kwangsi.


Information regarding the occurrence of minerals, geology etc. tin occurs at Tomuku, Kolton, Bukhok, etc., in the Province of Yunnan; some of the tinstone occurs in veins in Triassic limestones, but there are also secondary ore bodies from the decomposition of the limestones and veins.


Gives the geology, stratigraphy, and the mineral deposits of the Provinces of Kweichow, Kiangsi, and Yunnan.

Lee, H. K.


Information concerning the iron and coal resources of China, the development of the Hunan iron and steel works, the equipments, the productions, and the necessary government help.

Laurenceau, A. F.

The soil, climate and the productions of
the province of Szechwan are briefly treated.

723. Le Bassif du Ya-Long (China Occiden-
tale) entre le 28e et le 30e Parallele. Bull.
Paris, 1912.

724. Au Yunnan et dans le Bassif du Hin-

This volume contains a record of
Legendre's latest journeys in south-west China. The
objects of the mission were geographical and scienti-
fic, it had also in view the purpose of acquiring a
general idea of the configuration of the regions to be
explored, of their geological structure, and of the
flora, both natural and cultivated.

Legendre and Leoline.

725. Grandes lignes de la geologie du
pays Lolo (Szechuan, Chine). Extrait du bulletin

Geological and petrographic studies of the
Lolo country in Szechuan Province.

726. Principaux resultats Geologiques de
la Mission Legendre au pays Lolo (Szechuan, Chine)
Bull. de la Soc. Geol. de France, Vol. XXX, Vol. 10,

Geological results observed in the mission to
Lolo, a country located in the central part of the
Province of Szechuan. Map.

Leineke, J.

727. The Iron Ore Deposits in the Tsieh
District Province of Kwant, China. (Eisenerzfor-
kommen im Tsieh Bezirk, Prov. Kwant, China). Stahl
und Eisen, Dusseldorf, Germany, March 1, 1898.
A general review of the geological and mineralogical conditions of this important deposit of iron ore, and an account of the present workings.


Abstract translation from "Stahl und Eisen". Report concerning the red iron ore and magnetic deposit, and the hematite ore deposits.

749. The Iron Deposits of the Taoyeh District, At Mr. and Mrs. World, Pittsburgh, April 1, 1898.

Condensed translation. Concerning the importance of the district and the principal ore occurrences.

Leo.

736. Ueiters aus Meteorologie des Iran. Ostens. (Ann.), Ptolemaicoponentem, 7, 8, 9, 19-34, 30-34, 35-35, St. Petersburg, 1904.

Lévinsen-Birguet


This article is of two parts, the first is devoted to a resume of the observations and conclusions of Lichtofel in regard to the geological history of North China, and the second confirms the conclusions of his predecessors.

Leochar, A.


The author gives a translation of the sections relating to the metallurgy of iron, and reproduces a number of the illustrations. One of the latter, showing the manufacture of iron, bears in the Chinese language the title "Urnen for the Manufacture of Pig Iron and wrought Iron."
Lauche, Kurt.


A geologic bibliography, and geological observations of Tien-schien.


Describe the formation of the continental depositions of Tien-schien.


Information concerning the geology of the Kuenlun Mountains and western Tibet.

Lett., H. 


Information concerning the locations, the geology and the products, particularly in Turkestan.


Translated from paper entitled "Riches et minéraux des possessions Turques en Asie Centrale". Concerning the deposits, their locations, geology, etc.


Information concerning the hiper and oreana gold industry near Vladivostock.
Leverkus-Levekusen, L.


Lhotsky, J.


Liang, H. T.


The mission of a Chinese engineer, the author, to this country for the purpose of enlightening Chinese methods.


Deals mostly with the metalliferous content of the antimony ore in that section. Stibnol occurs in veins in Paleozoic rocks.


The mining, milling, geology, and production in general. The ore is a mixture of galena, zinc-blende, and pyrite. Illustrations and map.

Liebenau, W.


A German translation of Mr. E. F. Drake's paper on "The coal fields of Northeastern China", describing the coal fields in the western part of Shensi Province and the eastern part of Shansi Province.
In this treatise Prof. Lindstrom describes a series of corals entrusted to him by Richthofen who collected them in the course of one of his journeys in Northern China. The corals are of Silurian age. There are in all 18 species belonging to 11 genera.

Lisakowski, Karl von.


Little, A. J.

749. Through the Yangtze Gorges or Trade and Travel in Western China. London, 1888.

Chapter I and II give the physiography of the Yangtze valley. General geological description of country throughout.


A summary of the business resources, and political aspects.
138.


Descriptive sketch of this region and its resources.


Describes in the form of a diary, a trip from Central China, through the red sandstone basin of western Szechuan to the granite frontiers of Tibet and back again by the water-highway of the Yangtze.


Describes the Chentu plateau, an area of 2,000 square miles in Szechuan Province, hydrographically.


This work was revised by Mr. A. Lincel and is the result of 50 years spent in western China. Mr. Lincel was at heart an explorer, though in business as a merchant in Hwang-ho, much of his time was spent in different and dangerous expeditions. Illustrated.

Lobchold's

756. Topography of China. (Date and publisher are not available).

Lockhart, William.


Includes the geography of Yangtze River, the Hwang-ho, and the important changes that have lately taken place in the Yellow River.
Loczy, Ludwig von.

139.

In setting forth the results of his extensive geologic explorations in China, Mongolia, and Puma, Herr Loczy names and briefly describes rocks from many localities.


Gives the geological results of the journey of Béla Széchenyi in eastern Asia from 1877 to 1880; in western and southwestern China and Tibet.


Information concerning the coal resources of western and southern China and eastern Chinese-Tibet.


Contains notes of mining observations and mineral resources in Eastern Asia.


A note on the journeys so far made by Dr. Eugen V. Cholnoky, and the observations made.

Lorenthey, T.


Describes the foraminifera collected from the paleozoic rocks in China.


In this report (Vol. III) a number of specimens of limestones are described, special attention being given to the fossil foraminifera contained in them.

Lorenz, T.


Describes the Appendicularia (Cambrian) from Shantung.


The Geology and palaeontology of East-Asia with special reference to the Province of Shantung, China (Sections and geologic map), including stratigraphy, geomorphology, distribution of land and sea during the different geologic times.


The author describes the fossils collected by him in Shantung Province, China, essentially Cambrian trilobites.


This paper describes the geology of the Province of Shantung and incidentally it contains brief descriptions of several igneous and metamorphic rocks from that province. The author discusses at somewhat greater length the origin of the peculiar voliger and conglomeratic limestone of the Cambrian terrane.

Louis, Henry


The object of the paper is to describe a primitive method of gold extraction, practiced by a small colony of Chinese in the district of Tschau, one of the Huainan-Malayan States. Ills.


Includes an account of the Chinese gold workings in Malay Peninsula.

Lowe


An account of the fearful earthquake at Patham, in extreme western Sichuan, on the 11th of April, 1871.

Luigi, Giuseppe de


Describes the Tonitze river region.
Lux, F.


Manufacture of coke and smelting of iron ore in the interior of China.


Status of the development of coal mining in China to the beginning of the revolution in the fall of 1911, and future prospects.

777. Coal and iron in China (Kohle und Eisen in China). Stahl und Eisen, Düsseldorf, Germany, April 3, 1913.

A brief geological sketch of the country, describing the known occurrences of these minerals. Illus.

Lydekker, R. F.


Gives the descriptions and analysis of the steatite (soapstone) from China.

Lydekker, R.


Lyddeker, R.  
782. On a Skull of a Chiru-like Antelope 
from the Ossiferous Deposits of Kundes (Tibet). 
with fig., London, 1901.

Lyell, Charles  
Includes: The Climate of China, I, 239;  
Chinese deluge I, 10.

Lyman, Benjamin  
York, 1901.

Information concerning Chinese inventions, 
particularly the compass.

785. Silver mining and smelting in Mongolia. 
Trans. Am. Inst. Min. Eng., Vol. XXXIII, pp. 1038-
1041, New York City, 1903.

Discussions of the paper of Mr. Y. T. Woo 
published in the same volume.

Lysakowski, Karl V.  
786. Die slowakischen Vulkane und die 
Gebirgsstelen der Halbinsel Korea. Weltall, Vol. 6, 

787 Das Erdbeben in Indien und im Chinesischen 
Lacce. I.


Discusses the valuable mineral deposits of German Protectorates, including Tien-Tschiou, Ch'ung-tung Province.

Lee Gowan, W. J.


Gives the coal deposits in the different parts of China, their productions, the qualities, etc.


Includes the geography of the Tsieh-panc river. (An "Ehre" is a tidal phenomenon called from its Indian designation a "Nombre").


Information concerning the geological and historical changes of the Yellow River.

Referring to Dr. LacGowan's attempt to procure records of earthquakes in China from the residents in various parts of the country.

Discussed the earthquakes in China for the past thirty-seven centuries; as far back as 1631 A.D.

Includes a tabulated account of earthquakes that have been recorded since the Confucian era, in Chinese annals, and details of a few earthquakes.

Laclaire, J. J.


Gives an account of the occurrences of gold in Tibet.

Laclaire, J. J.


Gives the occurrences and describes the geology of the gold deposits in Nilli, Shantung, Szechuen, Yunnan, Ho-kien, Honchuria, and Manhaiwei.

de la Mare, Stanley H.

Information concerning the methods of travel, mineral resources, metallurgical methods and trades.

Fortell, 
1902, "Seidenwesen in Japan und China.

La Roque, A. 
1903, "L'ile d'Hainan.

Madeleine, J. 
1904, "Etude sur l'ile d'Hainan.

Included the orography, structural geology, geographical features and mineral resources of Hainan.

Menardi, A. 
1906, "Relazione inedita di un viaggio al Libet del Padre Cenniano Silicetti de Laccrata.

Mollan, 
1906, "Untersuchung über das Klima von Peking.
"Zeit. Ag., p. 13, 1943.

Moldel, E. 
1907, "Physico, Geographical Sketch of the China and Yellow Sea. (in Russian).
"Sedanl by E. T. von Spindler, T. Peters sons, 1908.

Penninck, E. C. 
1906, "Geological Exploration and Economic Development in Central and Western China.
Includes information concerning the geology, physiography and mineral resources of the country traversed.

Lamuy, H.

Gives and describes the fossils of the different geological formations of Yunnan, from lower Cambrian up to the tertiary.

Lamou.

Largue, A.
81. Journey from Shanghai to Bhama, 1876.

Larkam, J.

Describes the resources of the province, etc with map.

Lartelli, Lorenzo.
Describes and illustrates the following
Silurian fossils from Shenai Province:
Irrecheopodi
Pteroisoi
Tomi
(In Italian).

815. Il Serpiano superiore della Schena.
Roma. Soc. of T. It. 31, 2, p. 339 et
370, avec tab XIV, Roma, 1902.

Describes the upper devonian fossils from
Shenai, China.

Martin, E.

816. Notes on 
the Am. Jour.

Includes the following sub-titles:
The li-shan Hills.
Recent changes in the course of the hoango.
The Great Imperial Canal.

Martin, E.

817. Element du mophite en Chine, dans
la Chaine des Appalaches de Shen-Chen. Comp. des

Extract of a letter from Martin to Aubrey,
dated Jan. 5, 1891, concerning the geological and
petrographical result of a journey to the Shen Chen.

Letter, Aubrey.

818. Prospecting in China. Lines and
tin., Vol. 31, pp. 393-395, Toronto, 9., April,
1901.

Describes the country north of Peking, and
its inhabitants.

819. Description of the Country North of
Peking. Lines and Minerals, Vol. 31, pp. 393-395,
Toronto, 9., 1901.
Information concerning the water ways in China.

Lo, Cockey, H. P.


China's production of gold from 1890-1911.

Lo, Ronald, E.


Lanchan, John.


Contains a chapter on China, including geological and geographical information.

Larmsen.


An account of the precious metals system of China.

Larsencher, Otto.


A scientific journey (geology and Paleontology) in the Tian-Schan.
The Central Tian- Schan Mountains.


Discusses the Ice period in northwestern Mongolia.

Lettschikoff.

Licheliis.


Gives notes on the traces of Ice period and glacial deposits.

Licheli-Lery, A. Leopold et Leclerc.

Notes concerning the crystalline and eruptive rocks in China, Lichel-Lery and Lecleire's petrography, and Leclerc in the bearings and relations to structural geology.


Reports results of research work on materials and samples.


Geological and geographical information concerning China by C. D. Childs, Book II, Chap. XIII.


Gives an account of the Chinese usages of iron.


Synopsis:
- Altnag to Peking, Geology of the district, Devonian Limestone, coal measures, granite, erradation of the mountains, alluvium.
- Peking to Tientsin and Shanghai; Geology of the country, Carboniferous, Mississsic, granite, alluvial plain, its origin by depositions of river mud and elevation.
An account of the invention of the seismoscope by a Chinese named Choko in the year A.D. 130.

Loedray, J. de


Lollendorff


Discusses the methods of transcribing Chinese geographical names, and concludes that the Jenderin dialect would be best for general purposes.

O. annual of Chinese bibliography, Shanghai, 1876.

Includes chapters in kinematology, seismology, meteorology, etc.

Lollar, W. S.


Information concerning the location of the Lushan coalfield, the coal seams, the productions and the laborers. Analysis of sample.
Lonneau, H.


Lonneau, H.


Information concerning a Devonian fossilite, and the structure of the coal beds of Yunnan and Kwai-ching Provinces. The beds are intercalated between strata of schist.


In "Montan Industriel". Information concerning the coal-bearing strata; with analysis of samples collected during travels, showing that some of the coals can rival the best known fields.


An Devonian to Cretaceous. All strata of South China between Silurian and quaternary contain coal.


Geological studies of the southern provinces of China, petrographically, palaeontologically, etc.
Infornation concerning the coal of northern China, (anthracite).

Loose-Benzet, J.

252. The Minees of eastern China.

Gives descriptions, occurrence, and metallurgy of coal, copper, spliter, silver, iron, tin, anti-
mony, bismuth, gold, mica, asbestos, arsenic, mercury, nickel, graphite, sulphur, petroleum, salt, salt,
marble, limestones, lime, gypsum, corundum, platinum,
and tungsten (wolframite).

Loose, J. H.


The Kanyang steelworks have in operation one openhearth furnace capable of turning out 40 tons of steel per day, with no arrangement for redu-
cing phosphorus, and one furnace with French modification, capable of producing 100 to 150 tons
of steel per day.

Loose.

250. The Coal Anthracite of North China.

Describes the collieries, their equipment, operations, etc.

Morgan, Vol. 9.

The Scot. Geogr. Inst., Vol. 9, p. 337-332, Edin-
burgh, 1894.
Describes the geography of Central Asia, with particular reference to the 'Tian-shan' lode, and the 'Huen Huen' lode.

Loomis, Theodore A.

Information concerning the works at Houchou, their labor conditions, and iron ore and fuel supplies.

Lori, Augusto.

Lorilison, C. J.

Describes the journey to the mines in the vicinity of Pekin.


Includes the physical features of the country traversed, and the natural resources.

Lass, 1.
1858. The coal-fields of Asia; being an extract translated from Kochetoff's "Asia: its future Railroads and its Coalfields." 1st ed., 1877.

Lassman, C.
A description of the delta, with some information on the stones of its formation.

Lugge, p. 156.


A review of an article on the crystalline and eruptive rocks of China by Michel Levy and others.

Luirhead, p. 861.


Luirhead, p. 862.

Manual of Geology. (Published in the Chinese language).

Murchison, J. L.


The writer speaks of some upper Devonian fossils from Sz-chuan as identical in specific character with spirifex fermeudilii, ... Thiennes, productus subactulicis, and other evidences favor.

Lardoch J. Lardoch.


Description of the oil and gas wells, methods of working in Tze-lin-ching region, in the province of Sz-chuan. Illustrations.

Luzel, Theodore.

Describes the different species of jade mineralogically.


Includes a section on Chinese geology.


Describes the minerals and mineral localities in the provinces of Shantung, Kansu, Shensi, Szechuan, and the region of the Longtze and others.


A description of a sulphur spring in Dutch China.
Notes the fossil *Hippocampus* from the deposits
of upper Yellow River section.


Includes:
Chinese petroleum; on unknown factor
Native hostility and superstition
Nan-lin-pan oil field in Yunnan-Ti Province
its yield
boring oil tool—used
Production does not meet home consumption
French concessions and treaties
Chinese Tibet
The Szechuan oilfield
its geology
boring different gas wells.

Reuber, P. 472. Die Chinesen ihre Gerecht, ihre
Kun-Lun und Symbol machen. Magazin des Illustr.
Deutschen Kaiserhefte, No. 8, 1857.

The Chinese how the Chinese make their signs
symbols, etc.

Nomaer, Palchouir, 672. Über einige Wasserleuchten aus
Part 31, of 1883.
Information concerning the fresh water shell-fishes of China, the Cytilus, Mediola, Arch, and many others are noted.

876. The History of the Earth (erdgeschichte). 2 volumes in German. Leipzig, 1887.

China:
Vol. II Migration of organisms, p. 41

Cambrian trilobites, p. 41, 52
Carpenter, p. 131

Flora, p. 173

The section of the "Cleopatra's Tomb", p. 151

Jurassic deposits, p. 25-46 and a glance of the Jurassic, p. 334
Jurassic letters, p. 379
Jurassic letters, p. 379, 518, 138, 555
Jurassic letters, p. 704, 710
Jurassic letters etc., p. 753

Newberry, J. (1879)


This paper was read to Napoleon Bonaparte, describing the fossil plants collected by the letter, proving a large part of the great coal fields of China to be of Carboniferous age.


Descriptions of plants from the coal basin of the Hsin-hau-ho, in the northern peninsula of Manchuria, on the east side of the Gulf of Hiantung, near the coast of Shih-chuang. They were of Carboniferous age.
880. **Icthetodon's Fourth Volume on China.**

This review on this volume of Icthetodon's work on China by the author. It forms the paleontological part of the work and consists of descriptions and discussions of the fossils obtained from different parts of China.


The author exhibited during a meeting of the academy specimens of coal plants from northeastern part of China. These specimens were of I. coal plane, like those of the Richmond Coal Field.

882. *Further remark upon coal plants from the Yantze Valley and Shang-Cha and Hon-Su.* Geol. Andachten 11, p. 158-159, 1904.

The map and accompanying sections show the geological formations along the route.


An account of mining in China, and the steps taken to develop the industry, with information concerning conditions, climate, etc.


Describes the development of the Yantze Valley. The province of Sichuan and Hunan contain extensive coal beds, and many mines are in active operation, due chiefly to German enterprise.
685. The Tuyen Iron Mine, China.

Remarks on the effects of Chinese revolu-
tions on the mining industry, and of foreign loans, with history and description of the Tuyen iron mine.

686. The Future of Mining in China.

On regulations and operations of New
Republic.

Liljeborg.


Gives accounts of the bitumen, the minerals, lead, and copper of China.


Notes the losses demand of China.

Table, Algarida.

689. Mining Possibilities in Persia.

In mining mining areas favorable geolog-
ical conditions, coal, oil, and copper.

Noda, Seijiro.

690. Geology of the Northwestern Part of Hu-pen-sheng, China.

The district under consideration includes
a region along the Yenatze river between 1-chang and Kuei-chou and along the route of the Chuan-han railway. It is geologically, paleontologically and topographically described.

This district lies on the left side of the Yang-tze river between Shu-ch'ing-hsien and the frontier of Sian-si and Kupeh and embraces the 3 divisions, Shu-ch'ing-hsien, Taiyeh-hsien, and Hsia-chiao; it is geologically described.


The district under consideration embraces the 2 prefectures of Chek-shan and Sen-shan, consisting of sedimentary and igneous rocks from Silurian to Cretaceous. The geology of the district is described. (In English).


The geology of the region is described, and the history of the Triassic treated. Given an analysis of the igneous rock.

Koepping, F.


Information concerning the Devonian Trias.

Kidans-Gulf.


Information concerning the iron and coal industry in the provinces of Shantung and Shihli.

The Chinese method of drilling is treated.


Information concerning the hydrology of eastern Mongolia.


Consider the vast unutilized mineral wealth of the vast abundant mineral.


P. A. Norstedt & Son, Stockholm, 1913.

The coal and mineral resources of Shensi province, China, analytically examined by the author. Map and illustrations.


Account of a prospecting journey of the author in streams tributary to the Hohho river. Illustrations.


Iceland the mountains in eastern and central Mongolia, Ordos, Alashan, and Ksusciki, the province of Chih-li, Hon-si, Shen-si, Kansu; the Hon-lun and hon-shan mountains are included.


This German account of the Russian expedition in China under Taten is written by the geologist. It takes the form of a direct narrative of the two-year journey in the north of China and central Asia, including the Hon-shan Mountains.

Gives the geological and topographical description of the
mountains in central Asia, north China, and
Kanscha.

910. "Unter die geologischen Forschungen, insbesondere, die Andenken von J. .
Ruskenetow und set von einem freimutigen und schiller.
". Z 3-316, Ht. Peters burg, 1898.

Gives the geological and topographical description of Asia.

911. "Ueber die geologischen Untersuchungen in
Z. M. Ost., col. VII, pt. 31-6, 1905.

Information concerning the geological investigations in Topkhatia and Karlyk, eastern
China, in 1905.

911. Under geological investigation in
Kangxi, Pakar, and Kanscha in
Kuani, 1906. " Renssaier servi, et
Einer. Je la musée, note par J. Brichet-Fils, ".
Col. VII, livr. 3, 1-64, 1907 (Russian and
German).

Geologic, petrographical and paleontological studies in Kuani.

914. "Reise in jair, Urkanscha und
Kanscha in Summer 1906. '". Renssaier serv., ".
34, pp. 35-70, Gotha, 1908.

The writer describes in detail both the
morphology and geological structure of the
mountain ranges, explored with occasional notes as
to their vegetation, resources, etc.

915. "Exkursionen in Chiree, Zungaria, 1

The writer describes in detail both the
morphology and geological structure of the mountain
ranges, explored with occasional notes as to their
vegetation, resources, etc.
166.

314. Die Steinkohlen von Shantung, China.
Tokyo, 1908.

Describes the coal (anthracite) from the
Province of Shantung.

315. Fossil localities in North China.
Tokyo, Jan. 10, 1903.

Gives a list of localities in Shantung and
Shihli Provinces, north China. The fossils are the
products of Actinoceras, Orthoceras, Lingulella, etc.
(Japanese).

316. Topographical and geological sketch
of the eastern interior Mongolia. (Japanese).

Journ. Geol. Soc. Tokyo, Vol. 1, No. 148, pp. 10-14,
Tokyo, March 20, 1904.

Gives the geology in detail from the Archean
to Tertiary, and the physiography of North China.
(2 sections; Japanese).

318. Geology of Jeho and Eastern Mongolia.
167-174, Tokyo, May 30, 1904.

Describes the different geological formation
of Jeho and Eastern Mongolia; 1 section. (Japanese)

319. Geographical Researches in North
(In Japanese)

320. Fossil Localities of North China, II
Journ. Geol. Soc. Tokyo, Vol. 11, No. 138, pp. 71-
80, Tokyo, March 30, 1905.

Gives a list of fossil localities and fossils
in the Provinces of Shantung, Shihli, etc.

(Japanese).


Okada,

923. The rainfall of China and Korea. 


Okamoto, Yoshichiro.

924. Prehnite found near Amoy, China. 


Describes the prehnite found near Amoy, Fukien Province, China. (Japanese).

Omori.


Reference regarding Chinese earthquakes since the Ming dynasty.

926. Note on early Chinese earthquakes. 


Includes details about individual earthquakes.

Palern, K. W.


Vol. I. Mammal fossils. 
Vol. II. Paleontology.

928. Review of the Pleistocene of Europe, Asia, and Northern Africa. 

Includes a discussion on Pliocene and Pleistocene life of Asia and North Africa.

**Ltsuki, Y.**


Gives detail geology and describes the different formation occurred in the Liau-tung Peninsula. (Japanese)

**Owen.**


Describing the specimens of teeth and referring them either to the Upper Pliocene or the post Pliocene period.


Includes:
- Chinese assay, p. 63
- Chinese balance, p. 64
- Chinese blast furnace, pp. 76-77
Chinese prospecting methods, p. 78-79
Chinese tin smelting, p. 75-78
Chinese weights, p. 58
Chinese system of mining, pp. 61-62


Describes the basin of that river and its floods, and notes the filling up of lakes and the raising of the plains by sediment left. In some seasons they are heightened by 3 or 4 inches of earth.


I Die Chinesischen Gesteinsvorkommen.
II Die japanischen Gesteinsvorkommen. Under I the rocks from Pi-moonh-sien and Yu-shan are described microscopically, analytically and mineralogically. Tables of analysis.
Palibin, I. V.


Gives an account of the tertiary flora of Landschrei.

P., L. V.


A review of Vol. I, Part II; Petrography and Zoology, by Eliot Blackwelder, "Research in China".

Pantscher, Hofrath.


Treats briefly of tin and its occurrence in China.

Paps, C.


Sketch, maps, and illustrations.

Park, James.


Includes:
Loess in northern China, p. 207
Coal, p. 214
Tertiary rocks, p. 306
Cambrian glaciation, p. 324
Ordovician, p. 336
Parker, W. H.


Dr. Parker prepared this supplementary list from the Tong Hua Li, a work which gives accounts of the most important disasters, memorials, etc., that occurred during the reign of the Lanchu dynasty.


A series of vivid sketches of Chinese character, drawn from the writer's personal experience gained during his long period of consular service. The book deserves to be read by all responsible in any way for the direction of European relations with China. It sheds a valuable light on Chinese methods and modes of thought, a failure to recognize and make allowance for which may have, the author thinks, disastrous consequences.


Parsons, W. B.


Information concerning the topography, agricultural possibilities, mineral wealth, the alluvial deposits of the river basins, etc. of China.
250. An American engineer in China.
Journ. Pr. Inst., Vol. CXIX, No. 4, pp. 381-413,
Philadelphia, April, 1915.

Review of the present condition of China's
transportation development, universal wealth and
future outlook.

Pelourde, Joseph.

251. Sur quelques végétaux fossiles de
x, fasc. 1.

252. Sur la signification géologique de
certaines végétaux fossiles rassemblés par le
docteur Legendre dans le sud-est de la Chine.
Bull. de la Soc. roy. de France. 4th series, Vol.

On the geological significance of the
fossil plants collected by Dr. Legendre in the
province of Hunan or Kueichuan, southwestern China.

Perry, J. P.


Results of considerable interest
to those engaged in the study of terrestrial magnetics.

Pervinquiere, L.

254. Condition géologique et ressources
minérales de la Mandchourie et de la Corée.
Rev. de la Soc. roy., 1, 18, p. 345 a 352, 1904.

Notes the geology and mineral resources of
Mandchuria and Korea.

Peterek, A. J.

255. Beautiful Cinnabar Crystals from
China. Am. Jour. of Science, Vol. 176, p. 317,
New Haven, 1908.
The crystals described were found in Kiang-yen Prefecture in the Province of Kwangchow. They are ordinary and interpenetrating twins of a bright ruby-red color, translucent and in some cases transparent. Illustrations.

Peterm n. J.


Describes a collection of crystalline rocks collected by Dr. Friederichsen, including granite, schist-porphry, quartz-porphry, biotite-granite, and many others.

Flaeh, C. I.

97. Beschreibung der mineralreichhaltigen Meraeinsel Kwantun in Beziehung mit ihren geologischen Verhältnissen. Organ. d. Ver. f. Schmetterl., he. 5, pp. 5-8; he. 6, pp. 5-6; he. 7, pp. 5-6; he. 8, pp. 5-9, 1901.

Describes the mineralogical localities of the Kwantun Peninsula with respect to their depositions.


Information concerning an anthracite locality in the vicinity of Fort Arthur.

Finical, J.


Gives an account of the ancient usages of metals.

968. *A Treatise on the Deposits.*

Gives an account of the mineral deposits of China.

Phillips, J. P.


Discusses as to whether the origin of this process was obtained from the ideas of Chinese.

Haddington, R.

102. *Shower of Dust at Shanghai.*
China Rep., XVIII, pp. 531-535, 1897.

Being an examination and report upon the shower of dust at Shanghai.

Hieper, F.

102. *Forst und Hüttenwesen in China.*

Information concerning mining and metallurgy in China.

Ardens, R. V. and Charles Schubert.


Notes the area of coal fields in China; second to the United States.
Rotlinger, W.C.
969. A Recent Survey in Western China.

Notes of a surveying journey from the
Yangtze to the Burmese frontier in search of a
railway route.

Potonic, F.
960. Pfianzenreste aus der Juraformation.
J. K. Butterer, Arch. Asien, 3, pp. 115-124,
Berlin, 1902.

Prejewelsky, L.L.-vol. 1.
960. Mongolia, the Tungut Country, and
the Solitudes of Northern Tibet. (Translated)
2 volumes, 8 vo. London, 1876.

Some remarks of a historical nature scattered
throughout.

Rostow, Joseph.
968. Earthquake in China. Seismology,
Chemical, Physical, and Stratigraphical.

Noting the disastrous earthquake at
Tung, China in 1871.

969. China. Seismology, Chemical, Physical,

Vol. I Earthquakes in China, p. 266
Vol. II Coal Fields in China, p. 125
Loeser, p. 461

Prinsep, J.
972. Analyses of several Indian, Chinese,
and New Holland Coals. J. Roy. Phil. Soc.,
Prinz, Ernls.


Includes special information of the Man-chao mountains.


Morphological studies of Man-schan from the paleozoic to pleistocene.

Lambert, J. H. M. B.


The author describes a variety of rocks from the gorge and lower valley of the Yang-tzi and from the district northwest of Peking.


This article contains the geological observation obtained during a journey to a China, Japan, and Mongolia from the summer of 1863 to the winter of 1865.


Includes the geology of China, the mineral production of China and geological observations of the Yangtze and Yellow Rivers.

Gives a list of minerals and their localities.


Information concerning the earthquakes in these regions.

179. On the Hetao Plain, and the historical changes in the course of the Yellow River.
E. Jour. of Sci., Vol. 45, pp. 819-824, New Haven, 1876.

Includes the geological and geographical features and historical changes of the Yellow River.


Includes chapters on geographical sketch of China: journey up the Yangtze River; visit to the coal mines etc.

181. Explorations in Turkestan.
Publications of the Geographical Institute of Washington No. 73, 2 volumes, Washington, 1900.


Includes:
The Physical development of Central Asia.
The cause of salinity of central Asia.
The Glacial period in central Asia.
Map showing the regions closed.
Races of Asia.
Location and character of basin systems of central Asia.
178.

Burkett, E. C.  

Gold occurs in limited amounts in many places throughout the province, but the most widespread and rich deposits occur along the Amur River and on the coast of it in Manchuria. The workings along the Amur River are very well known and this article is one of the best descriptions of the deposits and the methods of work pursued.


Notes the occurrence of gold and silver in northern Manchuria.

Iutieta, J.  

Describes the geology, fauna and flora of northern China, particularly of Manchuria.

Jadun, T.  

Gives an account of the future routes across Asia, and the coal deposits of China.

Kemmerer, H.  

Information concerning the different fields and their characteristics, costs of mining, transportation, etc.
Randolph, John C. II. 


Almost all these coals could be fit for railroad, metallurgical or domestic purposes.

Hun-to-san 

Ho-tah-poo 

Ho-chu-tung 

Hin-jen 

Hin-chah 

Hun-chok-san

Further west on the Yang-tze toward Hon-kow, there are different coals and lignites.

Ho-poei-sung-foo--Emetaceous

Young-foo -------- Bituminous

Ho-nan ----------- Hard black anthracite

Hon-kow -------- Anthracite

Artbouin, J. J.

888. Stone and Tobacco Leaf.

as Feudo, T. D.

Arend, Harry.


Reports abundant resources of many kinds of ore, but slow development of the mineral industry. Analysis and illustration.


Includes description of the coal and conditions, the mines, minerals, production and methods of handling and working.

Information concerning the principal coal fields. 10p.


Information concerning the production and occurrence of coal. Iron, copper, silver, lead, platinum referred.


Includes descriptions of the iron, mines, coal mines, and the steel works. Maps and illustrations.


A review of mining conditions and the effect of international politics on the industry.


The author states that the mineral resources of China should be studied by competent engineers, with a country should be mapped topographically and aid to the development of railway, irrigation and industrial enterprises.

Information concerning the abrogation of foreign mining concessions, and the production of other minerals.


Information concerning conditions in China the mineral wealth and its present development, methods, production and related subjects.

Coal, iron, gold, silver, copper, nickel, lead, zinc, antimony, quicksilver, arsenic, detritus.


Description of coal and coal fields of China, with maps, analyses, and illustrations.


This paper was published in the Jour. of the Bulletin.


Mining conditions in China translated from English.
Information concerning the different oil fields in China.


Dr. Lead discusses the paper of Mr. J. L. Smith in the January, 1914 number and remarks on the mineral resources of China, particularly iron and coal.


Includes location, geology of the region; description of the petroleum, gas, and salt, and their occurrence; drilling of wells and salt mining. Maps and illustrations. (See also in and Sci. Press, vol. 36, 1914.)

Conclusion.


This present volume is perhaps the most complete work of reference on China that has yet appeared. There are numerous sketches, maps, and a bibliography of the most important works on China which have appeared since 1882.

Redwood, Bozeman.

Information concerning:
- Occurrences of gas and oil.
- Physical properties of the oil.
- The uses of gas and oil.
- Methods of drilling.


- Vol. III, p. 306: Methods and machinery used for producing oil.
- Vol. III, p. 317: Regulations as to storage and transportation of petroleum.


- Noting the descriptions of the Palaeozoic fossils from China by Dr. E. C. Liddell and Dr. Sellier.


Dr. said stated that the accessible coal deposits in the province of Shansi alone are estimated to be sufficient to supply the whole world's demand for fuel at its present rate of consumption for the next 4,000 years. Many thick and valuable seams cropped out at the surface.

Leire, Paul T.


The new regulations in regard to weights and measures as established in China.

Lietzenstein, F. von


Information concerning the silver deposits near Sinkiang.

Lemay.


Notes on the coal near the port of Okin.

Lenoir, Georges.


Leonidensk, V.


Information concerning the glaciers at Lus-tau.
Richard, L.

1012. Comprehensive Geography of the Chinese Empire and Dependencies. Translated into English, revised and collected by J. Kennedy. Ilucosei Press, Shanghai, 1908.

This book gives a physical and political description of China and dependencies. The physical part gives a general outline of each of the 5 regions namely the north, central, and southern, then each province is studied with respect to its area, population, mountains, and boundaries, mountains, and rivers, its climate, its flora, its mineral resources and agriculture, its climate etc.

Lichnowski, Eidel.


Lichthofen, . . . v.


The researches of Lichthofen were the most extensive which have yet been attempted in China. He describes rocks from a wide range of localities. His report contains no petrographic descriptions of a detailed character.
303, Hestd. 1929.

Information concerning the geological investigations in Iceland since 1928.


Additional information on the geology of the coastal region.


Additional geological notes of travelling in northern N.Z.


1940. "Notes to the number of Geol. etc. Aug. 24, 1940. 1942 - 1943.

Notes on the coal fields of Hsin-yu.

Remains on the coal fields of Wun.

1941. Notes on the coal fields of Tencowen.

Remains on the coal fields of Hupai.

Notes on the coal fields of Shang.


Gives information concerning the geological and zoological investigations in India.


In a letter to Prof. T. R. Chittenden, April 29, 1869, the writer described the geological features of a very pleasant trip of six weeks, taken up the middle of the River, then into the Royalty Lake, crossing over into the upper part of it, and ascending the upper river to East Creek, and up a mountain.

Junction.


1839. Notes on the distribution of coal deposits in the province of Japan.


A letter to Prof. T. R. Chittenden, dated April 29, 1869, describing a journey during 1869 in the province of Japan and China.


189.

I. Introduction.


III. The geology of northern China and the mineral resources of the region. J. Geol., vol. 16, pp. 597-602, 1908.

IV. The geology of southern China and its mineral resources. J. Geol., vol. 16, pp. 597-602, 1908.

V. The geology of eastern China and its mineral resources. J. Geol., vol. 16, pp. 597-602, 1908.

VI. The geology of western China and its mineral resources. J. Geol., vol. 16, pp. 597-602, 1908.

VII. The geology of central China and its mineral resources. J. Geol., vol. 16, pp. 597-602, 1908.

VIII. The geology of southern China and its mineral resources. J. Geol., vol. 16, pp. 597-602, 1908.

IX. The geology of eastern China and its mineral resources. J. Geol., vol. 16, pp. 597-602, 1908.

X. The geology of western China and its mineral resources. J. Geol., vol. 16, pp. 597-602, 1908.

XI. The geology of central China and its mineral resources. J. Geol., vol. 16, pp. 597-602, 1908.

XII. The geology of northern China and the mineral resources of the region. J. Geol., vol. 16, pp. 597-602, 1908.

XIII. The geology of southern China and its mineral resources. J. Geol., vol. 16, pp. 597-602, 1908.

XIV. The geology of eastern China and its mineral resources. J. Geol., vol. 16, pp. 597-602, 1908.

XV. The geology of western China and its mineral resources. J. Geol., vol. 16, pp. 597-602, 1908.

XVI. The geology of central China and its mineral resources. J. Geol., vol. 16, pp. 597-602, 1908.

XVII. The geology of northern China and the mineral resources of the region. J. Geol., vol. 16, pp. 597-602, 1908.

XVIII. The geology of southern China and its mineral resources. J. Geol., vol. 16, pp. 597-602, 1908.

XIX. The geology of eastern China and its mineral resources. J. Geol., vol. 16, pp. 597-602, 1908.

XX. The geology of western China and its mineral resources. J. Geol., vol. 16, pp. 597-602, 1908.

XXI. The geology of central China and its mineral resources. J. Geol., vol. 16, pp. 597-602, 1908.

XXII. The geology of northern China and the mineral resources of the region. J. Geol., vol. 16, pp. 597-602, 1908.

XXIII. The geology of southern China and its mineral resources. J. Geol., vol. 16, pp. 597-602, 1908.

XXIV. The geology of eastern China and its mineral resources. J. Geol., vol. 16, pp. 597-602, 1908.

XXV. The geology of western China and its mineral resources. J. Geol., vol. 16, pp. 597-602, 1908.

XXVI. The geology of central China and its mineral resources. J. Geol., vol. 16, pp. 597-602, 1908.

XXVII. The geology of northern China and the mineral resources of the region. J. Geol., vol. 16, pp. 597-602, 1908.

XXVIII. The geology of southern China and its mineral resources. J. Geol., vol. 16, pp. 597-602, 1908.

XXIX. The geology of eastern China and its mineral resources. J. Geol., vol. 16, pp. 597-602, 1908.

XXX. The geology of western China and its mineral resources. J. Geol., vol. 16, pp. 597-602, 1908.

XXXI. The geology of central China and its mineral resources. J. Geol., vol. 16, pp. 597-602, 1908.


Some time concerning the region of

Heather.


The studies elucidate the vegetation of

1858. Chinese, revision, 1862, and a draft of the Nature's Station, etc.

1859. Smith, in the.

This volume is mainly occupied with an

eminent and typical description of the

extent of a small region in the interior of

this island, and of the volume is occupied

with descriptions and relations of plants in

summary and significance of the area of

1867. A. C. Grant, The natural

varies from the temperate to the tropical.

The geological

the

1892. Smith, The natural

vegetation from the tropical to the temperate.

The

1894. Smith, A. C. Grant, The natural

varies from the tropical to the temperate.

The

191.
several initiatives control in different departments
of psychology, and the results of their investigation
are as follows in this row:

induction.

185. "The role of human memory in
the prediction of future events." In
memory and prediction, ed. by
Lawrence, KS, 1981.

In the following to the second volume of
seven documents to describe the machine
containing the simulation model of the
representation
in artificial intelligence. The scale of 1:750,
the simulation's structure and the electrical
structure of control panels.

Science, 130, 1067.

was the distribution of soil in India.

Ibid. "Great communications in
India." In the fourth annual report.

The following lack leads to error.

Ibid. "Great communications in
India." In the fourth annual report.

"Great communications in
India." In the fourth annual report.

6 this was concluded in another
paper, mentioned elsewhere.

London, 1974, 1-20."
... first account of the geology of this district.

... the present state of the art of the...
194.

... pp. 186-188. - 184.

J. B. P. C.

... characterization and... the... in Italy... 1809.

... the... process of... the... in... 1811.

... J. B. P. C. in... 1811.

... as... 1811... the... of... 1811.

... one of the... 1811... one of the... 1811.

... of... 1811... and... 1811... of... 1811.

... of... 1811... in... 1811... of... 1811.

... of... 1811... 1870-1876. - 1811... 1870-1876. - 1811.

... of... 1870-1876. - 1811... 1870-1876. - 1811.

... of... 1870-1876. - 1811... of... 1870-1876. - 1811.

... of... 1870-1876. - 1811... of... 1870-1876. - 1811.
Great southern areas of the country are not.

**Reference**

B. A. L. C. A. J., 1900, pp. 43-44.

The chief work done in mining is

With the aid of the Indian and Chinese labor.

Thus, no iron is made by Indians.

And the British Government, therefore, has made iron, etc.

Some of the more important facts are:

1. The iron industry.

2. The coal industry.

3. The silver industry.

4. The cotton industry.

5. The silk industry.

6. The wool industry.

7. The agriculture of China.

The general of geography.

C. C., pp. 43-44. Salome, Tia. 1913-1914.

Information concerning the (i) geographical position, (ii) the physical features and climate, and (iii) the mineral resources of China.
Instead of the first article on the uses and occurrences of names the present paragraph.

analysis. Attributions

acs. sum. 161. 

ves. 15. 119. 137.

ives, sum. 151. -198. 137.

ives, sum. 151. -198. 137.

ive, sum. 151. -198. 137.

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ives, sum. 151. -198. 137.

ives, sum. 151. -198. 137.
The second edition of the work of the same author, and also the third, was published in 1825. The work was dedicated to the memory of the nobleman and statesman, Sir William Pitt, and contains a detailed account of the political and social conditions of the time. The author stresses the importance of education and the need for a more just and equitable distribution of wealth.

In 1829, the author published a sequel to his first work, which continued to explore the themes of inequality and social justice. The sequel was well-received and helped to further establish the author's reputation as a leading voice in the intellectual and political debates of the time. The author continued to write and publish works on a variety of topics, including economics, politics, and history, and his ideas and perspectives continue to be studied and debated to this day.
In page 16 mining of China is mentioned.

arl, Henry Andrew.


Describing the physiography and trade of the country along the route. Specimen of mineralogy, forms and insects were collected and forwarded to England.

argent, R. H.


These surveys were undertaken for the purpose of producing base maps on a large scale which might be used to illustrate geological features of the country by the Carnegie expedition to China.

arran, J.


Geological notes on the tertiary terraces of Tonkin.

Memoir giving resume of geological knowledge of Tonkin previous to 1897.

Schellwein.

1107.  Alacozoische und triadische fossilien aus stassen.  in Futterer, durch gen.  id. 3.  pp. 125-174.  mit 5 Tafel.  in Die, 1903.

1108.  Trias, farn und pflanzen in China.  von g.  f.  physik.  on geo.  43.  1902 (1903)  t.  59-79.  mit 1 Tafel.

Describes the triassic, fern and carboniferous fossils from China.

Scheek, A.


Describes fossil plants from many different localities, showing the coal beds of China belong to 2 different periods, carboniferous and jurassic.  (Abstract from Vol. 4 of Richter's "China")

1110.  Jurassische pflanzenreste.


Describes the fossil plants from the coal-beds from different parts of China.  (Abstract from Vol. 4 of Richter's "China")


Describes tertiary fossil plants from southern China.  (Abstract from Vol. 4 of


Concluding.


A review of Richthofen's geomorphological studies of Eastern Asia.

Schmel, Gustave.

1115. Récoltes géographiques. Le contested 1892.

1. Les eaux et les Strangers chez les Historiens Chinois.

1116. Geographical Notes. III. Ho-Ling Kaling. IV. Taluor and Talayu. V. Ting-Li-Chi, Ting-Cii. Representative from the T'ung-Kao, Vol. IX. No. 4. Leyden, J. J. Brill, 1898.

Schlosser, 1.

Describes fossil-animals from China.

1118. Uber fossile land- und busiwass ergastropoden aus centralasien und China. 
1906.

Concerning the petrographical and
dataent of central Asia and

1119. Coal in China. Annales des 

Gives analyses of 2 samples of coal from 
Konkin. Both coals were high in sulphur. The 
also contained notable proportions of phosphoric 
analyses.

1120. Jurassic Rocks of the Altai 
Mountains. Journ. St. Petersburg Soc. of 

Gives a correlation of the Jurassic of 
the Altai Mts. which heretofore described 
otherwise, with other Jura flora of other 
localities.

1121. Letters to Baron Richthofen. 
cit. der deutschen gesellschaft. Vol. 29, 

Include geological notes in regard to 
the loess deposits in Asia.

1122. Vortrag des R. Bergdirektor

Shockley, E. H.


Extracts from letter from Mr. Shockley regarding the search for petroleum in Shansi and the si, and results.


Describes the topography and geology of the region, the details of localities, the mining methods, the ores, the iron works and furnaces. Includes analysis and itinerary of author. A record of observations made in the service of the Rekin Syndicate.


Notes regarding the oversight in the failure to credit China with some coal production.

Information concerning the work of the Standard Oil Co. in China; and interesting tales from engineers with special references to insects.

Kocher, L. H.

Describes the metallurgy of antimony at Shanghai.


Chemische, Alter.

Scott, Robert.

In the last decade, a few briquetting plants have been erected in China, Formosa, Australia, and India.

Lhott.

An ancient Chinese account of melting metals in Altai.
A description of the core of the Taian-Tang-Jang is given with views taken at joining.

Schulz, Karl.
1134. Beiträge zur Petrographie Carmen. [Lit. 1 Taf. u. 2 Textfig. H. 52.]

Describes the petrography of North Korea.

Schüller, Conrad.

Gives a very full and elaborate description of the Carboniferous Foraminifers of China and Japan, including the Fusulinia, Schwagerina, Marginulina, Melvulina, etc. (Abstract from Vol. 6 of Richthofen's "China")

Schilder, Richard.

The following types of rocks from Shantung and Liautung provinces are described:

I. Kristallinisches Gestein.
- Gneiss, Glimmerschiefer, Hornblende-
  schiefer.
II. Masse Gesteine.
- Granit, Granitporphy, Quarzporphy, Porphyrit, Diorit, Diabas, Trachyt, Basalt.
Scott, J. C.
1139. The hill-slopes of Tonking.

Describes the geography of the country
with occasional geological, the delta land;
2. the region of plateaux; 3. the forest
region.

Scott, J. C.
1139. China, an introduction to
teology. The Macmillan Co. New York,
1937.

The following topics are included:

Camurian of China
Devonian of China
Silurian of China

Jurassic (Lias)CRETACEOUS
Jurassic (Juras)

Gardner, J. D.
1140. Further considerations on
the origin of the Himalaya Mountains and the
plateau of Tibet. Proceed. of the Amer.

The purpose of this paper is merely to
add a final confirmation of some interest to
the memoirs dealing with the cause of earthquakes,
mountain formation, and kindred phenomena
connected with the physics of the earth, which
the author has published in the proceedings in
1906-08.
Seltzer, A. J.


An account of mines in China; which have been worked since 1868; giving analyses of the ore and limestone, and the raw and finished products of the Hangyang works.


Illustrated description of the works and their equipment. Latest German equipment used for making pig iron, steel, rails, plates, etc.

Terrays, A.


Gives descriptions of the different coal mines in the province of Kupch, with geology and analyses.


Information concerning the exploitation of mines and metallurgy in China, particularly in Shensi, Shantung and Kupch provinces.

Levertzoff, L.

Lewari, A. C.
1438. Jurassic Plants from Chinese
Jamaica. (Collect. Brutschew) St. Petersburg,
1911.

Longwell, C. F. A.
1447. Memorandum on the present state
of some of the magnetic elements in China and
Soc. Sect. C. Art 7, v. II. pp. 222-224,
May 1859.

Micaelis.
1458. Notes on China. (Notes sur la
Chine) Revue telecomnique, Paris, May 25,
May 10 and 26, 1906.

An illustrated account of navigation on
the Yang-tze-kiang, and of building and other
industries in China.

Simon, C. H.
1459. Notes sur quelques une de
recherches que j'ai pourroit faire en Chine
et en Asie au point de vue de la geologie et
Shanghai, 1868.

Contains geological and paleontological
notes on China.

Simonin, M. J.
1480. Lead and Zinc in China. Special
Consular Reports. Lead and Zinc Mining in Foreign
Countries. Vol. V. p. 144. Washington,
1934.

Simonin, M. J.
Volume XXI. pp. 150-159. London, 1864-
65.
r. Simonin published this article in the Revue Scientifique. It deals with the geography of China.


The following deposits were described in order of their antiquity:

1. Recent fluvialite deposits.
2. Marine sands with cardium, ostrea and bulin.
3. Old river gravels.
4. Loess.
5. Basement gravels.


This paper is based upon a recent journey by the authors extending right across Shantung, from Shifu in the east into Chihili in the west. It includes:

1. Superficial deposits of North China.
2. The basement gravels.
3. The tertiary history of North China.

Smith, R. Donaldson.


Contains valuable physiographical notes of the country travelled.

Smith, R. E.

1155. The Great Rivers of China. Ocean
211.

Highways. p. 5. April 1873.

Smith, James Perrin.
Boston, Jan. 1914.

Mr. Smith outlines the problems confronting the geological engineers of China.

Altay, Henry.
Edinburgh, 1894.

The journey was from Amur to Shanghai, including descriptions of physiological features.

Lessfield.

A review of Mr. Lavesstedt's paper on the mineral occurrences in China.

Jasemati.
1879.

Lepper.

Gives an account of the soil from Lo-Nan in the vicinity of Peking.

Gives an analysis of a Chinese brass sheet about 1/16 inch in thickness.


New York.

Information concerning the raw materials used, their sources and analyses, the different grades of pig iron and the variety of finished steel products.


A list of the principal mining concessions to foreign companies, with some of the Chinese regulations governing concessions.


A physical-natural historical center of the southeastern Mongolia from Baoloi-Moor to Ala-Scars.


States that Yunnan Province is the richest in mineral wealth of all the provinces in China, exporting gold, copper, zinc, and various stones and marbles of high value.


In China, the reported gold-quartz veins occur almost entirely in granite, e.g. Tsinan, the Chao-Tun district, and the Keshui in Mongolia.


Note on the occurrence of gold-quartz veins in China. Occur almost entirely in granite.


The topographical work was done in connection with an archaeological exploration in Chinese Turkestan.


Information concerning the ruins of Chinese times on border wall in Central Asia.

Stevens, J.

Describes the Chinese pitman and his habits in the mines.

Stever, J.

The author gives a brief description, based on microscopic study of 78 rocks collected in the northwestern part of China by Herr Michaelis.

Tome, Coll.
Information concerning the Chinese mine workings and methods.

Publications:


Describes the geology of the country explored, with special reference to the orography of the Tuen-luk, Tien-shan, and the Nash ranges.


Describes the geology and gives the geological history of the range.


Describes the minerals with reference to its physical properties, associations, and methods of mining.

Borcherdy.


Describes the physical geography of the different regions in detail, and includes the explorations of Tibetan mines and allusions.

Bruce, Richard.

1182. On the geology of part of the

Gives the geology, palaeontology, orography, of the regions, colored sections.

Tutcher, R. A.


Tutcher, R. A.


Tutcher, R. A.


Gives a geological account of the diamond deposits in the southern part of Shantung Province between the two and three Rivers, and notes the probable occurrence in mines.


Gives the occurrences and productions of the world, including a map of the coal fields of China.

Tutcher, R. A.

1167. Mountain systems of Asia and
Europe. The American Geologists, Vol. XIV.
pp. 528-529. Minneapolis, 1904.

Gives a comparison of the geology and
gography of the mountain-systems of Asia and
Europe.

1190. Le Tasse de la terre. (The
Face of the Earth) 3 volumes. translated
into English by Collie. Paris, 1897-1902.

China (English edition)
Account of the Volcano, Vol. Chin-Shan, 434; the
continents, 656.

Volume II (English edition) The
Corners of the Pacific. 153-152.

Volume III. (French Edition) The
Oriental highlands, Chapter VI.

1191. The King River Colliery. Ten.

An illustrated account of the development
and accidents at this Chinese mine.

1192. The Ranchos Mines in China. Coal
Jour. p. 1906. June 1, 1912.


A review of "Mr. J. Little's Book "Cleaning
from 50 Years in China". Mr. Little was a traveller
explorer; and merchant in China.

Scheff, Albert.
1194. Schleicher-Scheffische Expedition.

Further account of Dr. Siegel's geological researches in North China. (See also The Geogr. Journ. Vol. 20, p. 398, 1900.)


Notes concerning the author's journey in Central China in July 1906.

1185. Veröffentlichungen über seine Studienreise in Nordwestchina und Tibet.

(1) Fortsch. d. geol. Wiss. 1907, p. 37; and (2) loc. cit.

Contains geological and geographical notes on northwestern China and eastern Tibet.


Information concerning (1) the oil camp in China, p. 7; (2) drilling, p. 35-39; (3) the tank-system, p. 257, 258-260.


Notes the gold (163), coal production (174) iron ore (135) and natural gas (353) in China.
Verry, R. S. and J. Martin.

_The lactilian college physiology._ New York, 1914.

China: Loss in China 71-72
Chian's sorrow 169.

Rasseur, . . .

1938. Exploitation du pétrole. p. 492
Paris, 1938.

Pétrole in China. Information concerning the geology and the oil producing localities.

Retret.


Gives studies of climatology at the naval station.

Sear.


Gives the different coal fields in China together with information concerning the system of mining, transportation, labor, production and the prices of coal.

1903. Anthracite and Bituminous Coal in China. (India. Eng. March 14, 148, XIV. p. 204)
New Haven, 1846.

Information concerning the coal in China;
The early ages, its descriptions the different soil deposits, etc.

**Wallace, W. A.**


Information concerning the geology, flora and fauna. For both China, particularly Formosa.

**Ogilvie, J. H.**

1895. *The Deserts of Africa and Asia.*


The large sand surfaces which occupy immense spaces on our globe suggest naturally the belief of their being recently dried-up sea-beds or in the millions of the desert, it is to submit a few considerations on the geological age of the following deserts; the Sahara of Africa, the tract of Central Asia, and the desert situated in Turkestan between the Caspian Sea and the Caspian Sea.

**Ogilvie, H. H.**


Gives the geographical and physical features of the plateau; being one of the most wonderful areas on the surface of the earth, it contains nearly 3,000,000 English square miles.

**Ogilvie, H. H.**

gives the geology of Tibet, Turkestan, China, Sinkiang China, Turan, etc. In summarizing the
author says: "The general character of the geology
of the regions I have mentioned is (1) granite rocks
with older volcanic dykes (2) Precambrian schists and
slates; (3) limestone in detached outliers, notably
of Carboniferous age; (4) coal of various ages.
There has been little upheaval, and that has revealed
marine, Pliocene, and Pliocene seas with some few
marine basins deposits."

Le Congy, . .
1908. Geography of Asia. MacMillan &

His book is intended for the use of English-
speaking Chinese students. It shows few traces of
the influence of modern conceptions as to the scope
and function of geography.

Chad., .
1913. Updated in Man. Bull. e
in series "Memoire de l'Institut. Vol. XL.
p. 604. 1913.

The writer examined and analyzed some fine
specimens of chalcedony crystals and regularly spaced,
up to 5 feet, the line-by-line lists of "On Shan Mining,
Province of Kwei-Chen, Central China.

Hirne, Gusta.
1910. Weather Bureau on the seaclimes
of India. Meteorological Society, pp. 379-

An account of the knowledge so far known of
the climate of China.

Hsu, . .
1914. The experiences of a mission man in
Thomson, W.  
1212. Western Himalaya and Tibet. A Narrative of a Journey Through the Mountains of Northern India During 1847-1848. 3d ed., London, 1852.

Thurston, E. C.  

Notes related to a few gold placers in the provinces of Kuehch and Hunan Provinces; deposits and of the gold contained in them, together with the native methods of exploiting them.


A mining engineer’s journeys in Kuehch and Hunan; with notes on the geology and money systems; map and illustration.

Tießen, F.  


"To fill in, so far as was possible these gaps in his published work, and to meet a generally felt
among among von Lichtenföhn's old students and friends, Herr Siepen, with rare skill, has given shape, from von Lichtenföhn's unpublished manuscripts, his diaries, and his letters, not only one of the most interesting and enlightening books of travel which have been published. (loc. cit., vol. iii, vol. iv, 104)


An account of Lichtenföhn's travels through China which were cited and amplified by references to the observations of later travelers are by the author.


The topography and geology, the character of the deposits, history, the present state of exploitation, the proposed administrative reform, and the practicability of introducing modern methods are the topics discussed, with illustrations.


Includes a brief review of Lichtenföhn's theory of the origin of the loess.

A review of "Professor's geological expedition in modern China and Tibet, Central Asia."

Polzin. Le climat de l'extreme orient.


Description by the director-general of the government iron and steel works, consisting of two 30 ft. blast furnaces and mills for turning out merchant iron and steel and rails. There are 34 ore cars employed in the works.


Such tombs are carved in red sandstone. Also includes facts concerning the method of carving, the surfaces of these tombs, etc.


Gives a geographic-historical sketch of the Loo-Chwang.

In account of the geological results obtained during the Tsinghua-Scientific-Exposition were.


254. For relief des Goldene seine genesis.


Information concerning the relief and genesis of the desert of Cobi.


Reconstruction. Left 1. pp. 20-44. Novemau, 1910

(in Russian)

Scalansky. J.

1920. Coal yield in the northeastern part


Notes on the coal fields of northeastern

China are accounted on pages 241-247, 414-426,

473-475, 539-565.

The U. C. I.

1930. An aerial tramway in Chinese Coal


An illustrated and descriptive article of the

most modern equipments for transporting coal in Chinese

coal mines, and the result be compared with the old

methods. The aerial tramway is 15 miles in length,

supported by steel towers, and extends from old to

city.

Tarlcy, A. F.


1938.

The mineral wealth of China is briefly treated.

1932. Through the Hsiang Wang Gorges; or notes
of a tour in "Tibet's Land", Lhasa. The
1873.

Contains geological notes of the
country throughout.

1873. Some notes on the river system of
the Upper Ganges, Lhasa. Geogr. Jour. Vol. 15,

Gives the geographical features of the river
and some geological notes.

Upcraft, 5.


An account of an embassy to the Court of
Tibet, in Tibet; containing a narrative of
proceedings through Lhotse, and part of Tibet. Also
constructions of the land, geological, medical
by Robert Freame.

Petermann, G. A.

1867. Die freie Ubers die Nilungsreise
und Reise durch die Kaspische. "Die Erdkunde."
Riselli, d. 1. Thun, 1867. pp. 163-314. (Russ)

Discusses the origin and formation of the loess
deposits.

Forbush, W. B.

1896. Structural and Systematic Geology.
Philadelphia: loc. 1896.

This volume contains discussions of the
territorial and marine faunal regions of Asia,
systematically, as the Chinese region, Japanese
region, Indo-China region, etc.

Upcraft, 5.

1836. The salt wells of Szchuan, China.
Verm., May 8, 1900.

Describes the well-localities, the wells, and the native methods of using. All is corroborated by natural (see) illustrations.

Museum, 1897.


Chertus, 1912.

Chertus fossils collected from central Asia (Asia-Cam., ranging from the Devonian to Cretaceous).

A. J. C.


A. J. C.


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A. J. C.


A. J. C.


A. J. C.

Includes the tin deposits of the lalyg peninsula. Addenda to later; the methods of mining and smelting, and the chinese control of the tin-mining districts.

MILLER, C. H.


Information concerning the pre-Cambrian formation in China.


Strata of the Lower, Middle, and upper Proterozoic systems. Precambrian rocks extensively represented in China.

MILLARD, G. H.


MILLARD-FOIREAU.


Geological notes on the provinces of Shaanxi and Kansu.
1849: The physical features of the country traversed. (Translated by A. B. P. for an American.)


Visited the village of Tongong, which was formerly worked by followers of the sultan.

1912: Black diamonds are found in two provinces in
anchor oil, and they are picked up in the rice and cooking fields.


The only coal mines of importance worked in anchuria are the Huma mines, which rank among the largest in China, with an average output of about 4000 tons a day. The quality of coal, and coal beds are described.


Description and geology of the China Yangtze coal basin which is one of a series of bituminous coal mines in western China province. It is of the Carboniferous age.


Gives locations and indications of salt de osites and natural gas in China, particularly in the province of Jutuan.


The volcanic district of yun phohson in northern anchuria, 100' west from the sea, as it appeared between 1782-1783. (Plans and illustrations) (325 page) (325 page)


Describes iron industry and development in China.
Pouzesenskiij, A. Y.


Gives the results of an investigation in Mongolie.


1902.


Describes the Chinese precious stones such as ruby, sapphire, turquoise, eagle's eye, emerald, sard, turquoise, jade, jadeite, sapphire, chalcedony, etc. (Russische)

1910.


Information concerning the different coal mining companies in China together with their productions and operations.

1906.


Preliminary paper on the Cambrian faunas of China.


This is the third paper on the Cambrian material collected by C. Blackwelder in China. This paper contains 54 new species and one new genus "Blackwelderia"

Further collections of Middle Cambrian fossils are made for the author in Canada by Professor Keith, and the aim is to add extensively to the knowledge of the Chinese Cambrian. Almost here gives a corrected list of the formerly described forms and adds 29 new species of brachiopods and trilobites.


Describes the "American" fossils collected by Riedes, H. J. and Fawcett, consisting of 250 forms in 17 genera and 5 sub-families. Of these 15 forms occur in Lower Cambrian, 133 in the Middle Cambrian, and 54 in the Upper Cambrian. Several discoveries were made in the Chinese Cambrian which are described or correlated with the American Cambrian fossils.


Information concerning the physical features of the country traversed.


Information concerning the production of coal in China by provinces.

Antimony ore in China: Mine in Hunan Province, Sheltor in Hankow.


Information concerning the mining centers in the southern provinces, the ore names, and the Hunan Bureau of Mines henceforth.


Supreme in China to be exhaustive, this bibliography will be useful to those interested in the development of Chinese mineral wealth.


Description of the ironfield of the An-chi district, Hunan Province, China.


Notes some notes on the 'An-yeh-shih-foo-iron and coal company.' The chief topics are: (1) iron ore, and steel works; (2) An-yeh coal mine and iron works company; and (3) mining coal mine and steel works.

1881. Notes on the iron mining industry in the southern provinces. The National Review, Shanghai, Jan. 21, 1911.


Contains geological and meteorological notes throughout.

1888. The geographical distribution of coal


1902. Museum of the mineral resources of each province. Natural hist. part.

1900. Museum of the mineral resources of each province. Natural hist. part.

1900. Museum of the mineral resources of each province. Natural hist. part.

1900. Museum of the mineral resources of each province. Natural hist. part.

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1900. Museum of the mineral resources of each province. Natural hist. part.

1900. Museum of the mineral resources of each province. Natural hist. part.

1900. Museum of the mineral resources of each province. Natural hist. part.
The composition of the world. Published by the Harper & Bros., New York.

Descriptions of the occurrences in geological conditions of all the workable copper mines of the world.


Microscopic analysis of a meteorite found near Argin River at the Usho-Bassk frontier.

A. F. E. 1892. Die Provinz Fanaa, ihre land- und
Verkehrsverhältnisse. Ill. & Ins. Z. orient. Waren,
in Berlin. Y. 57. 2. 3. p. 11. 1892.

Note for historical geological and geographical information concerning the land, lakes and rivers in the province of Fanaa.


Describes the physiographical and geographical features of the province of Jittol.

S. J. 1892. Hue Y-a iron ore deposit, Wu-pei
York, Oct. 1912.

Describes the ore bodies as examined during a brief visit and quotes opinions from other investigators.
eller, thart.


The fossils were collected by members of the Geologic Institute expedition from the thin-lime
lineation in the province of Aka-tun. In age they
are approximately equivalent to the fauna of the Trenton
lineation.


The ooze that forms clearly its strong
relationship with the north European Ordovician Fossils
and especially with the fauna of the Hangchow and
Tientsin lineation of the Baltic province of
Asia. These fossils are equivalents of American
fossils.

1859. In handbook of marine carbonates.
published by London on geologic. 16...v. 1
Amer. Soc. Econom. Geol. (Vera. 9.

Describe the following genera from Hangchow: (continued)
Arctic, Spirifer, Ceratites, Leptites, and the
Cephalopods.

1897. Ostartiferous veins of Hunan Province.

Hunan Province is generously endowed with a
variety of mineral deposits, and the author has included
in the articles below: Mecrai, jade, jade, zinc, silver,
Zinc, silver, galena, etc.

1897. Ostartiferous veins of Hunan. In C.
vol. 112, No. 10, pp. 537-541. San Francisco,
Mar. 4, 1916.

A Chinese mine is a bewildering rabbit-warren of workings, which flare-lamps are used in. At the antimony mines fully 10,000 persons are directly employed. Lead, zinc, tin, quicksilver, and gold are also mined in Hunan. The stibnite is found in veins, pockets, and masses of sandstone.

Whitby, A. G.


White, David.


Whitney, J. D.


An article on the distribution and mode of occurrence of the so-called loess deposits of northern China; referring to the first volume of Baron Richthofen's work on China.


Accounts of the desiccation of the Asiatic continent, 121-141; the present glaciation of the Asiatic continent, 274-283; the past glaciation of high Asia, 346-354.

Williams, F. W.

1303. The Loess Deposits of Northern China. (In Dr. J. C. Branner's Library, under glaciation, 1-100.)

Describes the loess of northern China, area covered by the deposits and the origin.
T. L T B. T. L.

The Coal Industry in North China.


Abstract of a paper read before the
American Geographical Society, 1857, concerning the
coal deposits of China, with plans, sections, engravings,
etc., etc.

III. Illus.

I. Descriptions of the topography, etc. of
China. Chinese repository, 19, 19, etc.

II. Descriptions of the topography, situation, boundaries,
and other geographical and geographical features
of the different provinces.

III. Notices of the geology of the vicinity
of Lintu and Yutai. Chinese repository, ii, 6, 7.


1858. The United States, New York, 1858.

Acting in regard to the typhoons of southern China.

1859. The United States, 2 volumes, revised
edition, revised by Murray O'Reilly, New York,
1859.

Includes chapters on the general divisions and
features of the country, geological description of the
different provinces, natural history of China, etc.

III. Illus.

I. Journeys in North China, Pamir, and
Amur, England, 1879.

II. Narrative of the expedition in
China, 1878, with appendices on coal, plants, etc.

III. On some of the chief features of the
physical geography, including the geology of
China, and the bearing thereof on the future of that
province. Proceedings of the Philosophical Society of

1876. Notes on the production of the different minerals of Manchur, province.


1876. Eighteenth-century travel, and scientific exploration and exploration, particularly in China.


1876. Geologic exploration in eastern China.

1876. Geologic exploration in eastern China.


1876. The various conditions prevailing around China and the surrounding part of China, which make it improbable that good artesian water can be obtained at that place.


1876. Research in China. 8 vol. 2 atlas. Published by the Carnegie Inst. of Washington, July 1907.
Vol II. Descriptive Volcology

Vol III. Systematic Volcology
By W. H. Brindley. 1907.

Vol IV. Historical Ranges of Minor Volcanic Zones

The following subjects are included:

Chapter IV. Historical Volcanology of Central America.
V. Economic Volcanology of Mexico.
VI. Economic Volcanology of the Andes.
VII. Economic Volcanology of Central America.
VIII. Economic Volcanology of the Mexican Volcanic Field.
IX. Economic Volcanology of the Central American Volcanic Field.
X. Economic Volcanology of the Central American Volcanic Field.

1885. Systematic Volcanology of Minor Volcanic Zones
In part by F. W. H. E. Miller, 1885.

describes the geology, physiography, the occurrence of coal, peat, iron, coal petroleums, tin, slate, copper, and other mineral products in:
1. North China (map)
2. Szechwan and Yunnan region
3. Siam and Annam
4. The coast of south China
5. South China (map)

...retained in China. (The annual reports of the central geologic survey, vols. 1-6, p. 129, 1918.)

...and the oil is in China.

1824. Gas and oil fields (The mineral resources of China) Encyclopaedia, volume 1, p. 121 infra.

...concerns the geology, the methods of working, the distribution of mines, etc.

Hills, Fossils,


...comprising a tentative view of the principal formations of the world, vol. 1, 1898 by... infra.

...in volume 2, 1898. The mountains of the central empire are described in their respective provinces and the level of the seas near the following clusters:

1. Xilin Gorge
2. Min River
3. Tungtai
4. Hangchow

Hill, Fossils,

information concerning the difficulties
when foreign enterprise will encounter in China.

1911. I. China. Travels and investigations in
the interior. Trans. Inst. Mining Eng., vol. 26,
1911.

The following are a few of the subjects dealt
with: the mines, the locations and amendments,
and sources of river-bed; the mineral veins, the
minerals, floods, etc.

1900. Recent Survey of the Suli area to
have been published. Min: Mag., vol. 11,
no. 149, London, 1900.

This includes a note on "licensing
operations and country journeys.

1917. "China travels and exploration
in southern and central China." The geol. jour.

contains geological notes of interest
throughout the paper.

1916. "View of the Chinese mines." London,
1916.

Information concerning mines, metals, stones,
coal, clay, etc. pp. 331-356.

Mining Mag., p. 891-918. London, April 1917.

includes brief of 1901 stipulating revisions
of mine act mining regulations and omission of such
revisions.
Weld, C. M.
1332. Notes on an Iron ore deposit near

Information concerning an interesting
deposit. With map and sections.

Wodicka, Julius.
1333. A Book of Precious Stones.
Published by G. P. Putnams Sons. New York

Information concerning the precious
stone "Jade" with special reference to the
Chinese.

Woeikoff, A.
1334. A System of Meteorological

Notes on the feasibility of establishing
a series of stations along the Chinese coast.

Meteorolog. z. 17, pp. 192-202. 1900.

On the peculiar climatic conditions of
this remarkable depression of the Turfan oasis.

Wojciekoff, A. V.
1336. Das Klima von Ost-Asien.
1870.

Observations on the climate of eastern
Asia taken at Peking and other localities with
tables.

Woo. Y. T.
1337. Silver Mining and Smelting in Mongolia.
New York City, 1903. (Discussion by Lyman, p. 1038)
describes the mining and smelting of silver, and the types of smelting furnaces used. Illustrated.


Information concerning the methods of coal mining and descriptions of the coke-kilns, illustrations.

W. \[\text{sic}\].

1898. A collection of trilobites from the upper member of the Kent. Geol. Mag. Vol. 11, pp. 211 to 215, 221-224, pl. xvi, text figures 2, London, May, June, 1898.

Gives an abstract of a Youke's paper entitled: 'sur d'Italie von Schlencke, 'Bambusia resedae trilobites von Von-tw-yen. Additional material from the same locality, or similar material from all or similar one, not in the British Museum collection, is described.

1898. 1840. In an art exhibit from China.


describing the sections of orthoceras from a location about 200 miles from Shanghai. They are longitudinal sections in thin plates of limestone; the longest is 23 inches in length and 4 inches in its greatest diameter.

1853. Recent geological Changes in

1854. Recent Geological Changes in

London, 1854.

... journey to trace regions to examine these portions of the Asiatic continent which most nearly correspond in general superficial conditions to the glaciated portions of America. The author considers that the absence of glaciation was due to the rainlessness
of the region, and that during the glacial epoch Asia
was depressed while Europe was elevated.

1637. "Fossil and the ice age." Nature's

Remarkable geological discoveries in central
Asia and Southern Siberia showing that the Russian
ice age is a scientific reality.

1864. "Geology of Asia." Science. Vol. XII,

On the remains regarding the author's article
published in 'Nature's Magazine.'

1865. "Great ice age of the Baltic
Greenwich, 1865.

As written in his correlation upon the
recent extensive glaciation of the Siberian continent.

First, "Modern.

1855. "Origin and distribution of the ice age.
Norwich, 1892.

Includes the following sub-heads:
1. The present activity of erosive agencies;
2. The present activity of erosive agencies;
3. The present activity of erosive agencies;
4. The present activity of erosive agencies;
5. The present activity of erosive agencies;
6. The present activity of erosive agencies;
7. The present activity of erosive agencies;
8. The present activity of erosive agencies;
9. The present activity of erosive agencies;
10. The present activity of erosive agencies;
11. The present activity of erosive agencies;
12. The present activity of erosive agencies;
13. The present activity of erosive agencies;
14. The present activity of erosive agencies;
15. The present activity of erosive agencies;
16. The present activity of erosive agencies;
17. The present activity of erosive agencies;
18. The present activity of erosive agencies;
19. The present activity of erosive agencies;
20. The present activity of erosive agencies.

Third, "Modern.

1894. "The great ice age." Science,
No. London, 1894.

Several the best deposits in China; pages, 187,
189, 203, 394.


1440. Fossil corals from Japan, Korea, and China. T. S. J., vol. 18, pp. 139-159, Tokyo, 1904.


The following Devonian fossils from Southern China are noted: Atrypa, Artisia, Lestoapreria, Spirifer, Periasta, Athyras, and Rhynochonella (Japanese)


1447. On the physiology and ecology of the Chuanf chi basin. (Illustrations included.)


1448. Notes on a list of fossil plants from the provinces of Hsiang-t'ing, Shensi, and Shansi. (In Chinese)


In this work, the author gives the descriptions of some economic plants from various parts of China, ranging from the Triassic to the Cretaceous.

tokyo Jan. 22, 1907.

Describes fossil-plants from the provinces of Sue-chuan, Hsiang-pei, Kwantung, Shensi, Shantung, Kirin. 1. plate. (Japanese)


The palaeoic plants treated of in this paper are mostly from eastern Manchuria, a few are from other parts of Man. (In English)


Gives geology of region and methods of finding.

Alesskij, 11.


Describes the fossil plants from different parts of Manchuria.

Bailly, C.


Describes the stratigraphy of Tonkin.
The writer expands the stratigraphy of Tonkin, with a geological table.

Miller, ...


Describes carboniferous fossil plants from Ton-King.


Fossil plants from four localities in China.


Information concerning the carboniferous flora of Ton Ton.

1457. The Fossil Flora of Tonkin.


Gives a note on the fossil flora of Tonkin as affecting the probable age of the local coal measures.

describes carboniferous fossil-plants from Yunnan.


Note on some of the carboniferous vegetable impressions in Yunnan.

Ullstein.

1460. Voyage dans les montagnes de l'Asie Centrale. (Besse) Varsava, 1882. (1-st. cvv. 7 fig.)

Lichten.


Vitel, Karl A. von.


Contains paleontological notes of China throughout.
ARCHAEOLOGICAL NOTES

(Arranged Chronologically)
Anonymous.

lustre, color, and sound of silver.


Gives the salt and glass industries in the Rhone-Pa.The Alps and other districts.


Gives the discoveries of gold mines in China.


Gives notes on some of the coalfields in the southeastern provinces of China.


Describes the coal in the mountains.
to the northwest of Peking; and gives the age of the coal-formation of China, largely unknown.


.. Gras announces a geological exploration to China by Mr. Albert C. Ingersol, a young American colonist.


.. Geologische notes taken on the journey was proceeding through Honan and Kansu provinces and the Kansu region.


An interesting official report giving an account of the coal district of Yei-chiang in China.


Geological notes on China by Lichtenfenz, and a discussion on the coal deposits.


Abstract of Baron von Lichtenfenz's paper on "The Distribution of Coal in China."
Anonymous.


Information concerning the acquire of coal-fields, the difficulties of transportation, the price of coal, etc.


"Enter the advancement and the development of iron works in China.


"The occurrence of tin and tin mines at Lo-Lien in the Hunan Province, are briefly treated.


"It is 3 feet thick and reached at 250 feet in the government coal-mine of the Helang district.


Note on the Shensi coal-field, which contains much brown iron ore along with the coal.


A brief outline of Lichtenstein's first volume on China.
Anonymous.

1886. Coal mines in China. Long and
20, 1878.

Information concerning the coal production,
the fields, and China's standing in coal industry
in the future.


Account of the mines of China and the
equipment of an American geologist and mining
expert.

1887. An earthquake in western China.

A severe earthquake in western China,
China. It is said to have caused serious damage in
the province of Tszchuan, Kiousi, and Fanking.

1888. Diamonds in China. Quarterly
Jour. of Science. Vol. VII., pp. 589, 772.
London, 1876.

Information concerning the collecting
of diamonds in Kwanto province, and the coal
in the neighborhood of Shing-an-ho.

1887. Intrinsics in China. Nature,

An account of the Shih-mun-chow
cad field near Ichang, on the upper Hanzi
River.

1888. Metal mining in China.
Nov. 30, 1879.
Notes the early steel manufacture in China.


Information concerning the prospects of the iron trade etc., in 1875, and the discovery of a bed of anthracite coal at Ching-wa-tee, near Foochow, on the bank of the Tung-tsi-fu.


Mr. E. von d'Hermeroff discusses the methods of translating Chinese geographical names and concluded that the Mandarin dialect would be best for general purposes.


Notes that the Chinese are much more disposed to allow the opening of coal-mines than the construction of railways.


Reports on the iron and coal in Tien-tsin, the development of coal-mining in north China and the grey steel.


In account of the proposal of the establishment of a number of meteorological
sections along the coast of China.


An account of a destructive earthquake


Information concerning the opening of the mines in Thilin, province of Kansu.


Lead ore, according to the Chinese

1871. China. The Journ. of the


A writer in a number of the North

China Herald referring to fossils in China, remarks that the Chinese have never advanced a theory to explain this existence.
Anonymous.


NOTE THE VARIOUS OBSTACLES WHICH HAVE STOOD IN THE WAY OF PROGRESS.


DESCRIPTIVE OF OPERATIONS, THE EQUIPMENTS, THE FUELS USED, ETC.


NOTE THE FLOODED AREAS AND THE DEFORESTED REGIONS OF LOWER HANGHAI COUNTY.


DESCRIPTIVE OF CHINESE ANCIENT GEOGRAPHY.


BRIEF REPORT CONCERNING THE ANIMAL, Fossil, Minerals, etc., OF THE Hsung-Shui DISTRICT. AMONG THE FOSSILS ARE THE AURIGEROS, ASPERITES, ETC.
Anonymous.


Notes the effort of George H. Peng, in trying to bring coal into being from peat, and the building of a railroad.


Extract of Rev. Mon. Allison's paper read before the Philosophical Society of Chicago.


Describes the mining of the ores and the smelting of the metals of coal. The principal seats of this industry are at the towns of Fan-lin-chih and Futan.


An abstract of part of the translation of an old Chinese handbook of technology by the Rev. J. Liefvend. The book is of great interest as a further proof that things newly discovered in Europe were known to the Chinese for centuries before.


Includes information concerning the coalfields of North Formosa, and the coalfields of
Anonymous.

In China it is said that iron ore is found in all parts in close proximity to the coal.


Describes the methods of smelting the iron ore, and the casting of guns.


In Yunnan Province, at 10 a.m. the shock lasted an hour, causing much destruction.


In account of a new theory propounded by the Vicar of Remi and later which goes as to the origin and cause of earthquakes.


On the occurrences of iron and coal in the province of Shantung.


Abstract of Dr. Barnett-Smith's report on this area, to the Hydrographical Department of the
Minerality, embodying the results of observations.


Supervisions of the Chinese toward the development of the mining industry.


1430. "Fires of the more important earthquakes which have occurred in China" in Eng. 72, p. 48.


An account of an earthquake in Siam Province. The earthquake is able to be the most destructive ever recorded in China.


Also on a trip by J. Bourne, quoted as stating that more than 1000 men are said to be employed in Siam to the tin mines, the region in 1926.


Includes information concerning the iron in China, 510; imports of steel, 348; and mineral resources of China, 29.
Anonymous.


An account of the opening of the reduction and smelting works of the Hsiang and Tsui-ya-men mining Company.


S. annual report accounting the coal industry in China.


On the report of the Chinese engineering and mining company's mine and office in the Tong Colliery, Taihing.


Nearly all the useful metals are known to exist in the provinces of Kansu-shan. Scores of mines have been worked for years, with varying results.


Abstract of Dr. Armitage's hydrographical report of the Chinese coast; describing the different islands and group of islands.


An abstract of Herr Michaelis journeys through central and western, investigating mineral deposits.
Anonymous.


Let us consider the mining industry in the mining district of the Kansu Province, south China.


Next the erection of a foundry for melting iron is considered, and the local difficulties.


Information concerning the mineral wealth of the province of Kiang-tung.


Description of the Kiu-chow coalfield, Manchuria, China.


Development of the gold mines in the gold fields of the province of Kansu.

May 10, 1890. The province of Manchuria, China, has been described by modern explorers. For the present undergo current news in regard to the mineral wealth of China.


Information concerning the progress in the preparation of a report on the Flora of China. Made with Chinese cartography, drawn through quartzite and a few beds of coal and graphite. Notes also the iron ore and the coal of Manchuria.


Abstracts of several accounts of the Siberian and Chinese Mammoths by the Chinese.


A review of the geographical distribution of petroleum, including China.


Information concerning the location of the salt wells; and the description of the drilling methods.


It is reported that the silver mines...
of Fuli, in the province of Anhwei, China, and to be worked by Government, the Government having given its permission.


British Consular report concerning the manufacture of lapis in lapis-stone ornaments in China, and the location and description of the mines.


British Consular report concerning the mines for the manufacture of artificial stones at a distance of 150 miles from Canton.


Note concerning the iron-ore of Jarrow.


Gives the location of the iron-ore area.


Interesting information concerning coal mining in Jarrow.


Brief notice of a discovery of an ancient coal-seam in the district of Jarrow in the county of Northumberland, province of England.


Describes and analyses samples of the soil collected from different localities.
1462. Typhoons of 1895 in Chinese seas. 

A report from Mr. Chevallier of the American Meteorological Society, devoted entirely to a notice of the typhoons of the year 1895, etc.

1463. The Ma-yo-oi observatory. L. A. 

The Ma-yo-oi, now abandoned, was founded in 1879 by the recent mission of Bishop, and equipped with the instruments necessary for the study of meteorology and terrestrial magnetism.

1464. Education and discovery in China. 

1465. The government iron and steel 

Describes the works at tso-chung, the machines and the people about the vicinity.

Vol. 31, p. 52. New York, April 11, 1895.

Information concerning the coalfields in the neighborhood of China.

1467. The early use of iron. Chin. 

Notes on the use of iron as described
Anonymous.

1469. Geology and mineral in China, etc. Trans. Roy. Soc. 1832, 1802.

Information concerning the iron and coal in China.


Information concerning the anthracite coal and iron coal in China.


Information concerning the mining industry in China and its vicinity.


Information concerning the proposed development of the iron industry in China and its vicinity.


Includes description of the mines, the local conditions, the variety of rock in the neighboring region, etc.

1474. The mineral resources of China.
Anonymous.


The most valuable are located in the department of Jura, in the northwestern part of Algeria, where the most valuable in the sense of small, touched pyramids weighing about 2 or 3 oz. each.


Describing the different mineral regions from northern India to southern China.


Here the occurrences of gold and coal deposits in the different parts of India.


Note concerning the zinc deposits in Deutshau, Germany.


Abstract of consular report on China, and trade of central and southern China.

1892. Analysis of Chinese and Japanese

Analysis of coal from Korea, China,
India, and Japan.


"It is stated that vast untapped beds of coals are
situated in depths of thousands of feet and
that the extent of this deposit is as yet
unknown, etc."

1894. The coal fields of Japan.
"Military attaché, Japan, no. 1."

In the same "Ibid." giving
information and folklore that shows relations
in the front rank of coal-producing countries.

1895. "Coal exportation in the
1895-96. ibid. ibid. Jour. cbl. 76,
p. 316. Apr. 18, 1896.

Note relating to the coal and iron
resources of Japan and iron trade with
manufactures of iron and steel.

1896. Ibid. ibid. ibid. Cit. for
July 1896.

Information concerning coal and
their occurrence in Japan and China.

1896. Ibid. in the same ibid. Aug. 5, 1896.
143. Chinese allied forces... 1921

144. Judicial system of ... Chinese forces...

145. Allied forces...

146. Allied forces...

147. Allied forces...

148. Allied forces...
the gold came almost chiefly in the form of dust.

1483. *Roter von Steinkohlen und
Isachen in ostlichen China* (1 st. Ed.),
Fur Verlag und Matt. p. 34, 1880.
Anonymous.

Gives the deposits of anhydrite and iron ores in eastern India.


Some of the iron deposits in India in the year 1897.


Some notes on the geology and geology of the iron deposits in India, and some of the iron deposits in the United States, forselecting suitable sites for the iron industry in India.


Conclusion of the regulations prepared by the board of control for mines and railways.


Information concerning the iron foundries in India.


According to a report, the province of
Yunnan now exports annually 2500 metric tons of tin. This is obtained from alluvial deposits at Kotchiou, 20 miles from Moung-tse.


1502. Mining in Szechuan. U. S. Cons. Repts. Washington, D. C. July 8, 1899. Mr. Holley's attention was principally directed to the following structure of the mining and working of mines in this province.

A copy of the regulations for the working of mines in this province.


A copy of the regulations governing mines.


Professor.

others used, the products, and their uses in.

1264. Lachs- und Eisenschilderungen.
    Sale, Vol. IV, pp. 453-547, 555-598. Berlin,
    1889.

...the ground plan (690-16) and its vertical
relief, geology, geography, etc., (588-598) are
assisted in detail.

1317. Dr. Cheincky's Physical-Geographical
    descriptions in China. The Geographical Jour.

Dr. Cheincky's attention was principally
addressed to the geological structure of the
following regions, viz., the main sections of the
iron ore deposit, the iron ore deposits, and the
region of the lower region.

1349. Supplee,报告 in China. The
    iron and steel trade. Vol. I, p. 367,
    London, 1889.

...describes a supplee report (supplee).

(see also pages 368, 369 for iron-ore information)

1391. Steinhauser in den Provinces nach

...describes the different coal-fields in the
    provinces of China and Japan.

1510. Steinhauser in Schlesien
    China. Opt. Uel. for Her. 6. p. 160,
    1899.

...the anthracite deposits in eastern
    China.
Anonymous.


Information according to China.


Give a list of localities, where silk-worms occur in the different districts of China.


Information about the silk-worms in the province of China.


Abstract (in German) of C. T. Miller's paper on the "Silk Trade around Foochow, Pei-si, China", read before the London Institution of the 1st. Inst. in Nov. 1814.


Accounts the future silk trade in China.

1818. ironi duriae in Sennai, China. The Country, V. 5, p. 31, 1818.
Anonymous.

Information concerning the iron industry in the province of Liaotung.


An account of the iron works at Tanyuan, China.


The journal of commerce states that China now already became a competitor in the export of pig iron in the world. Information from Hong Kong states that the Japanese have been persuaded to make purchases of Chinese pig iron.


Reports that an engineer had discovered unusually rich gold mines in the Kwantung peninsula.


Information concerning a gold mining industry in the lands of the Russians which has been developed in the Kwantung region of a term

Extract of R. Lavoisier's report on the coal fields in Coal Province.


An abstract of the material mined acreage as present in 1892.


Description of the coal mines, methods of working, and the machinery used, including, extra china, (to Thomas clark).


Describe the coal mine with reference to
Anonymous.

its equipment, productions, etc.


Concession to concession in.Nepalis.


Historial on the transfer of the mining concessions in Northern Japan, from a native to an English company, on the immense success.


Information concerning the transfer of the mining concessions in North China from the native to an American company.


etc. in regard to the owners of the properties of precious metals, and the increased consumption of silver.


This field lies in the province of Anhui, quite close to the capital Hankin, giving fuel of
a very high quality.


A review of C. F. Birt's journey around the world, with special note of the most important observations with particular reference to the meteorological and astronomical.


A note in regard to the mines in China and the present restrictions on the mining of iron, coal, copper, zinc, lead, and silver.


A description of the mining industry in the province of Shensi.
Anonymous.

1939. Les Cartouches de la Relig. 
   Rev. de l'Er. Ch. 31, 1939.

1941. Letter to American in China. 
   (item) Josephus T. Clark. 
   Vol. 1, pp. 11-16, 1941.

1942. The dimensions of the 
   pit on the Vol. 4, p. 11-16. 
   Franklin, 1942.

   Vol. 4, p. 11-16, 1942.

1942. Information concerning the iron 
   and its working, 1942.

   Und. 4, p. 11-16, 1942.

1942. Report according to full force in 
   the case of respect to iron, 1942.

   Vol. 4, 1942.
Many years.

o. 1819. Iolabor., ... April 1., 1839.

information as to the pending acts, laws and rules, etc.

Ibid. May in 1819. Indianan. ori

from 1818. Political, &c., p. 25. Try 93

and p. 77. April 1., 1839, ad. 1839-1840.

I. 47. where the law remains for

mining. &c. and mining law. Vol. 70, p. 897

evol. New York, June 14, 1839.

A statute in case these questions by the

mining government, and that they were to the future

of mining in India.

As. Introduction from India. p.


but an act of the legislature last as late as for the American in pre-existing rights.

1840. One of these for Ind. to


1844. The one prepared for Ind. to


1845. That one prepared for Ind. to


1845. That one prepared for Ind. to


1845. That one prepared for Ind. to

Anonymous.


...as the present of a minor school of the popular victory, China-Austria.


...cour. of 1934, p. 706. New York.

...account of the mineral mines of the district of Nis-Ganawa, in the province of


...of. 5th. San Francisco, 1936.

...on the mining industry in the different arts of Chile.

1934. And since we wrote as leaders of this part of Chile, mining. In. M. vol.

...of. 6th. New. Trujillo, 1938.

1935. And in Chile, the law of.


...issue special
supplements of, judgment value. A supplement of this, a notice letter...1, 1908, containing a collection of analyses of coal from mines and burning.

1908.

Information concerning the mineral and non-mineral deposits in China.

Dec. 3, 1933.

Information regarding the mineral and non-mineral deposits in China.

Dec. 22, 1933.

Virtuous salute of jade are found on the river. A - way but action into the sky of sorts. Colors of green, white, blue, red, etc., are noted on their use.

1951. Copper Resources of China.

Copper is prevalent in Kungfu, Shan, Tung, Yuen, Kung, Sun, and Sun, and a number of them in China. Colors of jade are said to exist in this last noted locality.

1951. Ore deposits in China.
Nov. 10, 1951.
An essay on the Chinese government code of laws.

II. Additional literature:

In summary, the Chinese legal system is based on ancient traditions and practices, with a strong emphasis on maintaining social order and morals. The laws are administered through a hierarchical structure, with the emperor at the top and local officials overseeing smaller regions. While the system has evolved over time, it remains largely unchanged from its ancient origins.

In view of regulations applicable only to certain parts of the Indian region, outside of the "Indian" area not in "Saskatchewan."


Illustration, with descriptions of the gold mines and methods of working.

1969. *Coal and iron resources are the principal source of wealth.* (Abstracts of articles at annual scientific sessions of the Ontario Geological Association, Toronto, Oct. 16, 1969.)

A description of the mineral district and its principal resources of iron and coal.


Information concerning the early use of coal in China, and its rapid use during the last century.


Information concerning the opening of various mines in the province of Saskatchewan.

Information concerning the operation of the different lines, and the financial position.

1879.中铁铁道发展.


Information on the extensive deposits, their size, and their commercial value, and the proposals which it is to be made for the operation of the railway to Tientsin.

1879. 矿产地质调查报告.


Some further information concerning the mineral deposits of the place.

1879. 地质及土木工程调查.


Information on the recent geological and mineral work carried out under the auspices of the Geological Institution in China, and on the results of the operation of the institution.

1897. 《中国铁道志》.


Information on the extensive deposits of coal, iron, and copper, and transportation.

1897. 汉口铁道志.


Information on some of the extensive iron deposits on the north of Nanking, near the...
Anonymous.

Recent frontier; in the district of Cheo-chang; and the coal deposits of Tae-oi and Piu.

1888. "In Japan. "" Trans. "" 1893. "" 1898. "" 1899. ""

In its early condition in the province of Chao-ku for many years, much of it never cleared the Russian rule. The recently discovered fields have been operated in violation of treaties in the name of China.

1871. "" Japanese. "" 1874. "" 1886. "" 1898. "" 1900. ""

In respect of the present condition and state of the mines. (3.)

1886. "" "" Chinese. "" 1888. "" 1890. "" 1892. "" 1896. ""

In their condition in order, and the recent results of the control of mines and the state of the lately unveiled one of the Coss. coal. 1888. ""

1890. "" "" Chinese. "" Science. "" "" 1891. "" 1892. "" 1893. ""

In account of the latest discoveries period of the Chinese government.

1896. "" "" Japanese. "" "" 1898. "" 1899. "" 1900. "" 1901. ""

Information concerning the discovery in discoveries of the mines, the present operating companies, and the laws already. 1898. ""
Anonymous.


A discussion of the mining industry in China and Korea at the end of the Chinese-Japanese war.


As engineer was engaged to report on the mineral deposits of several districts in Kansu Province, upon receipt of the report the Chinese will start the work of development. Placer gold has been discovered.


An account of the making of salt in China.


Notes the physiography and mineralogy of the country.


Included in this book are the reports of
Anonymous.

Five parties of geologists and mining experts sent in Manchuria for the survey of the mineral wealth during the late Russo-Japanese war.


It is reported that the Chinese mining industry is making progress, and that in 1906 the exports of pig iron amounted to 18,111 tons.


Note stating China has long been a producer of tin for domestic consumption, although there is little information on the subject.


Information concerning foreign mining syndicates working in different parts of China, and Chinese reports on mineral resources as ordered to be published by viceroys of different provinces.


Includes the translation of the regulations from the original Chinese.

1592. Mining Development in China.
Anonym©*


An account of the Chinese method of making iron.


Information regarding the richness of the Bashan coalfield in Manchuria.


Information in regard to the great coal resources of Hunan, and other minerals as coal, lead, antimony, zinc, etc.


Information concerning the Chinese antimony exports and the antimony smelting establishments at Changsha.


British consular reports in regard to the tin industry in China.
One of the most peculiar coal deposits in the world is at Fengtian, Formosa, China. The deposit consists of the solid block of coal about 100 ft. high. To get at the mineral, it is necessary to remove layer of soil on the surface.


Illustrated and descriptive methods practiced in the central territory of South Australia, with coal operations in current mining without modern supervision.


Review on Dr. Culloch's research in North China; from south to north along the middle longitudinal section of the country, a course between the provinces of Hopeh and Manchuria.


Information concerning the development of the coal industry in north China, with general reference to the companies in operation. (See Jour. Iron and Steel Inst. Vol. 47, p. 549, 1907.)

Anonymous.

p. 40. 1898.

Describe the nature of sediments, oil and the equivalents of iron existing in China.


In the province of Kansu, near Peking, a bore-hole struck a bed of oil at a depth of about 1200 feet, containing a sandstone carrying continuous quantities of petroleum, of 1.045 specific gravity, containing 14.42 per cent of sulphur, 32.07 per cent of benzene, and others of benzene.


Give an account of the earthquakes in China.


Anonymous.

Information concerning the mineral wealth on lower river, the natives' opposition to foreign exploration, and the steps taken by the Chinese authorities towards development.

1610. Mining, daily secular and yearly reports, sent of the year and later. Washington, D.C., April 6, 1907.

1611. Information of mining in the province of Shensi, China.


Information concerning China's claim of the first country to utilize coal deposits but without any advances in methods of development.

Anonymous.

Describes the primitive and latest methods used in mining and smelting sulfur-ore in Sicily, Italy.


Review on "Mining in Sicily" by research in 1907.


Gives the extent of the development of the Chinese coal industry in 1907.


British coal mining report describing the mines in Southern China.


Description of the ice deposits as discovered by Germans in this province.


River issues relating to the production and the different mining conditions.


Describes the iron with reference to their production, quality, etc.
Concerning the conditions of the southern trade of 1907 as compared with 1904 and 1898.

In China, in January, 1908.

Information concerning the diamond district (Tsumeb) in Namibia, as discovered by the Germans.

In China, in southern China, 1899.

Information concerning the present prospects in the mining industry in the regions of southern China.

In China, in December, 1907.

Information concerning the discovery of iron ore at Ang-Tung, which is reported to be present in large quantities. Analysis of the ore shows that it is composed of magnetite ranging from 55 to 60 per cent of iron, entirely free from phosphorus or sulfur.

In China, in January, 1907.

In the resources of Shandong, p. 491. May 1. Brenton. 1900.

The mineral resources of southeastern China are minerals, which are believed to be...
Anonymous:

valuable and may in time become the most important output of this region. Among the important minerals are coal, silver, copper, and pyrite oxide.


Note on the tin ores and their potential use in the mining industry.


Note of the regulations in place in the region as of 1883.


Note on the tin mining of the region as of 1885.


Note on the conditions and challenges faced by the tin mining industry.


Information on mining the total estimation of the important Chinese tinfield, etc.


Information concerning the mineral resources and mining in the province of China.


French Engineer's report describing an
recent, iron plant in China.


Informal note concerning the increase in
the export of coke, coking coal, and the decrease in
the export of ore in 1909.

Information concerning the proposed development of coal mines in China.


The discovery is said to have been made at a place of the same name, and the quit location is next week.


In account of the present position of the iron industry of China. It states that 100, 000 tons of pig iron, manufactured at the various works, were exported to Philadelphia in the early part of 1915.
A report on the development of iron mining in Chile, and facts about the Chilean-American iron trade.

Considerable report concerning a shipment of barite coal, coke, and cement to San Francisco from a barite-containing company in Chile.
The Chinese iron and coal district, the area, and the method of operation.


Tracts on account of the equipments, operations, etc. of the country.


II. "Chinese Silver in China" by Mr. C. L. S. op. 208-286, Berlin, 1911.

Given an account of the silver standard in China.
1871. Coal industry in China, etc.


Annual report from China in respect to the output of minerals in China.


Mention of mining and metalurgy in China; a survey of the mineral resources.


The history and development of the plant, the question, and expiry of its validity, of nearby mines, and the modernnage ents. Illustrated, etc.

1871. The Mining Company Limited.


Investigation concerning the establishment of the company, the mines in its vicinity, and the coal company.

1871. J. J. B. M. p. 41-42.

Report concerning the mineral resources of four provinces and the government reservations.

1893. J. J. B. M. p. 41-42.

Steel production in the present.

Anonymous.
p. 84. New Haven, July 19, 1911.

Note about the steel industry in China
and Japan.

1898. Chinese trade, diplomatic
and commercial reports. Miscellaneous series,
oct. 1911. China, 1911.

moments in Chinese finance.

1903. Chinese currency. a.
by he. 21. 24. c. is. and ac.
new york, 1910.

In connection with currency in drafted
by the treaty of Tientsin.

1911. tariff in China. a.
ber 24. 25. 26. 27. 28. 29. 30.
new york, 1911.

Information concerning the probable Chinese
competition with America in the production of iron.

1911. Stephen. in China. a.
new york, 1911.

Additional facts. the seven
commercial cabinets. a.
new york, 1911.

Information concerning the value, and
diplomatic negotiations, relating to the cotton
issue and the Chinese cotton industry, as Japan.

1913. Weber and Walter in der

In the industry in copper, China; activity, 1 in. ind. vol. Silver, lead, etc., from German consul report.


can miner industry in California, and region.


Information concerning the works of the tabacary.


Consider report associating the exports in. 1915.


Of artistic importance the works of the south. India, Bathurst, and the Chinese as miners.


Nickel is believed to occur in southeastern China in fairly considerable amounts. Geolos found nickel ores occurring associated with the copper in
Anonymous.

"source or sources is unknown and undocumented.


Information concerning the different engineering and mining companies in China.


Information concerning the production of the iron-ore, iron and steel companies for 1971.


Including facts concerning the mine of china, acid, petroleum, steel, copper, and other precious metals in southern China; and zinc, etc.


Information concerning the iron mines in the province of China, and the iron ore in connection with these mines.


On the production of the different metals such as coal, iron, copper, antimony, etc.

A recent statistical and production of
oil in the province of Shan.

1912. The meteorological divisions of

An account of the Asia expedition through
north China.


An account of the Asia expedition through
north China.


Outlines the present and future mining
developments in China and notes the training of
living engineers.

1913. Petroleum deposits in China.
Studien zur Erdölindustrie, p. 78., May 18, 1913.
Anonymous.

Oil resources of China.


F. K. D. La Tanner for Chinese total exports for 1909, 1910, 1911, in Native Sect.


States the opportunities neglected and the geology in coal deposits of China, by Mr. ... Tauss, C. A., School in Huntingdon and T. C. I. ill ill.


Information concerning the prices of the production of steel by ton and their relation to American prices.


A report from United States Consul General in Shanghai, on mining, taking a considerable number of mines throughout China, with notes on railway questions, etc., noting in the southern part of Kiangsu and Kwangsi Provinces.

1930. A geological survey for China.

and . . . . vol. 34., vol. 96., p. 77-78.

It is proposed to build about the vicinity of Peking, one of the principal cities of the country.


A mine is located in the southern district of


A mine is closed. started carrier.

1913. continued in China and Japan.


A mine is closed, July 1, 1914.

Weil on mining the extent of coal of the salinity at Batavia, Java


1916. the salinity of the different districts, results of investigations, and the use of salt. (Abstract of N. A. J. W. V. 27, No. 4. July 1, 1916.)

1889. New tin mines in South China.

As early as 1912, the Chinese were experimenting with crop rotation in China, which enabled them to grow a wide variety of crops in a single land area. The Chinese, both primitive and urban, as well as in rural China, are described in this article. (See also page 132)

1892. Chinese immigration in the U.S. See an article by E. H. H. in the current review.


Concerning the mining and metallurgical industries in China.
The report concludes that the erection of a blast furnace in China would be a significant economic undertaking. However, the feasibility study suggests several challenges, including the availability of skilled labor, adequate infrastructure, and the unpredictability of market demand. The study recommends caution in proceeding without thorough investigation and analysis.

1. Art. 1, 1911, ed. 4, pp. 55-56.
3. Art. 2, 1912, ed. 4, pp. 70-71.
4. Art. 4, 1913, ed. 4, pp. 72-73.
5. Art. 5, 1914, ed. 4, pp. 74-75.
6. Art. 6, 1915, ed. 4, pp. 76-77.
8. Art. 8, 1917, ed. 4, pp. 80-81.
9. Art. 9, 1918, ed. 4, pp. 82-83.
10. Art. 10, 1919, ed. 4, pp. 84-85.

The report concludes that the erection of a blast furnace in China would be a significant economic undertaking. However, the feasibility study suggests several challenges, including the availability of skilled labor, adequate infrastructure, and the unpredictability of market demand. The study recommends caution in proceeding without thorough investigation and analysis.
the 3rd of June the King replied, as

the action of the United States and the

a resolution of the Senate and House,

A Ministry of Science and Industry is

A resolution of the Senate of April 13th,

A resolution of the Senate of April 13th,

A resolution of the Senate of April 13th,

A resolution of the Senate of April 13th,

A resolution of the Senate of April 13th,

A resolution of the Senate of April 13th,

A resolution of the Senate of April 13th,

A resolution of the Senate of April 13th,

A resolution of the Senate of April 13th,

A resolution of the Senate of April 13th,

A resolution of the Senate of April 13th,

A resolution of the Senate of April 13th,

A resolution of the Senate of April 13th,
It is the text of the agreement between the government of the Republic of China and the Standard Oil Co. of New York for the exploitation of oil fields in Kansu and Shansi.

Information concerning the agreement between the Chinese Government and the agreements thereof.

The article includes:

1. The oil menace of the unnecessary secrecy.
2. The Chinese danger.
3. Immediate work in view.
4. A food strangle for China.
5. A blow to Japan.
6. Was ill advised folly.

Facts concerning the mining and timbering in Kansu; what the future would be if properly protected by the Chinese government; capital and aspects of the mining enterprises; and the Russian acquisition.

A text of the new mining regulations as promulgated on March 11, 1914. See also page 25.


Information concerning the details of China's losses and gains in the deal.


Describes the technical agreements, the oilfields of Taos locality, and the Chinese opinion concerning the concessions of the Standard Oil Co., to assure the concessions.


Gives a list of Chinese names of minerals and the correct naming names in Japanese. (Chinese and Japanese)


Petroleum in Central Asia.
A letter to the editor of the North China Herald concerning the effect of the new mining laws to the native and foreigner and a comparison with the mining laws of Japan.


(Mining and salines in China—ientsin in 1913)

1723. Der Borzhava und Salinen in China—
Anonymous.


Mining and Mining in China—Henst in 1913.


Mining in Java and Netherlands.


Gives and describes the resources of the eight mining divisions of China. (Japanese)


Information concerning the mining and geological work as outlined in the British-Korea Coal Concession.


Information concerning the report of the geological survey in Southern. (Japanese)


Information concerning the history and the establishment of this iron works, and its subsequent.

Discussion on the development of the E. W. Chung oil fields, the future of the city of Tientsin as a commercial center of eastern China, and other oil fields in the province of Honan.

China's existing conditions of mining and the foreign press.


Formation of the mining company of Yihsi, and Tang.


Description of an important district in north central Toncolin. The company in control is a mining company.


General report of the conditions of mining industries in the German zone in China, now believed
by the Parthians; particularly the Parthian and the
Persian coal mines and their productions.


Information concerning the oilfields in
Iraqi, Buz-i-wah and Barmian provinces. (Japanese)


Information concerning the oilfields in
Iraqi; mineral resources in east Bagdad; Dour-
Vali-kan and Ab-i-kan in east Bagdad. (Japanese)


Information concerning the (1) production
of coal in Buz-i-wah oilfield in 1914 (2) a poem
about the same; iron from west line in Buz-i, nov.
(1914); oil lines in Iraqi, east of the
Ktunah; explanation of Ayvand-o. (Japanese)

1737 Description of the Siraf and adjacent
Oct. 31, 1914.

Sequences the region where alluvial gold has
been found.

1738 The Chine KING Coal mines. The
Oct. 1914.

Notes the different coalfields belonging to
Anonymous.

the Chang-hai Iron Mining Company.

T. 1738. Nov. 20, 1814.

Information concerning the production of
salt in Shansi Province, China. (appended.)

1740. Coal in Lo-shan, Hopeh Province.
P. 284. Nov. 20, 1814.

Information concerning the coal require-
ses in Lo-shan, Hopeh Province. (appended)


Descriptive in coal-fields of Tientsin.
[In Japanese]

1742. Petroleum in China. Petroleum
1818.

Gives extracts from 2 letters published
in 1822 containing the observations of a missionary
seer on the oil, oil, and brine wells in
the province of Tientsin, China.

1743. Petroleum in the Chinese Empire.
1818.

Notes about the present between the republic
of China, and the Standard oil of New York; and of
the different districts, the productions, etc.
Includes China's production in gold, silver, copper, antimony, and other minerals.


Covers notes on alluvial gold mining in the Yens and Amur regions in Siberia and northern China.

Information concerning the excavation of an open cut at Lycosia, Canadaria, and many others.


The bulk of the annual purchase of the United States of 16,000,000 lbs. of pottery comes from China.


Includes location of the field as discovered by the company in the U.S. at its request.


Along with the minerals of Shanghai and on the eastern.


Among the famous coins of ancient China, the old manuscripts brought back from the buried cities of Lycosia and Canadaria, in Central Asia, and now stored in the British Museum, is one called the 'un-guang-u,' literally meaning 'un-guang-u.' This little book contains the records of a person who wrote in the time of very early China. Among the interesting phenomena is a small man in un-guang-u, which at a time when there was no loud noises.
information concerning the potential of the standard of o. to construct a 300-mile pipeline in a.m.

1795. Mining ventures in China. (Article)

The conditions to be encountered by foreign mining officials pointed out.

April 18, 1916.

Discuss a list of mines in the province of Hunan. Information concerning land for recreation in Hunan province, and the king-kio mine in Hunan province.

April 22, 1915.

Information concerning the operation and development of the king-king iron works during 1914.

1798. Opportunities for mining in China. The Mining Record. Vol. 36. No. 5, pp. 287-

Abundant raw material and a growing market invite development of mining in China, but up to the laws are not sufficiently favorable to warrant investment by foreign capital.
Anonymous.


Gives the output of China, divided into different provinces.


Information concerning the present iron condition in China and its relation to diplomatic problems.


Information concerning the iron works of China and the production of 1914.


Deals principally with the production of tin.


A creditable exhibit has been made, in spite of transportation difficulties and the few companies that are in a position to participate.

A

1746. Chemical analysis of sparite from Xi-nan-chi, China. (China Mining Journ. Vol. 23, No. 21, July 25, 1919.)

[Extract from the China Mining Journal concerning chemical analysis of sparite from Xi-nan-chi, China.]


[Article on ores in China.]


[Article on geology of orient mining in China.]

1749. Information concerning the export of kerosene from Russia, America, etc.

[Article on the export of kerosene from various countries.]
ted in this province; as the importation of oil from different parts of the world.

June 15, August 18.

A discussion on the agreement between the Chinese government and the Standard Oil Company. The original agreement expired Feb. 1911, and a new treaty, further consolation, have been


Lithograph, etc. Information contained in a report from the ministry's council of mining, regarding the discovery of petroleum areas in China.


Of the world's total output of antinary 70% of the ordinary 80 grade comes from China. Here are about 100 companies established and 10 at wasters have been erected.


Information concerning the oil in Chinese and elsewhere in China.

Anonymous.

Information concerning the fact that China refuses a monopoly to standard oil.


Information concerning the present oil development in China.


Information concerning the interest that the Chinese have lately shown toward the development of their mineral resources.


Silver is abundant in Shansi and Shensi provinces in considerable amounts and exported mostly to Germany and Belgium.


Information concerning the mining rights of Japan in Manchuria as a result of the Chinese-Japanese agreement.
1788. Leicestuin's report on 1836.

Oct. 1836.

Leicestuin's report on account of the
magistrate's curiosity.

The same material is
arrested to the villagers,
and it is calculated and
denied in a certain of every description.
The
and ponders are made up.

and turned 
for use in villager. 1836.

1861. The beginning of the China. The
Oct. 1861.

Discusses the working and work's functions
of the collection of data. A procedure to such
an effect must be provided by the
minister of agriculture, commerce and industry.

1865. History in 1865.

Jr., Vol. 1, p. 658. New York, Oct. 23,
1865.

Contains a report stating that 11,196 tons of
antimony, valued at $75,000, were exported from
China in 1865.

1869. Trade openings in China.

The Jr., Vol. III, p. 16, p. 10. San
Francisco, Oct. 29, 1869.

The abstract from the journal of the royal
society of arts opportunities to sell mining
machinery and supplies in China; necessity for
representation on the press to push the goods.

1914. Graphite in China.

Nov. 1914.
A notable discovery of graphite has been reported from the Xuanfu district of Honan province. The region is rather difficult of access but the high quality of ore and the size of the deposit it is believed will make its mining commercially practicable.


Also opportunities in Japan that furnished copper for Chinese commerce; government assistance in one of the principal copper mines.

1767. Gold mining in the Tier region.


Gives an account of the gold mining industry in the Tier region and the developments.

1767. Coal mines in Manchuria.


Coal fields are reported near "Chululi" in the Chinese border. Various fields in Manchuria. Their extent is not being investigated.

1768. China's Anthony and iron profits.

In the engineering era. Vol. 22, p. 70, Chicago, Jan. 8, 1868.

In the year of 1866 the world was dependent upon the Chinese province of Hunan for its supplies of antimony. The production, refining, and the opening for competition.

II. Information concerning the recent developments of the company.


IV. Suggestions that the Chinese engineers that have been educated abroad should use their influence to modify the imperial regulations of the Chinese government.

V. Catalogue of copper in China.


VII. Chinese catalogues are published annually, and contain records of antiques from every part of the world.
Anonymous.


Information concerning the iron and coal industries of China. 1774. 3. 417; 1775, 5. 677.


1776. Versus by:

I. Freire de Andrade.
II. Sir John Crawfurd.
III. J. D'Arcy.

Chemical Research, London.

Extrait de l'Académie, chimique, etc.
of China.

1777. 中國礦產志. Shanghai.

LongTitre sur un des principes de la chimie des mines, in 1773. 5th atlas.

1778. 山海經. Nan-Ki-Hing.


1781. On the early history and use of coal in China. 1880. Translated into French by Daubree in.

1808. 山東煤礦論. Nan-Sung Tai.

L'essai de chaine de la meridien du Shantung. 1878.
CHINA.

Position and Boundaries: China is made up of China Proper and the bordering provinces of Manchuria, Mongolia, Eastern or Chinese Turkestan, Sunchuria, and Tibet. The total area is about 4,000,000 square miles, lying between $53^\circ$ and $10^\circ$ north latitude and extending from $73^\circ$ to $134^\circ$ longitude east from Greenwich. It is bounded on the north and northwest by Siberia, on the west by Russian Turkestan, on the southwest by Hindustan, on the south and southeast by Further India, Tenking, and the Pacific Ocean, and on the northeast by Korea. Within these boundaries lies the most varied country of the world, mountain, plateau, valley, and plain giving place to each other in rapid succession, and in this country lives and thrives a population of over 400,000,000 souls.

China Proper is a country which, in spite of its vast extent (measuring over 1,800,000 square miles or about half the size of Europe) and great diversity of physical features, is on the whole marked off by natural boundaries from surrounding countries. On the north, the boundary runs along mountains or through sparsely peopled steppes, separating it from Mongolia and Manchuria. On the west, China is bordered by the high tableland of Tibet. On the southwest, it is divided from India and Burma by a succession of high mountain ranges and profound valleys. On the south,
the boundary runs, in part, right across these mountains and valleys, and partly along the water parting between the basins of Si-Kiang and Sung-Loi.

General Configuration: Broadly speaking, China is composed of two extensive low plains in the northeast, and of mountains and hilly country in the west and south, together with an isolated mountainous peninsula between the Gulf of Weihali and the Yellow Sea. The two plains differ very greatly in extent. The larger extends from the Gulf of Kanghwa to the mountains north of Peking, a total length of about 700 miles; the greatest width, near the parallel of 32° 30', being about 400 miles. A large part of this plain is so low and level as to be very liable to inundation, the rivers being only with difficulty restrained within their banks. The most destructive of such inundations have been caused by the changes in the bed of the Yellow River, which has altered its course at least eleven times within the last 25 centuries, flowing now north, now south of the mountainous peninsula of Shantung. The minor plain is that of the middle Yangtze and the lower Han, comprising all the lake district of the region of the great zigzag of the Yangtze between Ichang and Hankiang. It is cut off from the larger plain by the comparatively low hills containing the water-parting between the Yangtze and the Kwai-Lo. Both in length and breadth
it measures about 140 miles.

The mountainous country in the west and south is partly composed of an intricate system of mountain chains and spurs, with narrow intervening valleys, and partly more undulating country with broader valleys, the latter type predominating in the southeast.

The highland regions of the north and south present another contrast. The valleys of northern China are all to a large extent filled with loess. This is an earthy deposit generally of a yellow color, differing from clay in being remarkably porous. The pores are vertical and are believed to be due to the former presence of the stems of plants rich in lime. Equally characteristic of the loess are the horizontal terraces, a structure which is not easy to explain. The loess of China is believed by Baron von Richthofen to be due to the gradual accumulation of dust blown from the interior tablelands of Asia, in other words an aeolian deposit. According to Kingsmill, it is of aqueous origin. In some places this fertile soil is cultivated even at the height of 3000 feet. In southern or southeastern China, on the other hand, the higher slopes are generally too steep for cultivation, and notwithstanding the warmer climate, cultivation is in most parts confined to the zone below 2,000 feet, but in the upper part of the Yangtze River Basin, the present of a rich red soil, filling what is hence known as the Red Basin, has caused more of the
hill and mountain sides to be terraced for cultivation to their tops.

Mountains Systems in General: The ranges that penetrate the region south of latitude 45° N., may be said to have their nucleus in the Taklamakan plateau. From this plateau extend the Tien-Shan, or Celestial Mountains, separating Mongolia from Chinese Turkestan and the Gobi Desert. To the south of Tien-Shan, the Kuen-lun range takes its exit and proceeding due east, separates Chinese Turkestan the Desert of Gobi, and Sinkiang from Tibet, ultimately striking the Kunlun Mountains near 104° E. latitude. At the southeast corner of the Taklamakan plateau, a huge range leaves the plateau, and joining the Kuen-lun with a cross spur, forms the western border of the central Tibetan plateau; thence taking a great curve, it continues as a barrier round the southern and eastern sides of the high plateau, until it joins the Kuen-lun about 95° E. latitude. Under the name of the Himalaya it separates that portion of Tibet bounded by the Brahmaputra from India, some of its peaks being nearly 20,000 feet in height. East of Assam it is broken through by the Brahmaputra. Continuing in an easterly direction, it throws out a huge arm southward, which forms, with its plateau and mountain ranges, the primary base of Indo-China. This arm is clift lengthwise by the Salween and Mekong Rivers, and partly in its length
and in part transversely by the Yangtze River and its branches. The Irrawaddy rises in its western arm, the Si-Wiang and the Song-Lai in its eastern one. The main range then continues in a north-northeast direction, and under the name of Yangtse, impinges on the Sayan Fara, which springs in 95° E., 58° N., from the eastern flank of the hill barrier that encloses the central Tibetan tableland. Running nearly due east, and known as the Sealing and Sealing Range, it forms the water-parting between the Yangtze and Yellow River systems. The mountainous belt of the southeastern provinces forms the northern water shed of the Canton River, and is the divide between it and the Yangtze system. All the ranges which penetrate China proper with the exception of the mountains of Shantung, jutting out south of the Gulf of Tcheli, are connected with the Western Tibetan System. The average heights of the western China highlands may be roughly given as follows: the Pamir plateau, 15,000 feet; Tiett, 15,000 feet; Makonov, 14,500 feet, the Mongolian plain, 4,000 feet; the Chansi tableland 3,000 to 5,000 feet; Yunnan, 5,000 to 7,000 feet.

Coastal Configuration: The Coast-line of China, in the form of a semi-circle, is 3,150 miles in length, or, with all indentations reckoned, approximately 5,000 miles. The northern part including the coast of
Chihli, the N. and W. of Shantung and Shanghsa, is of an alluvial nature; the remainder is granite. Along the latter (the provinces of Chekiang, Fukien, and portions of Shantung) are innumerable islands, affording anchorages of varying extent, in abundance, while the sea is of a more uniform depth. Shoals fringe the northern coast-line, and navigation relies upon the channels made by the rivers, as the Yangtze-Kiang (at Koosung for Shanghai) and the Ti-lo (at Taka for Tientsin).

The Japanese Archipelago separates the western portion of the Pacific from the deeper waters of the main ocean. The seas of China are all west of this barrier. They are known as the Yellow Sea, including the Gulf of Chihli and the Gulf of Liaotung; 2, the Eastern China Sea, including Formosa Channel, and 3, the South China Sea.

The Three Great River Basins of China:
1. The Hoang-ho, or Yellow River Basin.
3. The Si-Kiang or West River Basin.

The Yellow River Basin: Being immediately to the south of the Mongolian plateau the northern valley has extremes of heat and cold, and the country being largely of loose formation travelling is impeded by the thick mud
of summer and the deep mud sand of winter. The difficulties of water travel have given rise to the use of the northern cart, a cumbersome affair, typical of all communications in the valley of the Yellow River. The Yellow River, or as it is frequently called, on account of its changing floods, "China's Sorrow," is the most important stream in the country. It is a stream very like the Mississippi, carrying a great amount of deposits at various places, to the shores of which for many years the bottom of the stream are raised. The character of this great river is characterized by the deposition of silt and the normal bank. The location of its mouth in the Gulf of Tonkin has been altered by the change in direct line about 600 miles. When passing through the Eastern Fu Shan mountains, the river cuts through the mountain on the south by the Western Fu Shan mountains as it proceeds from west to east, and the height decreases in the same direction. Though the northern valley is cut
off from the central basin by this range of mountains communication is possible through the passes, and while the Grand Canal forms an important link to the southeast, the Peking-Hankow line connects the eastern portion of the northern valley with the central portion of the middle valley. The great trade road, which crosses Chensi and Kansu, links up this basin with Central Asia. There are several routes which lead into Mongolia.

This basin includes the Provinces of Kansu, Chensi, Shansi, Honan, Shihli, and Shantung.

The Yangtze-Hiang Basin: The Yangtze-Hiang Basin is a subject on which a great number of volumes might be written without anything like an exhaustion of the topic. There is at present no region on the face of the earth which can compare with it. The nearest approach is the basin of the Amazon, but that region has been, as yet, so undeveloped that a comparison between the two would, as far as our present knowledge goes, be very much to the advantage of the Yangtze Basin.

The Yangtze drainage area is well defined. On the north it is bounded by the continuation of the Kuen-lun Mountains, known under the names of Keping, Koeiling, Tunia, and the Tsuiyang Ranges. Of these the first have an average height of about 7,000 feet, while
the last rise to no more than 3,000 and eventually lose themselves in the alluvial plain of Kiang-su. On the south side three plateaux—Kunan, Szechwan, and Kwangsi—continued through the Shantung and Shantung, shed the waters of the Yangtze to the north and those of the Si-Yiang and the rivers of Fukien and Chekiang to the south. This vast basin with an area of 700,000 square miles supports a population of two hundred millions, of whom it is safe to say that every individual supplies, or in the future will supply, some of his wants from, and some of his surplus product to Shanghai, the great metropolis of the whole valley. Half the inhabitants of China settled in this basin, and more than sixty per cent of China's commercial transactions take place here. The great highway is the Yangtze-Huang, which is supplemented by a vast system of natural and artificial waterways.

In the lower basin of the Great River of the Yangtze, the Grand Canal forms an important line of communication from north to south. In the middle basin, the Hanon the north bank and the rivers flowing into the Tung T'ing on the south, form another north to south highway, and to the west innumerable streams of a greater or less degree of navigability pour their waters into those of the Yangtze-Huang. In addition to the waterways, there is a web of railways, which cuts through the rich districts of this basin and shortens the distance between the
commercial centers of China.

The moderate climate of the basin, the abundant rainfall, and the diversified nature of the country are factors which cause the diversity of vegetable products. In the northern slope there is an abundance of wood, less now than in bygone ages, certainly, by reason of reckless and extravagant deforestation to which it has been subjected at the hands of the people. Tea, silk, cotton, sugar cane, and rice abound.

The mineral wealth of the basin is enormous. Anyang is the center of a great iron industry, and this metal and coal, though not as abundant as in the more northerly provinces, afford in many ways employment for a large class of laborers. The industrial potentialities of the region are almost incalculable. The silk mills and filatures of Yiangsu, the steel works of Hupeh, the salt and oil industries of Szechwan, the porcelain of Kiangsi and the textile fabrics of Hupeh, are all well known to demand the attention of foreign capitalists; but none has yet had an opportunity of thorough development.

This basin is the largest of the three and includes the provinces of Szechwan, Hupeh, Kunan, Kiangsi, Anhwei, and Yiangsu.
The Si-Kiang Basin: The basin of the Si-Kiang or West River lies partly in the tropics; that part within the tropics being also the lowest lying land, while that portion beyond the tropical area is largely made up of high plateau.

Owing to the fact that this basin is the most diversified of the three, a general statement concerning it is more difficult. The river drains a country almost entirely mountainous, the great exception being the low-lying delta on which the great port of entry, Canton, is situated. The climate is semi-tropical over the greater part, and the country is rich both in mineral and agricultural wealth.

The geology of this basin is of considerable interest. In its more easterly stretches, porphyry, granite and schist are in evidence, but in the other parts wide zones of sandstone overlie the crystalline rocks and the outcrops of granite and porphyry are only occasional. The curious contortions and folding of the secondary limestones produce, throughout most of the basin, a characteristic scenery. A series of plateaux descends from west to east. In the north the Nan Shan constitutes a barrier between this basin and that of the Yangtze, and from these mountains and others flow many rivers, by which the basin is abundantly watered.

The Si-Kiang rises in eastern Yunnan and after
a short distance southward, strikes east with a northerly bearing to the borders of Shansi and Honan, to which provinces it serves as boundary for some two hundred miles. It is not until the Yu-Siang has poured in its water that the main stream is known as the Hsi-Siang, the Yu-Siang affording communication with important districts on the right bank, just as the Se-Siang and the Ting-Siang on the left.

This basin is noted for many industries; mining, tunning, agriculture, paper-making, and other manufactures, and includes the provinces of Kansu, Shansi, Honan, Kiangtung, Fukien, and Chekiang.
The Geological History of China: During the Pre-Cambrian period, China was a land surface which had been exposed to erosion so long that nearly all the mountains and hills that may have existed there before had been worn away, leaving comparatively flat plain with groups of low hills here and there. Beneath this plain were highly folded rocks of various kinds. Eventually this surface was submerged beneath a relatively shallow inland sea, and although the uneasy movements of the earth's body caused the sea bottom to emerge occasionally, it remained below water nearly all through the geologic periods which constitute the Paleozoic era. By the end of that time, China as a shallow sea bottom more gradually to a mostly coastal plain on the east. During the long intervening ages, the accumulation of sediments upon the sea bottom had formed successive layers of limestone, shale, and sandstone, which eventually reached a thickness of 5,000 to 10,000 feet.

This condition did not hold without end, for during the Jurassic period, strong compressive forces, occurred in the underlying body of the earth, squeezed the superficial rocks into folds, and thus bulged the surface high above sea level in the region so affected. By the prompt attack of streams, winds, and other agencies which are continually carving the surface of the earth, these
elevated areas were, even while rising, sculptured into rugged mountains and deep valleys, so that the original folds were greatly disfigured even before the compressive forces ceased to operate.

Such episodes of compression and folding are short-lived. Soon they are followed by much longer periods during which the internal forces of the earth are quiescent, but in which the erosive agencies have free play. If any land remains indefinitely above sea level, and is not disturbed by movements from below, the mountains will eventually be worn away and there will be left only a broad almost featureless plain. It is believed that China, in consequence of such period of quiescence (Cretaceous and Eocene periods) was reduced to a lowland from which almost all of the pre-existing mountains had been eroded away. Probably in this condition it remained for more than one geologic period, and the western part may even have been submerged beneath the sea which at that time covered part of Tibet and northern India. In that sea were deposited the thick beds of limestone which are now found in some of the western mountain ranges.

Forces of distortion of great magnitude causing great folding and crushing, again occurred in the Miocene Period, but this time the area affected lay farther to the west and south. At the same time, and perhaps earlier, the eastern part of China was fractured in various directions,
end the intervening blocks, settling somewhat unevenly upon their bases, left a group of crenellations and depressions comparable to those formed at the present time in eastern Oregon and western Nevada. As before, the work of erosion and the leveling of the surface was at once accelerated, so that even before the deformation and spent itself the blocks were deeply cut. It is not definitely known how far this period of erosion succeeded in reducing China to base-level. The completion may have been prevented by gentle undulations of the surface, rising very slowly here and sinking there. These changes of level seem very slight when compared with the size of the areas affected, but in spite of that they are sufficient to cause great changes in the aspect of the country.

Streets tend to produce in their channels an almost uniform slope from their sources to sea. If any part of the channel is so flat that the stream is too sluggish to carry sediment, it is built up until it reaches the required gradient; and on the other hand, if any part has too steep a declivity, it is gradually worn down to the proper slope. In consequence of this law, the parts of China which were slightly bulged above their original level were attacked by the branching systems of rivers, with renewed vigor, by carrying out softer rocks, those have made deep valleys
with intervening mountain ranges. Some of the larger rivers, such as the Yangtze-long, maintained their courses in spite of the slow uplifting directly against their courses. A result is the significant series of gorges along the central Yangtze where the great river has moved its way through a slowly rising mass of more complexly folded rocks.

On the other hand, the broad areas which were depressed not only below the general level of stream action, but below sea-level, were filled with sand, loam and clay washed down out of the adjacent mountains by the streams. It doubt the rivers have been this in large measure to keep pace with the sinking movement of the ground, so that great rivers like the Yellow river have maintained perfectly graded courses across the region of depression from the mountains to the sea. While this engaged in building up its channel, the river in time of flood frequently breaks through its low steps, shifts its channel, and then begins to fill at a new and hitherto lower part of its surroundings. By the long continuation of this process of repeated shifting and filling, the great eastern plain of China and many smaller plains have been produced.

By this succession of events the surface of China is believed to have reached its modern condition. (After
Geology and Predominant Rocks:  Mr. Gillis, in his paper on the mineral resources of China, divides China proper into five parts, namely, North China, Middle Yangtze region, Shu-chih-ling Mountains, Basin of Chekiang, and South China, and describes each as follows:

1. North China:  North China comprises the provinces of Shensi, Shantung, Honan, Kiangsu, and Hupei. Approximately half its area is alluvial plain, built by the Huang-ho, and its distributaries and in Shensi by the Lin-ho. The other half is mountainous. The heights are above 5,000 feet in general and 10,000 feet in the greatest. The mountains are bare. There are scarcely any trees, except in Shensi where some forests of pine still remain. The valleys are deeply filled, and the rivers, which are calm in upper parts near their sources,ander in wide gravel plains among the foothills.

The rocks of North China are sandstone, shale, and granite (Pre-Cambrian); limestone and marble (Pre-Cambrian and Cambro-Ordovician); coal-bearing shale and sandstone (Carboniferous); varren reddish sandstones (Permio-Carbo-
iferous); higher coal resources (Jurassic); volcanics (Tertiary); and clays and gravel (Quaternary).

2. Middle Yangtze Region:  This district lies on
both sides of the middle course of the Yangtze River between the cities of Chang-king in Kansu and Shu-jiang in Hsiangsi. It embraces the section of the river between I-ch'iing and Shu-jiang with the Poyang and Yang-Ting lakes, the heart of China from the commercial point of view; the alluvial region round about the Yangtze nearly to the headwaters of the navigable tributaries of that great artery; and in contrast to these districts it includes also the high mountains of central China west of I-ch'iing, which are shut off by their ruggedness, though traversed by the Yangtze in its world-famous gorge.

Of political provinces the region embraces all or parts of An-hui, Shantung, Kue-chen, Kiu-hoa, Kienan and Hsiangsi.

Geologically this region resembles North China in the non-metamorphic condition of the Pliocenic and younger rocks. There is a basement of old rocks, which is exposed in many places, but the prevailing hard rocks are limestones of different ages interstratified with some sand, sandstone, and coal beds. The adjoining geologic provinces on the north and west are characterized by igneous activity and as the boundaries are irregular and can be vaguely at widely separated points only, intrusions and local contact metamorphism probably occur within the area here described as generally non-metamorphic.

The type section of geologic formations is exposed
in L-chang gorge between the village of Lan-teu and the

city of L-chang in the western part of Hupei Province.

At the base near Lan-teu are granite and gneiss (pre-Cambrian).
The superjacent stratigraphic sequence consists of limestone
4000 feet (mainly, i.e., Cambro-Silurian); shale, 1000
feet (Middle Paleozoic); limestone, 4000 feet (Upper
Carboniferous); and red beds (early Mesozoic). The strata
are generally conformable.

The pre-Cambrian gneiss, schist and granite occur
extensively in the low hill country north and southeast of
Lanchow, and in an isolated area west of L-chang between
L-chang and Hsia-ken verses of the Yangtze. Their distribution
north of the river is not well known, but in the basement
of a distributed and deeply eroded sedimentary series they
may occur anywhere.

basal gneiss traversed by dykes of aplite
are the rocks described northeast of Lan-chow, and they probably
have a wide distribution. Granite-gneiss constitutes the
mass exposed on the Yangtze above L-chang. Pre-Cambrian
schist, a somewhat altered calcareous sediment, occurs as
boulders in an ancient glacial formation beneath the
Shanxi limestone at Lan-teu, but is not known in place.

3. Ts'ing-hling region: The Ts'ing-hling region is so
named from the mountain range which, stretching eastward
from the Kuen-lung of Central Asia, divide North China from
from South China between the parallels of 33 and 34 degrees, as far east as longitude 133. In the north the range is sharply bounded by great normal faults. In the south the basin and canyon through which the Han-jiang takes its course set a certain topographic limit, but they do not define the area of special geologic conditions which extends somewhat further south.

The dominant geologic characteristic of the province is metasomatism of all the rocks older than the Jurassic. There are very ancient series which were metasomatized before the beginning of the Triassic, but the Triassic limestones and marls themselves exhibit more or less general slicken, schistosity, and rearrangement produced during a post-Triassic disturbance, and also metasomatism in the vicinity of large granite masses intruded about the same time. These metamorphic, young granites are not readily distinguished from those which were intruded into pre-Triassic sediments, and as both occur in very large masses, it is almost as yet to describe the structure of the range satisfactorily.

4. Red Basin of Ts'ai-Shan: The Red Basin of Ts'ai-Shan, so named by Crichton in account of the red color of the prevailing rocks, is a synclinal depression, roughly estimated at something over 100 miles in diameter, surrounded by high mountains. It lies in western China, west of the 3000 to 12,000 foot heights of eastern Ts'ai-Shan and east of
the 20,000 to 30,000 foot peaks of norway fleet. the
elavation of the basin lies between 1000 and 3,000 feet
above sea. the surface is deeply cut by many streams
which are generally navigable, though in some cases only
for small boats capable of running smooth.
the rocks of the surrounding highlands are
pre-eocenic and palaeozoic chiefly, with minor areas
of younger strata (early cretaceous) and great bodies
of intrusives, but the deposits in the basin are very late
palaeozoic and early cretaceous (serpico, Triassic, and
Jurassic) strata, which are slightly disturbed and only
locally intruded by igneous masses. in general these
intrusives are red sandstone and red gritstones.
3. South China: This region comprises that hilly
and mountainous country which extends in an arc from
Szechwan on the northeast, south to the coast of Ton-
kin and the extreme south-western portion of the empire.
it takes in the provinces of Fu-kien, Huang-tung, Huang-
si, and Yenan, together with the southern parts of Shensi,
Chihli, and Kansu. it is a country of marked relief but
not of great width except in the western portion. In
the west the rivers flow in the west the rivers flow in
deep and narrow valleys separated by high mountain
ranges and the character is not only deeply but not deeply
dissected plateau.
Throughout this entire region the dominant geologic characteristic is the presence of large bodies of intrusive rock (granite, quartz-serpentine, etc.), together with more volcanic rocks which were erupted during the Carboniferous, and which accordingly intruded and notoreoved the earlier Carboniferous and older Paleozoic strata. (Hollogrenaw No. 1821.)
The Eighteen Provinces.

1. Shensi:  Shensi Province is the third largest province of China, having an area of 105,000 square miles. Its population is 12,300,000, which is the highest density of any province except Chekiang.

Though the transit trade is the most valuable part of the wealth of the province at present, there are other sources not to be overlooked. During the long winter months, ice breaks, but in the spring the temperature rises to 194° F., and vegetation is abundant. Toward the south the climate is milder, and in some quantities of fruit are grown. With the introduction of modern methods of transportation and preservation, fruit growing might easily become a great source of wealth.

Geological Characteristic:  These is nâng in its central part, while its mountain ranges which are a prolongation of the Kansu countries, are coalstone and granite. Its eastern part is covered with rich loess deposits, in the form of terraces which the people excavate for dwelling purposes. The numerous voids, plains, in the province are to well organized systems of irrigation, yield splendid harvests.

Mineral Wealth:  Little is known of the mineral wealth of the province. There are extensive coalfields in
the north and north-east but they need exploitation.
iron, gold, silver, copper and marine ore also found,
and from the geological formation of some parts of the
province could be considerable in quantity. Another
essential product is petroleum. The geological conditions
that have given supplies of petroleum to central Asia and
Chinese Turkestan, should also give them to Inner Province
in commercial quantity.

Thus Inner Mongolia province awaiting great development,
the chief obstacles is which are the scarce population and
the lack of communication.

II: Inner Mongolia Province has an area of 73,052 square
miles and a population of 2,680,000. It is closely in touch
with the great waterways of China. Its boundaries are the
Great Wall on the north, beyond which are the Gobi steppes,
its extension to the south of the great Mongolian tableland;
the Yellow River on the east, which separates the provinces
of Inner Mongolia and Manchuria; the provinces of Jehol and Ning on
the south; and Inner Mongolia Province on the west.

General Features: The river which crosses the
province almost on the 35th parallel, divides the province
into two well marked portions. To the north is a tableland
of loess deeply cut by narrow but mountain streams.
The richness of this loess, as correctly described by
Michther, is beyond doubt, but the uncertain rainfall, on which its availability depends, very seriously militates against agriculture. South of the city and rising serpently from its valley, we have the Tingling mountains, an extension of the Panjhan, rising to a height of 10,000 feet, and in Tashkent, up to the west, to 11,000 feet. The range is difficult to cross except at its extreme eastern and western points, where there are comparatively low passes.

Samali is noted as a country of agriculture, especially the northern part. Wheat is constantly grown, white wheat, cotton, millet, rice, barley, and abundance of evergreens such as pine-trees, palm, mulberries and orange trees abound.

Ecological Characteristics: The Tingling Mountains are composed of granite, sand, limestone and sandstone; granite being the prevalent constituent. In both places extends a thin layer of cutaneous deposits, which continues toward the north of it to under the form of loess. In the south of both are sand, sandstone, and the limestone rocks of Kiu-lung.

Local geology: Throughout Samali there is abundance of coal of varying quality. Thirty miles north of Shanta begin the first loose hills, in which galleries are cut down to the subcharging strata and a dirty coal is mined for local consumption. Further north is again an extensive coal bearing
area, the coal being of superior quality. Petroleum
springs occur in the neighborhood of Yenan. Iron, salt,
sporadic veins with gold, nickel and magnetite (in the upper
valley of the Ho-ho) are also found. Building stones such as
marble, granite and porphyry sandstone, especially in the
Shanxi mountains.

III. Shanxi: the province of Shanxi was an area
of 11,195 square miles, in which is reported a population
of 19,800,000. It extended on the north and west of the west
by Shansi, Shanxi and the Yellow River as a very definite
boundary along almost its entire west and half of its south-
ern frontier, the river separating Shanxi from Shansi and
Shanbei, and the more easterly half of the Shanxi-Shanbei contact
being uninterrupted by any such natural barrier. On the
east Shanxi and Shanbei are contiguously.

Geological Characteristics: the greater portion of
Shanxi is covered with mountain ranges interrupted with deep
valleys. Shanxi may be regarded as divided into three parts,
the piedmont, and the plain. The first plateau, with a height
of 3000 feet rises from the plain of Shanbei, stretches north
and mid-Shanbei, and consists of a sand formation underlying the
limestone that forms the escarpment hills bordering the plain.
The second plateau, rises from the latitude of Shanbei
and stretches northward, with a height of 6000 feet. Both
plateaus are loose-covered, and deeply cut by gullies in which
the natives have worked suits to extensive coal and iron deposits. The third portion of the province consists of the plain of Suiyuanfu and the valley of the Jen-sno, divided from the plateau by the Ho-shan, which is of granitic formation, and according to Hichothofen, divides the area of anthracite from that of bituminous coal. It may be well to quote here Hichothofen's description of the geology of Shensi. In reviewing the main features of the geography of Shensi south of the Great Wall he states that there are; first, a rugged eastern barrier, made up of ancient formations; second, a general substructure of limestone in regular and little disturbed stratification. Third, if all the superincumbent strata were removed it would present the appearance of a nearly level plateau with more or less steep descents, varying from 3,000 to 6,000 feet, and interrupted only by the granitic and metamorphic Ho-shan range. Fourth, a system of coal-bearing strata about 600 feet in thickness, covering the plateau of limestone, carrying bituminous coal west of the Ho-shan, anthracite east of it, and everywhere a large quantity of iron ore. Fifth, the post-carboniferous strata, about 3,000 feet thick, and not containing any useful minerals. Sixth, if no erosion had taken place its surface could be nearly level plateau of about 8,000 feet altitude, but there are marks of considerable erosive action, which has carried away the
post-Carboniferous from large areas, but has left it in its
original position in others to still greater extent. Where
it exists, it forms undulating hills, intersected by
deeply-cut watercourses; where it is removed, the coal
formation is laid bare, and in places even this is washed off
and the limestone strata exposed. Seventh, a general cover
of loess spread over hills and valleys, and covering the
highest plateaux as well; it borders the great plain. It
is intersected by labyrinthine watercourses, most of which
are cut through into the underlying formation.

Mineral Wealth: The coal and iron deposits of
Shensi Province are not only found side by side as in the
flourishing manufacturing regions of Europe and North America,
but their quality has been famous from ancient times. They
belong to the Carboniferous formation and are practically
inexhaustible. The coal seams reach a thickness of forty
feet, and lie mostly undisturbed on a horizontal limestone
formation, and at an altitude of some 3000 feet above sea-
level. According to Richthofen, Shensi is one of the most
remarkable coal and iron regions in the world, and the
world at present rate of consumption of coal could be supplied
for thousands of years from Shensi alone.

Clay, salt, petroleum (in the southwest), and
gypsum (in the south) are also found in Shensi.

Vegetation: The loess-filled valleys of Shensi
are extremely fertile, yielding excellent crops of barley,
wheat, millets, pears, dates, and particularly grapes from which wine is made, unequalled it is said, throughout China. The high plateaux are desolate.

IV. Honan: The Province of Honan is more densely populated than any of the provinces so far discussed, there being 26,317,829 people on an area of 57,994 square miles, or an average of 378 persons to the square mile.

The boundaries of the province are not so clearly marked as those of the provinces further west. For less than half of the northern boundary the Huang-Ho (Yellow River) serves, while the longer stretch consists in part of the lowest outliers of the Shan-si plateau. The Hai Shan, the dividing line between the Huang-Ho and Yang-tze-Kiang basins, forms the boundary on the southwest. The whole of the eastern boundary, along which lie the provinces of Shantung, Chihli, Anhwei and Kiangsu, is purely artificial, though little suggests that it may represent the line of some long-disappeared watercourses and swamps, a suggestion with which the nature of the country is quite in consonance.

General Features: The portion of the Huang Ho above mentioned divides Honan into two distinct parts. The northern and smaller part consists of a tract of country with a gentle slope in a general southeast to northwest direction leading on to the Shan-si plateau, the escarpment of which forms the Ts'ai-ho Shan. South of the Huang Ho the country
shows considerable undulations amounting at times to hills, representing the worn-down terminal spur of the mighty Huenlan. As the Huenlan Shan, the Lwa Shan and the Amdo Shan these spurs break across the country from west to east as far as the line of the Peking-Sumen Railway, which cuts the province into two almost equal parts, roughly along the longitude 114° east. The whole region of these hills has an average elevation of 2000 to 3000 feet.

The river system of Huanan is important in that it governs to a considerable extent the lines of traffic in the province; not that the rivers are fully navigable, but their valleys make fairly easy the communications between the province and its neighbors. Among the important rivers are the Tai-No in the north, and the Sha-nuo, Sai-no, and the Tang-no in the south.

Geological Characteristics: In the north yellow earth predominates in a large portion, and is mingled with alluvial silt in the Sai-no basin. The Anmu Mountains in the west are composed of marble, sandstone, and granite. The mountains which are their continuation to the south, are formed also of granite, schist, and gneiss.

Mineral Wealth: The coal and iron strata of the neighboring province of Shaanhsii extend over into Huanan. The chief coal district lies between Angkingfu and the Shaanhsii boundary and stretches east and west for some 60 miles. The coal is of the same excellent quality as that of the same
Tin and argentiferous lead are also found in considerable quantities.

Vegetation: Excellent crops of corn, fruit, millet, maize, and cotton are obtained almost throughout the province, especially in the vicinity of Weik'ingfu, of Sanyangfu, and in the valley of Ho-o.

V. Chihli: The Province of Chihli, the metropolitan province of China, is situated between the Province of Shansi on the west and the Gulf of Chihli, and are of the Yellow Sea on the east. On the north it is bounded by Mongolia and on the south by Honan and Kansu provinces. The province has an area of 100,000 square miles and a population of 20,000,000.

General Features: Chihli, like most of the other provinces of China is a geographical unit. Its western and northern boundaries consist of the crests of the southern escarpments of the Mongolian uplands, and with the exception of the piedmonts slope of these uplands, occupying the north and west of the province, Chihli is a sand plain with a superficial alluvial deposit for which the Swans Ho is to be thanked. This plain is very fertile. The mountains to the northwest lie in roughly parallel lines, the foothills beginning not far west of Peking.

The plain is thus described by Hulse; The wide plain of Chihli is formed principally of marine sand and gravels
A small tract of alluvial detritus deposited by the Huan-ho, the muddy river, and numerous other small rivers having their sources in the Shansi Mountains and in the ranges buttressing the high Mongolian plateau on the north. The great Yellow River itself, whose northern arm formerly entered the sea on the site of the present city of Tientsin, has also contributed its share; detritus washed down from regions a thousand miles and more to the west, and of which the fertile loess, here relegated to the position of an aqueous deposit, is the main ingredient. This plain, which continues steadily to encroach upon the Shallow Chinni Gulf, extends from the old Han city of Changtien, in the south, to Peking in the north, a distance of 120 miles north by east and averaging sixty east and west, and supports the dense population characteristic of latitudes everywhere. The plain is subject to inundations on a large part, especially to the south and along the soaring border, is traversed by a network of shallow rivers with ill-defined banks, forming extensive marshes and swamps.

The mountainous portion of the province consists of prolongations of the escarpments already noted in Shansi, and these take a general SW-NE trend thus cutting off a corner of the province. The province is abundantly supplied with water by its numerous streams and their tributaries. Traffic roads are numerous.

Geological Characteristics: The great western Plain of Chinni is entirely composed of alluvium deposited by the delta of the Yellow River and the Pea-ho. A small tract of
yellow earth is found toward the west. The mountainous
region contains chiefly limestone, and is traversed in many
places as it slopes on the plain, with crystalline streaks
of porphyry and granite. Then further on, are found granite,
schist, and gneiss, partially buried beneath volcanic
crations and loess. Generally speaking, especially in
the volcanic region of the north, the limestone predominates
and is covered over with rich coal measures. The denuded
layers are conspicuous in the mountains which lie to the
west of Peking.

Mineral wealth: The mineral wealth of Shantung
consists chiefly of coal found to the west of Peking, and
at Kaiping near the route of the Imperial Railways of
North China. Gold, petroleum, and kaolin are also found,
as well as a great quantity of building stones.

Vegetation: Corn, millet, sesame, beans, and
peas form the staple agricultural products of Shantung,
while fruit grows abundantly in the southwest, particularly
grapes.

VI. Shantung: Shantung is the most easterly
province of China, its mainland jutting out well beyond
the longitude 122° east. The province forms a geological
island consisting chiefly of a granitic mass, quite cut
off from the great ranges of the rest of the Yellow River
basin by plains of Chihli and Honan. On its north lies the Gulf of Chihli, on its south the Yellow Sea, Honan and Kiangsu provinces. Chihli and Honan form the landward boundaries. The estimates of the area and population of the province differ enormously; thus little gives the area as 57,000 square miles and the population at 26,000,000; and Richard gives the area at 55,064, and the population at 36,247,000.

General features: The province is of highly diversified geographical configuration; mountains, valleys, lakes, rivers, and plains are found within it, and its maritime border constitutes half its boundary. Physically it may be regarded as consisting of two parts, the mountainous seminular portion and the western plain which is merely an extension of the plains of Chihli and Honan.

One of the important physical characteristics of Shantung is the coast, which is profoundly indented, and affords excellent harbors, as Chefoo, Weihaiwei, and Kiaochow. A considerable portion of the coast is rockbound.

The mountains of the province largely group themselves round three centers. The first of these is in the heart of the province where the sacred Tai-Shan forms the nucleus of several ranges that thrust themselves out in all directions. Again to the east of Kiaochow a number of chains lie in close proximity to each other, and are dominated by Lao Shan, a mountain some 3,700 feet in height. A prominent chain lies
southeast of Chefoo and attains a maximum height of about 8,000 feet.

The principal feature in the hydrography of the province is the Shang-foo, flowing from southwest to northeast through the plain, its bed being ten to twenty feet above the level of the surrounding plains, and its waters being enclosed between high embankments built by the patient and toiling people.

The climate of the province is healthful. The rainy months are July and August.

Geological Characteristics: The mountain peninsula of Shantung is a land which was deeply eroded in Pre-Silurian time, and sunk beneath the Cambrian sea; which was buried under pre-Silurian sediments to a depth of probably 5000 feet; which was raised without deformation, slightly eroded, and further buried under Late Carboniferous and Mesozoic sediments and local masses of extensive igneous rocks. These after the close of the Paleozoic suffered slight folding by compression, which later were broken by normal faults into relatively small blocks with great dislocation, and have since been deeply eroded. During the latest geologic epochs extensive superficial deposits have accumulated in valleys and on plains. Considered as a whole, Shantung is, therefore, an irregular mosaic, wide areas of the oldest rocks are inlaid with fragments of Paleozoic and Mesozoic strata, and much of the surface is covered by the dust of
in the center of the province, a large portion of
the bed-rock is composed of gneiss underlying limestone
and clay. In the east, gneiss is also found, but interspersed to a greater extent with granite, sandstone, and
limestone, while in the north especially it is veined with
basalt and porphyry.

Mineral Wealth: The mineral wealth of Shantung
is enormous, particularly iron and coal. Arseniferous
lead, copper, gold, diamonds, gypsum, slate, and clay are
found, as well as building stone in great quantity.

Vegetation: The principal agricultural products of
the province are poppies, hemp, barley, wheat, millet,
maize, ground-nuts, sesame, cotton and fruits (pears,
apricots, peaches, apricots, plums, and grapes)

VII. Szechwan: Situated in the extreme west
of China, the province of Szechwan is bounded on the north
by Kansu and Shaansi, on the east by Hunan and Hunan, on the
south by Yunnan and Kweichow, and on the west by Tibet.
The area of the province is 216,333 square miles, by far
the largest of the eighteen provinces, and the population
is 68,724,800.

General Features: The Province of Szechwan is not
a geographical unit. Portions of Yunnan and Kweichow are
really parts of the same natural region, that may be called
the geographical Szechwan is hemmed in on all sides.
completely isolated, for even the Yangtze is a very
difficult means of ingress, and the mountains offer but
few passages into Tibet, Kansu and the valley of the Banpo.
The province takes its name (Szechuan, Four Streams),
suggests little, from the fact that the four great valleys
in which its richest agricultural wealth is to be found and
which were the part of the province first settled by
Chinese, are watered by four roughly parallel streams rising
in the mountains to the north end descending into the
Yangtze Kiang. These four streams are the Eun, the Chung,
the Foo and Nailing, all running into the Yangtze.

These four rivers are almost the principal geographical
features of the province, and indeed are only second in
importance to the mountain ranges that give rise to them.
Taking the latter first, we may fairly divide them into three
parts. First is a series of high plateaux in the west,
rising step by step to the Tibetan tablelands, from 10,000
to 15,000 feet in height, and deeply scored by torrential
streams running into the Yangtze, and by the Yangtze itself.

Next is the mountain region of the north separating Szechuan
from Kansu, Kensi and Kuen. The third mountain area
lies in the northeast of the province and consists of a
number of chains lying in general in a direction W. to SW.,
and seldom rising above 6000 feet in height.

Of the rivers of Szechuan, the greatest is the
Yangtze Kiang. Cutting across the province from north to
south, it is but a huge torrent and continues such, incapable of navigation, to its junction with the Min. Thence throughout the province it is semi-navigable. Other rivers are those mentioned above in the north, and the Heng Jiang, Cuying ho, Fu Kiang, and others in the south.

An important region in Shensi is known as the Red Basin. Little describes the basin as follows: The climate of the Red Basin is warm and damp; there is practically no winter, frost and snow being unknown except on the hills-tops, their places being taken by drizzling rains; thus the country is always green and never without crops; ---- the rains in summer are heavy and continuous, causing summer floods in the rivers, and a rise of the Yangtze; ---- not seldom these rains produce serious landslips, blocking the streams and washing down the soil from its rocky background. The most interesting feature in the agricultural development of the province, and one most worthy of special study, is the exploitation of the old lake basin in which stands to-day the capital, Ch'ang-t'uo, at a height of 1,700 feet above sea-level, and the only piece of level land in the province. Though apparently level to the eye, this old lake bed has a natural slope towards the north.

Geological Characteristics: The eastern part of Shensi Province, formerly the bed of a dried up lake, is
an immense basin of red and green sandstone. Between the 
Hin-kiang and the Tsu-pa-shan, the thickness of sandstone is 
very great, while beneath it lies a thin coal seam. It is 
encircled on all sides by ancient crystalline rocks 
(granite, gneiss, schist) which once formed the borders of 
the lake. The waters eroded the rocks of the east, and 
thus found an issue on this side. The flow seems to have 
at first been great, but diminished gradually, as the outlet 
deepened, till it became eventually the actual bed of the 
Yangtze-chiang.

Mineral Wealth: The mineral wealth of Szechwan 
Province includes salt, iron, coal, gold, silver, copper, 
antimony, quicksilver, potash, lead, zinc, nia, 
petroleum, and natural gas. Klockhoven estimates the 
coal-bearing area as being probably greater than the total 
area of any other province in China, but if quality be taken 
into consideration Szechwan is at a considerable disadvantage 
compared with Shansi and Shensi.

Vegetation: Agriculture is the chief occupation of 
the province. The leading products are rice, tea, tobacco, 
cotton, wheat, beans, maize, groundnuts, sugar, hemp, and 
fruits.

VIII. Hagen: Hagen Province consists mainly of 
two valleys, that of the lower Han in the north and that of
the Yangtze in the south, the two valleys being separated
by the T'ao Shan, the range of mountains that also divides
Kiangsu and Kiangsi. The provinces surrounding Kiang
are Shanhai and Honan on the north; Anhwei on the east;
Kiangsi and Hunan on the south; and Kueichow and Kansu
on the west.

The province has an area of 71,433 square miles
and a population of 80,000,000, or about 430 to the square
mile.

General Features: The general character of the
province is hilly, and this is especially true of the distri-
cts bordering on Honan, Kiangsi, and Hunan. On the Honan
frontier some of the mountains are fully 8,000 feet high.
There are numerous lakes and swamps, and ever, year during
winter a vast tract of country is inundated. To the
north of the province there are two spurs of the Huanhsien,
and in between these two the Han Kiang is located. The
more northerly spur consists of the Tunli Shan, the
Hwaiyung Shan, and the Hwaiyang Shan, averaging 3,000
feet. On the south of the Han lies the T'ao Shan rising
to 11,200 feet, while the Wutang Shan, about 8,000 feet lower,
also exercises a strong influence on the course of the river.
The snowshoe winter extends over into the southwest of the
province but does not reach any great height, not more than
3,000 feet.
except for these three mountain systems the
province is a great plain frequently interrupted by lakes
and marshes, and abundantly supplied with waterways. Of
these the chief is the Yangtze River, entering the province
through the tsusan gorge, and taking a southeasterly direction
until the Tungting lake demands into the great river
through a short channel controlled by the town of Yenchow.
Another river of economical importance is the Tam Kiang.

Geological Characteristics: The half of the province
of Ch'ien is made up of an alluvial plain. The lowlands
were once the bed of an immense inland lake, and are even
at the present still covered with impoons and swamps. The
other half of the province is mountainous. To the north
and west as well as the banks of Tam Kiang, sandstone and
limestone predominate, interspersed in places by schist,
granite, marl, and conglomerate.

Mineral Wealth: From all accounts, there is no
doubt that Ch'ien is excessively rich in minerals, which
well developed, must prove a source of wealth to the province.

In the Tuyen district, for many years have been
mined coal and iron ore of superior quality. Another
important mine is at Bing-Shiang, a coal district on the
borders of the Hunan-Hsiangsi provinces. Lead, zinc, manganese,
antimony, copper, salt, lime, and other
minerals of economic value are also found in large quantities
and of superior quality. Gold washing is carried on, in a
small scale, in the Hun-ning.

The province is best noted for its great industries of iron and steel, using the most modern appliances.

The industrial undertakings comprise the iron and steel works atanyang, the mines for the supply of iron ore and coal, the arsenal atanyang, the cotton mill at juchang, and the modern laboratory and college, also at juchang.

Vegetation: The productions of Hunan are less varied and not so abundant as those of Szechuan to the west, or Hunan to the north, the mountains, ages ago denuded of their forests, being mostly barren, and the plain doing little more than supply the necessities of the people for food and clothing, in the shape of barley and cotton. The chief natural products are rice, tea, hemp, tobacco, cotton, vegetable tallow, groundnuts, wood oil, and sugar. There is very little timber in the province that is accessible, the hills within reach of the waterways being quite bare.

IX. Hunan: The province of Hunan has an area of 63,333 square miles and a population of 28,100,000 people, giving an average of 280 to the square mile. It is bounded on the north by Hupen, on the east by Kiing-mei, on the south by Kwang-mei and Kwantung, and on the west by Szechwan and Kweichow.

General Features: Hunan lies in the northern slope of the great Central Asian plateau that stretches across China
from west to east, forming the watershed of the Yangtze basin and of the rivers that pour into China Sea. The northern and western parts are mountainous, the central districts consisting of broad, undulating plains; while the presence of the variable Yangtze lake in the north suggests the flat, low-lying country between itself and the Yangtze. This part of the province, as well as the portion immediately to the south and west of the lake, is mostly alluvial land.

From the rolling ranges, four rivers flow into the Yangtze. The Hoang Hsien traverses the province from south to north, taking its rise in the north of Szechwan. The Tzu Hsiang flows through the middle of the province. The Hsao Hsiang, rising in northern, drains the eastern part of the province, and receives soon after its entry into Hsunan a large tributary, the T'aing-foo ho.

The Yangtze lake is an essential portion of the hydrography of Hsunan province. In winter it is but a collection of mudflats, with the streams meandering through it. In the summer the level of the lake rises with the level of the rivers that feed it and its surface area is estimated at from 4,000 to 5,000 square miles. The lake acts as a reservoir in which are stored the surplus waters of the Hsunan rivers.

Geological Characteristics: Red sandstones predominate in the mountainous region, intersected here and there with limestone, conglomerate, and granite, and overlying almost everywhere thick coal measure. The portion bordering on the
Tungting Lake, belonging like the great plain of Apan, to the alluvial formation deposited by the vast inland sea which once covered the whole of this region. The bottom of the Tungting Lake is formed of micaceous sand. A similar formation gives rise in the Chiang-Hang to quicksands, which are very dangerous for boats.

Mineral Wealth: Hunan is abundantly supplied with minerals. Coal is the principal mineral, anthracite in the south and bituminous coal in the north. In speaking of the southern part, Mr. Parsons, an American mining engineer, says: "For a length of 600 miles and for a width of at least 50 miles our route is unbroken with certainly 3 and probably more veins of coal which sufficiently enough is both bituminous and anthracite. Of the former there are two sorts, both cooking and non-cooking, fit for steel making or for steam uses; while of the latter there are those adapted for domestic use, with enough volatile matter to ignite easily, and other sufficiently hard to bear the burden in a blast furnace, and yet so low in dangerous, sulphur, and volatile substance as to render them available for the manufacture of Bessemer pig as is done in Pennsylvania."

Iron ores of excellent quality are scattered freely over the province. Rich deposits of gold, silver, granite, slit, cotton, antimony, arsenic, manganese, copper, lead, zinc, tin, and cinnabar, borax, and sulphur are also found, but the mines await modern and scientific developments.
Vegetation: The chief agricultural wealth of the province is tea. Other products of importance are hemp, tobacco, cotton, wood-oil, ginger, vegetable oil, toococa, ground-nuts, cotton and timber.

X. Hsingai: Hsingai Province is bounded on the north by Yunnan and Szechwan, on the west by Szechwan and Chekiang, on the south by Yentung, and on the west by Hunan. It has an area of 80,498 square miles and a population of 26,382,000 inhabitants, giving an average of 332 to the square mile.

General Features: Except in the north Hsingai is entirely mountaneous and alike resembles Yunnan in many particulars, having for example an important lake, bordered by low lying lands in the north, a combination of mountains constituting the borders, and a central north-south valley eroded by the main stream of the province, which has been aptly described by little as "an amphitheatre of mountains, one fifth larger in area than England and Wales, draining into a central lake, not all but filled up by their detritus. The province is covered with mountain chains running generally in a southwest to northeast direction, the main valley, that of the Ken Hsing, running more nearly south to north, and the tributaries running more nearly west to east.

The river system depends upon the Ken Hsing, which has considerable interest, being, in all probability, below
Hunchow almost certainly, in a consequent stream into which a number of consequent now flow, while the true source is probably to be found, not as is generally accepted in the short length from Hunchow to the Russian border, but in the less important Bo-hiang, which rises in the Hengta Shan and is probably a consequent stream. In the usual version so accepted, however, the Hsi-hiang is described as having its source in the southeast of the province and flowing west under the name of Hsing Hsii to Hunchow, there to receive the Sun Hsii, from this point it flows north and slightly east to the Peiyang Lake. The other main river of the province is the Bo-hiang.

The Peiyang Lake serves such the same useful purposes in Hsiang as does the Tongting Lake in Hunan. It acts as a regulating reservoir in periods of flood and as a means of communication. It is shrinking in area, the town of Hunchang formerly standing on its shore but now being some 30 miles away.

Geological Characteristics: Red sandstone seems to predominate in the west and, as in Hunan, overlie rich coal measures. In the east, although red sandstone is abundant, still at one advance in the same direction, it is replaced by granite and porphyry. The sandstone, wonderfully broken up, offers in this province the same picturesque features as in Hunan Province. It exhibits great variety and charm to the country, otherwise so rich in liquid streams, and also in trees and shrubs.
Mineral wealth: Considerable amount of coal is found in this province especially in the northwestern and eastern parts, while kaolin abounds, as well as lead and slate.

Vegetation: The agricultural wealth of Kiangsi consists chiefly in rice, cotton, tobacco, fruit and hemp. The province has also good crops of corn, barley, millet, sorghum and indigo.

XI. Anhwei: Anhwei Province is situated between Honan and Kiangsu on the north, east and west, and is bounded on the south by Kiangsi and Chekiang. The province has a population of 33,972,000 people, and an area of 64,630 square miles, thus giving 482 persons to the square mile.

General features: Anhwei is the meeting place as regards climate, physical circumstance, flora, fauna, and races inhabitants of North China, South China, and maritime China. The Great Northern Plain covers the northern portion of the province, the soil there being a mixture of alluvium and loess. In the south the mountains of Fukien and Chekiang are continued. The middle of the province, within the immediate influence of the Yangtze, partakes of the maritime character of Kiangsu. The true partition of the province, however, is not into these three divisions but into two river-basins, that of the Wei Ho in the north and that of
the Yangtze in the middle and south.

The rivers of the province are important as means of communication and of irrigation. In the north the main drains a very large area, taking its rise in Honan, and flows into the Yangtze Lake. The Yangtze is both wide and deep throughout the province, the lowest of the great lake-basins of which the Yangtze Valley anciently consisted, are found the sources of the various channels through which the great river reached the sea. The present route is one of the three formerly existing. The other two had their origin at Lu-hsü, whence the main stream ran eastward to the lakes of south Shensi, passing into the Pi Hsü. From Pi Hsü the stream bifurcates, one stream going southward into Yangchow Bay, and the other occupying the bed of east in now generally known as the Soochow River. The Yangtze Hsü affords great facilities for navigation and is directly connected with the Grand Canal.

Geological Characteristics: As stated above, the northern part of the province is covered by the Great Northern Plain, and the soil is a mixture of alluvium and loess, and the surface is diversified by the prolongation of the last years of the Nu-lun Range. These mountains terminate not far from the Yangtze Lake, and are composed of sandstone marble and granite. In the south is a prolongation of the mountains of Fukien and Chekiang. Their
formation is chiefly of granite, limestone, and schist, while alluvial lands are found at the bottom of the valleys and along the Yangtze River.

Mineral Wealth: Coal and iron ore exist in considerable quantities, but the mines need development. Other minerals found are gold, silver, copper, and lead. Brickworks on modern lines are well established in this province at Nanch.".

Vegetation: The great staple of the province is tea; and in the vicinity of Huchang in the richest rice-producing region in China. The province gives also excellent crops of cotton, hemp, flax, poppy, and tobacco.

III. Kiangsu: Kiangsu, the smallest of the eighteen provinces, has on its 38,610 square miles a population of 23,969,350 people. It is bounded on the north by Shantung, on the east by the Yellow Sea, on the south by Chekiang, and on the west by Honan and Anhwei.

General Features: Kiangsu occupies the delta of the Yangtze, the delta area being cut off on the south by the Highlands of Chekiang and on the north by the Highlands of Shantung. The province falls naturally into three distinct parts, each with its own characteristics. The northern part from the borders of Shantung to the old basin of the Huangho is densely populated. The central part extends from the former bed of the Huangho to the present course of the

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Yangtze. This region is swampy and marshy. The southern part consists of that portion of the province south of the Yangtze. The absolute flatness of the delta is broken in this district by lines of hills in the west and along the Chekiang border. This region is watered by an inextricable maze of rivers, canals, creeks, and waterways of every kind.

The dominant feature of the hydrography of the province is the Yangtze River which here ends its 3000 mile journey, a journey which it seeks to prolong by depositing islands at its mouth and then linking them up with each other. The other principal river is the Changpu River, the tributary of the Yangtze on which stands Shanghai. The Grand Canal, an artificial waterway, though sadly in need of repair at many points is a very valuable asset as a means of communication.

The lakes of Kiangsu are numerous and important. The chief ones are the Tai Hu or Great Lake, Hangtze Hu, and the Yangtze Hu.

Geological Characteristics: Kiangsu is largely a low, wide, alluvial plain, formed by the silt of China's two great rivers; the Huang-ho in the north and the Yangtze in the south. Loess covers a great part of the country, both to the north of the Yangtze and also to the south down Chekiang and Kianhing. In the hills extending along the south of the Yangtze, the predominate formations are sandstone or quartzite, then limestone and conglomerates. Around Hanghing volcanic rocks betoken that the region was formerly the scene of violent
Mineral Wealth: Very little has been done along the mining line in this province. In the north coal and iron are found, in the south marble and lead, and in the central part salt.

Vegetation: Kiangsu is an exceedingly productive province but the various parts are not equal in this respect. The northern region is not so promising in agricultural wealth as the Yangtze basin generally, and produces the bamboo but sparsely. Some fruits of fine quality are grown. The central portion of the province is not much improved on the northern but it grows cotton of good quality. The southern region is abundantly favored and produces crops of many kinds.

The staple productions are grain, cotton, tea, silk and rice.

Cities: In this province is situated the city of Shanghai, the great commercial metropolis of China, and ranking the former national capital of the country.

All: Yunnan: Yunnan, bordered in by Tibet, Burma and Tongking, has an area of 146,716 square miles and is thus the second largest province of China; but it is only sparsely populated having an officially estimated population of 12,721,500 inhabitants, or 85 to the square mile.

General Features: The main features of Yunnan may be read without any difficulty from a good map. It is an
exceedingly mountainous country, containing small patches of flat ground that are almost lost except in anything like a detailed map of the province. Though the character is in general mountainous in the line of the main ranges, it varies in different parts of the province. The west consists of a vast plateau, buttressed up the still higher and vaster plateau of Tibet, and deeply furrowed by parallel streams running north and south. These streams are the Taining, the Salwen, the Sekong, the Black River and the Red River. The tableland from the heart of which these rivers have eroded their beds has a slope from north to south. In the northwest the plateau touches 15,000 to 16,000 feet, the bottoms of the valleys being 7,000 feet above sea level and from this region slope gradually to the south of the province where its edge is 3,300 feet above sealevel and the valley bottoms are correspondingly lower.

The eastern half of the province has not been so cut up by rivers and hence retains much more of its original plateau character, with more extensive plains here and there. The plateau stretches quite to the border of the province, and in the southeastern corner the country is broken up into numerous small basins from which the water has no outlet. Most of the streams of eastern Yunnan flow either into the Yangtze or into the head streams of the Si-Hiang. In western Yunnan the tributary streams follow the same direction as the main arteries.
As to the climate the following quotation from Little puts the matter in a nutshell: "The province of Yunnan enjoys almost perpetual sunshine, and the strong winds together with its high elevations give Yunnan a cool and healthy climate for Europe; notwithstanding its situation between the 22nd and 26th degrees of north latitude."

Geological Characteristics: Strata of Mesozoic age still cover a large portion of the Province, leaving exposed vast tracts of primary formation, while here and there igneous rocks, such as granite, greenstone and porphyry, are present. Traces are found of volcanic eruptions, which must have been formerly considerable. Limestone wonderfully folded and broken up, predominates. Torrential rains have wholly or partly filled up the numerous lake-basins of this region. They are the only traces of recent alluvial formation.

Mineral Wealth: Yunnan is very generously endowed with a variety of mineral deposits, and if its communications were properly developed, the province could easily become one of the leading metal producing regions in the world. Of the metals mined the most important is copper. Almost wherever one travels one hears or sees something of silver mining. Iron is commonly found, as well as lead, zinc, gold, gypsum, alum, galena, coal, precious stones, anthracite, bisinite, tin, corundum, platinum, nickel, arsenic, quicksilver, salt,
petroleum, and marble. The most important precious stones are ruby, sapphire, garnet, topaz, cysthyst, and jade.

Vegetation: A greater part of lower Yunnan is bare, but a great deal of it is covered with forests of excellent fir, cedar and other fine timber trees. There are also fruit trees bearing good fruits. There is little rice grown, and little maize, the chief crop being wheat and barley.

As for the rest of the province, the chief differences in productions arise from the varying elevation of the land. Grazing land is abundant.

XIV. Kweichow: Kweichow with an area of 87,162 square miles is bounded on the north by Szechwan, on the east by Hunan, on the south by Kiangsi, and on the west by Yunnan. It has a population of 7,650,000, giving 114 persons to the square mile.

General Features: The northern half of the province belongs properly to the Yangtse basin and the southern half to the Hsingang basin, the line of division being the watershed formed by the central mountain range, which crosses the province from southwest to northeast. The province is a great plateau cut up by river beds, but not so deeply scoring the land as in Yunnan. Several parallel ranges cross the province from southwest to northeast, or rather several wide valleys have been carved out from the former level of the plateau, and have left behind what now appear to be mountain ranges. The general
direction of the ranges and valleys alike closely corresponds with that of the whole Chinese system.

The river system is two fold. In the north are various streams flowing into the Yangtze, in the south the drainage is to the West River of Si-liang. The chief river of the province is the Su-kiang which rises on the western boundary and flows through the deep and numerous gorges that it has cut out.

The climate is one of moisture and fog especially in the southern valleys where the winter months are very wet, and the summer temperature seldom rises much above 80° F.

Geological Characteristics: The province is cut another step leading down from the Tibetan plateau, whose structure and resources it shares, being of primary formation overlaid with layers of secondary rock more or less folded and permitting here and there a view of the primary strata. The predominant rock is limestone and the scenery is that universally recognized as proper to limestone formations. In the valley bottoms are to be found patches of alluvium laid down in quite recent times by the erosive mountain torrents. Limestone and red sandstone are also frequently encountered.

Mineral wealth: Minerals abound throughout the province. Among the important ones are quicksilver, coal, and silver. Others are iron, antimony, copper, clay, gypsum, rice, asbestos, lead, zinc, granite and petroleum.

Vegetation: In the fertile valleys of Hwang-ho there are excellent crops of rice, maize, tobacco, timber, beans,
barley, tea, cotton, indigo, wheat, nuts and fruits. Among the last are apricots, plums, cherries, oranges, and strawberries.

IV. Kwangsi: Kwangsi covers an area of 77,820 square miles, and has a population of 5,143,000. It occupies a considerable portion of the lower basin of the Ho-tung, and is shut in by the southern mountains of Hunan and the Kwelowow plateau on the north, by the Yunnan plateau and Yongking highland on the west and south, and the circuit of adjacent provinces is completed by Kwangtung with its great plain to the south and east.

General Features: Kwangsi is wholly mountainous, and is the last step downward from the Himalayan and Tibetan heights, the average elevation above sea level being not more than a thousand feet. The province is abundantly watered by three streams that divide it into three main valleys and unite to form the West River at Tuchow. West River of Hikang traverses the Province from northwest to southeast.

Southern Kwangsi is distinctly tropical, with excessive heat from May to September.

Geological Characteristics: Kwangsi is the continuation of the Kwelowow tableland, but its altitude is much lower. It is of limestone and sandstone formation, and has also schist veined with porphyry and gneissite. Toward the center, to the north of Nanning Fu, is a granitic mass. In the west clay-stone abounds.
Mineral Wealth: The chief minerals found are gold, silver, lead, iron, antimony, zinc, copper, nickel, pyroxal, coal, and petroleum. Coal of good quality is widely distributed. Tin is mined in the northwest, while white lead is found in inexhaustible quantities in the northern part.

Vegetation: Eastern Kweilai as a whole is rocky and not specially adapted for cultivation, but on its occasional plateaux, and on the banks of the rivers in the numerous valleys, the annual floods supply excellent fertilizing materials, and give excellent crops of rice, wheat, maize, millet, cotton, sugar-cane, fruit, tea, tobacco, nuts, vegetables and poppy. Timber is one of the most valuable exports from the province.

IVI. Kwangtung: Kwangtung, the most southerly of the provinces of China, is cut off from the provinces on its northern border, Hunan and Kweilai, by a range of mountains known as the Nanfang. East and northeast lies the province of Fukien while to the west lies Kweilai. South and southeast lies the ocean. Kwangtung, which was the first region of China to come into regular contact with foreigners, has an area of 100,000 square miles, and a population of 31,000,000 inhabitants, or 319 to the square mile.

General Features: Except for the actual delta of the
Si Hiang, Kwangtung is mountainous, its hills and valleys being a continuation of that last step in the descent from the Tibetan highland. The general trend of mountain chains and valleys is from southwest to northeast, and in every way the structure of this province is in harmony with that of the neighboring provinces.

The hydrography of the province centers on the complicated network of streams forming the Canton Delta. Here the great Kwangtung waterways, the Si Hiang (West River), the Wei Hiang (North River) and the Tung Hiang (East River) debouch into the ocean, mingling their waters first with those of the Nan Hiang (Pearl River) which is really nothing more than the arm of the West River that flows past Canton. In addition to this main river system are the independent but comparatively small valleys of the San Hiang, finding the sea at Swatow; the Canton Ho, at the north of which stands Kwangchow; and the Yiling Ho, the source of which are Fokhao and Liachowfu.

Of the many islands along the coast the most important passing from east to west are, Canton, a home of fishermen; Hongkong, a British lease; Lantao, another British lease; the Ladores Islands; the Caven Islands; and largest of all Tai Nien.

Geological Characteristics: The formation of the region between Canton and Hongkow is quite persistent and
regular. The first and lowest formation is granite on which rests the second formation composed of grits and slates; these are covered by old limestone, highly tilted; on these rests another series of limestone strata, often disturbed from their original horizontal position and of the same age as the coal beds; these again being covered by the new red sandstones. Mr. Kingsley, writing on the geology of Kwangtung, in a paper contributed to the "Journal of the North China Branch of the Royal Asiatic Society" describes it as, "a connected sequence of formations ranging upward from the early pre-Cambrian rocks of Hongkong and the adjacent continent and islands, to the Tertiary sandstone of Canton and the delta of the Pearl River, and such as occurs at intervals from Hongkong up to near Bangkok, intermixed with some traces of later formations."

Pampelly states in his Geological researches in China the following account on the geology from Canton to the sea: A gray-sand, containing much quartz, forms the hills near Canton. Underneath this rock is red sandstone, "varying from bright red, fine-grained rock to a coarse conglomerate, full of large pebbles of quartz". These strata dip to the west. Granite occurs below the sandstone and crops out more and more, as the river approaches the sea. Near the coast the granite forms peaks 1,200 to 2,100 feet high, which continue as barren islets toward the island of Hainan.

Mineral Wealth: The mineral wealth of Kwangtung have
never been thoroughly examined. In several localities coal has been worked considerably, while iron-ore is worked in many places. The province also possesses good deposits of copper, silver, lead, tin, nickel, clay, slate, antimony and salt. Gold, silver, copper and iron are found in Kwantung island.

Vegetation: The agricultural wealth of Kwantung is of no small consideration. The warm climate and abundant moisture, with a fertile soil in all the lower areas, favor agricultural enterprise. The most important products of the plains are rice, silk, sugar, indigo, tea, wheat, tobacco, various oils, and many luscious fruits. On the highlands of the northern parts of the province tea is grown, as well as along the south coast of the Keelung.

The fruits of this province such as oranges, melons, litchis, peaches, mangos, pecans and pears, are of excellent quality.

Cities: This province enjoys the following great commercial and open ports, Tsimawa, Canton, Macao, and Hong Kong.

AVII. Fukien: Fukien lies between the 24th and 30th degrees of northern latitude and has its landward frontiers from south to north, Nanping, Minchau, and Chekiang, and the sea forms its eastern boundary. The area of the province is 45,332 square miles, and the population is 52,479,000, standing high from the point of view of dense population.
General Features: Fukien is wholly mountainous, being crossed by several ranges of hills which come right to the sea and form bold headlands on the coast that is rugged and precipitous throughout its length. Between the hills are alluvial terraces. The mountain ranges run roughly parallel with the coast and thus prevent any great development of the river system of the province. The westernmost range of hills forms a natural boundary between Fukien and Kiangsi, and it also gives rise to the series of streams which ultimately unite to form the Tin Kiang. The general slope of the province is toward the southwest. The parallel ranges of mountains rising one behind the other catch the moisture laden winds from the sea and thus the province is abundantly watered, a provision of nature for replenishment of the sandy soil generally prevailing, but the rapid destruction of forest trees is gradually depriving the province of the invaluable recuperating effects of ample rainfall.

The river system of the province centers on the Tin Kiang which drains the greater part of Fukien, though several tributaries of the Men Kiang water the southwest, while the Hing Kiang drains a valley that reaches the sea at Amoy.

Geological Characteristics: The mountains which run through Fukien, as well as through part of Kiangsi, are crownly of later ancient formation than those of the rest of China, and bear close resemblance to the geological
formations of Japan. They are the outcome of a slight,
universal, with a crystalline core with granite and porphyry.
Sandstone, as well as schist and limestone, are also found
there, but these do not form the principal formation.
Volcanic strata are not with in some places, especially in
the islands. The soil of the province is sandy, except
in the alluvial estuaries.

Mineral wealth: Fukien province possesses rich
deposits of gold, silver, lead, tin, iron, granite, salt
and coal, but yet they are unworked by modern methods.
Rock-crystals and rubies are also found.

Vegetation: The great industry of the province is
agriculture, and that has taken chiefly the form of tea-
planting. Then come the crops of rice, chest, ginger,
sugar-cane, flax, fruits, hemp and tobacco.

XVIII Chekiang: Chekiang is the smallest of the
"eighteen Provinces", having an area of 36,000 square miles.
It lies east of Kiaogai and Anwei, north of Fukien, south
of Kiangsu. On the coast it is bounded by the sea. The
population of the province is 11,500,000;

General features: The Province has been described by
Little as a miniature Szechwan, the similarity with the great
province is the west being most marked in climate and in the
fertility of the soil. Again, except for valley bottoms and
the plain north of Nangpoo, the province is covered with
mountains, though less steep here than in Kweichow and
either cultivated or covered with bamboo. The province has
physical characteristics in common with each of the provinces
adjacent to it, and is naturally divided into two dissimilar
sections, the south and the north. The south is mountainous,
with a deeply indented coast line, a continuation of the
Talien structure; the north partakes of the same first character
as Hangchow with its net-work of rivers and canals, its embank-
ments and its agricultural wealth.

The axial range of the Great Central range runs through
the province from northwest to southwest and is flanked by
lesser ranges running in the same direction. Between this
range are alluvial bottom-lands of great fertility. The
chief valleys are those of the Taientang Hsia on the north
of the axial chain and the T'ei Hsi on the south. The
chief river is the Taientang, which, rising in the western
hills of the province, follows a generally northerly direc-
tion and falls into the Bay of Hangchow. The basin of
the Taientang Hsia occupies nearly half the province.

The Taientang mouth of Hangchow bay is very shallow,
and a string of islands lies at the point of its junction
with the sea. The strong bore or tidal wave that sweeps
up the bay prevents very rapid deposition of silt. Other
noted rivers are the Hsiang Hsiang and the Wu Hsia.

The coast of the province partakes of the twofold
character of the general physical structure. In the north for the first, it becomes in the south mild, rocky and deeply indented.

Geological Characteristics: In the western part of the province to the north, sandstone, sandstone and limestone are the predominant rocks. In the east, the Great Plain is of alluvial formation. To the south in the west granite and porphyry are the principal rocks, with limestone and sandstone here and there, while traces of volcanic creation are found in the Queen Islands.

Pertinently describes the geology from Chekiang to Yuenen thus: About ten to fifteen miles west of Hephzibah, Chekiang, are limestone mantles and a few miles further west beautiful green granites. Near Hangchow, Anhwei, the hills consist of red sandstone resting on slate. Near Huchan, Chekiang, there is red, calcareous sandstone.—The rocks of the Cusan, on the east side of Jinhua mountains in Yuenen consist of clay slate, in which occur, embedded in the form of veils, or fibers, quartz rock, while granite of deep brown coloring to which in of fine deep brown block, cuts through these in all directions. Resting on this clay slate are sandstone conglomerates formed principally of angular masses of quartz, held together by a calcareous basis, and alternating with these conglomerates there is a fine, calcareous, granular sandstone in which beds of dolomitie limestone occur. Granite forms
the summits of most of the principal mountains in this part of the country.

Mineral wealth: The mineral wealth of Chekiang is negligible. In the north there are no mineral deposits. Although there are a few minerals such as copper, lead, zinc, silver, coal, found sporadically, they are not in commercial quantities. Good building stone, slate and lime are however to be obtained from the hills, and coal and iron are mined in several localities. Salt is extracted from sea-water.

Vegetation: The chief natural products of the province are rice, tea, cotton, silk, fruit, drugs and tobacco. Rice is grown particularly throughout the province except in the higher levels. Cotton from Chekiang is considered among the best in China. Other products are wheat, maize, hemp and indigo.

Chinese Dependencies.

Tibet: Tibet is an extensive region, the most elevated region in the world, stretching through 12 degrees of latitude (from 28 deg. to 40 deg. north) and 24 degrees of longitude (79 deg. to 104 deg. east). The great plateau is surrounded by the great mountain ranges, the Hwen-Tung, the Altyn Tagh, the Ten Shan on the north, and the Himalayas on the south. The area is officially put at
401. 483,320 square miles, and the population is 6,380,000.

General Features: Tibet forms a vast mountain mass, the largest and the highest in the world. In the north and northwest are immense tracts of ice, and rivers owing no outlets. Its east and west are traversed by deep and well-irrigated valleys. The elevation of the great mass ranges from 13,000 to 16,500 feet in height. All the great rivers of India, Indo-China, and China rise in this country.

Geological Characteristics: Very little is known about the geology of Tibet. Strata of the volcanic period seem to predominate in the north. In the south there are sedimentary rocks of more recent formation. Strata of recent age are highly developed. The uplands are largely composed of granite and diorite, while the valleys are granite. Towards the center, volcanic action must have been rather powerful. If one ascent thereof, hot springs are still found at an elevation of 17,300 feet. Many of the numerous tanks-sets of the country are very likely their origin to an upwelling of hot extinct volcanoes.

Mineral Wealth: Tibet is rich in gold. For ages gold has been washed out of the surface soil by the centuries. There can be no doubt that Tibet is a great natural treasury of gold, but its mineral wealth also includes silver, copper, lead, iron, mercury, rock-cryolite, borax and salt. There are vast possibilities in the forests of timber still untouched in the eastern and southeastern Tibet.
Sinkiang or Chinese Turkestan: Sinkiang is an area of 830,370 square miles and a population of 1,200,000 or 2 persons per square mile. In large portions of Sinkiang are uninhabitable; such population as there is is confined to the more fertile valleys and plains.

General Features: Chinese Turkestan is an immense desert, surrounded by high mountains, and except for a few oases, swamp and barren throughout. The melting snow gives rise to a few rivers. The southern part is closed in again, communicating with the outside only through a few passes, and is known as the Eastern Turkestan. Its northeastern part is a series of mountains, valleys, and plateaux, and is known as Sangeria. The Eastern Tien Shan Range separates these two regions from one another.

Geological Characteristics: Sinkiang is a series of gravelly and sandy basins, surrounded by high mountains of igneous and primordial formation, where granite, sandstone, and crystalline rocks predominate. It may be possible that the sea filled these basins during the secondary and tertiary periods, but there is however, no proof of this. That seems certain is that vast inland lakes formerly covered part, if not all, of these basins. Some of these lakes remain, even to the present day, especially in Sangeria.

Mineral wealth: Of mineral wealth Sinkiang are considerable variety, but not adequately worked. Gold, lead, coal, copper, saltpeter, rock salt, alum are found.
Sinkiang is particularly famed for jade. This precious mineral is much sought after even outside China Proper.

Mongolia: Mongolia lies to the north of China. It has an area of 1,467,368 square miles, and a population of 2,683,182; this gives an average of nearly two to the square mile.

General Features: Mongolia is essentially a continuation of the Takla-Makan Desert. In its widest sense, Mongolia comprises the whole northern section of the central Asiatic plateau between the Kun-lun and Altai systems. It is thus a high land, a plateau ranging from 3,000 to 5,000 feet above sea level, cut in by mountain scarps from all the countries adjacent to it. The plateau, however, is not of any homogeneous material, for there strike out from the surrounding mountain ranges of considerable height and taking many directions.

Geological Characteristics: The Mongolian plateau is the extension of the Tien-shan. It is said to be composed of metamorphic and igneous strata; gneiss, granite, crystalline and dirty schist. It was formerly believed that it had formed the bed of a dried-up sea during the Paleozoic and Mesozoic eras, but no traces of rock belonging to those periods have been found on the plateau. On the elevated plains which border the plateau, and on the slope outside Mongolia, lie extensive beds of basaltic and other
volcanics, as well as limestone and Carboniferous rocks. Red and brown conglomerate, sandstone and clay are found everywhere throughout the Gobi, but the fossil remains which they contain, attest that these rocks have been formed at the bottom of fresh-water, and not of salt water lakes or inland seas.

General Wealth: Up to the present time, the mineral wealth is very little explored, however, salt, granite, marble, granite, and coal occur.

Vanscharia: "Vanscharia is the most eastern of Chinese territory. As officially estimated, it had an area of 360,000 square miles, and a population of 1,500,000 or 25 to the square mile.

General Features: Vanscharia may be regarded as consisting of the alluvial valley of the Liao in the south, of wide marsh lands and undulating forest country in the north and center, and of high mountain ranges abutting in the country in its eastern and western frontiers. The valley of the Liao occupies the larger portion of the province of Fengtien, and the rich agricultural plain is continued northward in the valley of the Sungari, to a point of a hundred miles north of Kharin. The marsh lands are drained by the Sungari and its affluents in Kirin and Heilungkiang. The two mountain ranges are the Chang Pei Shan on the east and the Great Maingan Mountains on the west.
Lanchuan is well supplied with rivers, and the beds of these streams are not broken by the rapids and meanders that are so noticeable a feature of all the great rivers of China Proper. The most noticeable river of the country is the Amur which takes its rise in the Mongolian Proterae.

Geological Characteristics: The greater part of Lanchuan is composed of Ancient and Paleozoic rocks (gneiss, granite, and schist), overlain here and there by sandstone, conglomerate, and limestone. These rocks are often interbedded with eruptive lavas. Extinct volcanoes, immense sheets of lava, especially in the northern and eastern regions, indicate the great volcanic activity which prevailed there in former times. The two great plains of the Hiao-nan and of the Tung-hu contain specimens of mineral soil.

Mineral Wealth: Coal is found throughout the Hsing-tien Province, at mines associated with iron. The Tung-tung Peninsula also has considerable resources of coal and iron. Soft coal is found near Hsin. There are also widely distributed excellent granite, building stones, and good deposits of iron. Other minerals found are gold, silver, copper, lead, zinc, asbestos and coal.
CHAPTER II

SOCIAL PROBLEMS.

China today faces almost overwhelming problems, economic, social, political, industrial, and educational. Many of them demand immediate solution, or at least immediate attack. Some of the most pressing of these may be termed physical and ecological.

The poverty of the people and the hard economic conditions of China combined with the ruinous policy during many centuries of using all available timber, without replacing it, have so decreased the margin which the people have between a state of enough and that of utter want, that when floods come, as they do almost annually in certain regions as a result of this ruthless deforestation, vast numbers are subject to actual famine.

The remedy is complex, but should come; a comprehensive system of reforestation, for from a physical point of view the primary fact about China is that she has used up her trees. Reforestation on a small scale has been begun in some parts but much more needs to be done and the need of it must be made clear and appropriate measures approved and financed. Improved methods of agriculture must be introduced. What is needed is more extensive farming.
This does not mean that a Chinese does not know farming, for a Chinese is the world's best expert in intensive farming, and much can be learned from him, but he knows little of extensive farming. Modern schools are being established in different parts of the country and some large agricultural development schemes have been formed.

In North Shihli near Jehol there has recently been a great butchery of that was but a few years ago a noble forest. One finds enough fine straight poles of larch and pine piled up to string a telegram wire a thousand miles. There they lie rotting while crooked willow carries the wire.

In the lowland hills opposite Hong Kong there are frightful evidences of erosion due to deforestation several hundred years ago. The loose soil has been washed away till the country is knobby or blistered with great granite boulders. North of the Gulf of Peihoing, there is not a tree to be seen and the surviving balks between the fields show that such land once cultivated has become waste. Erosion stripped the soil own to the clay and the farmers had to abandon the land. The denuded hill-slopes facing the est river have been torn and pulled till the red earth glows through the vegetation like blood. The coast hills of Fukien have lost most of their soil and show little but rocks. Fuel gatherers constantly climb about them, grubbing up shrubs and pulling up the grass.
No one tries to grow trees unless he can live in their midst and so prevent them from being stolen. The higher ranges farther back have been stripped of their trees but not of their soil, for owing to the greater rainfall they receive, a verdant growth quickly springs up and protects their flanks.

Keep-culled plateaux of the loess, gartered hill-sides, choked water-courses, silted up bridges, bankless wandering rivers, dyked torrents that have built up their beds till they meander at the level of the tree-tops, mountain brooks as thick as pea soup, testify to the changes wrought once the axe has let loose the force of running water to resculpture the landscape.

R. . Burdon (late of the Arboresium, Royal Botanical Gardens, How, and Exploration on Forestry Research in Northern China) in his report states that there and there remnants are to be found of past forests consisting mostly of pine, fir, and larch, and judging from some of the specimens seen, excellent timber for almost any purpose must once have been available. Particularly in the Weichang district in Shíhlí is this apparent. There appears to be in that region neither system of falling trees nor any restrictions as to the amount. Thousands of fine poles were observed rotting in the grass, poles too, of a size suitable for holding telegraph wire. In many
parts of Shansi, Shensi, and Kansu similar desultions exist, but there is no reason why with organized effort, any parts, how barren waste, should not be again afforested."

It is safe to say that drought, flood and famine are of annual occurrence in one or another portion of China, and the famines are apt to be severe owing to the lack of efficient transportation from more favored sections of the country. It must not be assumed, however, that even a thoroughly good system of railways throughout China would prevent famine, though undoubtedly it would check absolute starvation.

Russia, which is well provided with railways, seldom has a year without famine. Grinding poverty is the common lot of the Chinese peasant and Russian meshik, and if there is any choice the Chinese is probably the better off of the two. Similar causes have produced similar effects in both countries, deforestation has already ruined much of China, and is beginning to spoil some sections of European Russia. There is a general tradition among the natives throughout the whole country that the mountains and hillocks were once covered with forests and that rains have decreased in frequency and increased in violence from generation to generation. In China as in some other countries the floods were formerly regular during successive years, whereas at later periods they have grown more irregular and violent.
In mountainous regions torrential rains do not soak into the bare uncovered earth, the rapid run-off tears up the soil, fills the water courses and lakes with gravel and sand. The once deep-bayed indentations of the fine sea-silt province of Chantung are deep no longer, but are now so silted that a good anchorage for deep-draft ships can only be obtained even in the best of the harbors, like ei-hai-wal and hsin-chau by constant dredging. The celebrated geologist von richthofen, in speaking of Chantung, remarks, "that the traveller at every step has occasion to contrast the present poverty and incertitude of the inhabitants, with the signs of a previously better condition. The large cities, even villages, the temples, the remains of magnificent public structures, as well as the history of China, give evidence that the northern provinces have been in a more prosperous state." The cause, aside from political, that led to these conditions richthofen believes is the deterioration of the climate, which is the possible consequence of the extermination of the forests. He further states that besides the injurious effect of the destruction of the forests upon the climate in general, there is an intense amount of unnecessary denudation going on, which would not take place if the hills were wooded. The heavy rains wash off the soil from the rocks, and the water, instead of penetrating into the earth, and being stored up for feeding springs, runs off the hillsides and descends in torrents through gulches which were before perfectly dry. In the valleys, the rivers in overflowing their banks spread
such fine sand or silt over the surface of the fertile alluvial soil, thus often rendering extensive regions unfit for agriculture. Instances of this kind are, according to Riehthofen, numerous in Shensi, on the borders of the Great Plain. If it were not for the loess formation, he declares that northern China would already be a desert with some fertile valley enclosed. Even this beneficial formation, which is the principal basis of agriculture and, more than other kinds of soil, capable of storing up moisture, is undergoing a rapid destruction. (Bibliography c. 1907)

One of the best examples of re-forestation is given by Yen Fo in which in the course of twenty-five years, a considerable area has been given full-grown trees of quick-growing variety and the rainfall has already been markedly affected. It is not likely that the same conditions exist in China so that it will be at least two or three generations before the conditions with reference to re-forestation can be adequately altered. There must, in the meantime, be a survey of the flood-subjected areas of the rivers involved so that the adequate measures of protection may be carried out.

Chief among the rivers needing such control is the Yellow River, "China's Great Sorrows". This is but little inferior to the Yang-tze in length, being 2500 miles, running from southwest to northeast.
unmanageable rivers in the world and of little utility. It is a characteristic river of the loess region, with a broad meandering course which is apt to change. It owes its color and name to the loess sediment. During the whole known historical period, this river has frequently changed its course for the last 300 miles. These changes have swept over a fan-shaped area of 60 degrees in one of the most densely populated and highly cultivated regions in all China, and have, consequently, caused great loss of life both directly by flood, and indirectly by consequent famine through destruction of standing crops as well as of stored food supplies.

Throughout its whole lower course, its water runs through the plain where it is next to be dredged, because the mud and sand carried down by its streams have actually raised the bed of the river until it is several yards above the level of the surrounding country. Consequently there are few important towns on its banks. At its crossing with the Grand Canal, its bed is 10 feet above the level of the Canal.

In 1642, the city of Taifang-fu, 350 miles inland, was submerged 20 feet. In 1854 the river flowed into the Yellow Sea in latitude 34 degrees north, but in that year it diverted near Taifang-fu, into a northern bed it occupied 350 years before, and joining at Ta-ling-ho, discharged into the Gulf of Chihli, several hundred miles further up the coast. In 1887 a terrible inundation occurred by the river bakng in, and towns and villages were swept away.
To hinder its overflowing, embankments have it in, some nearer, others farther, ranging one behind the other at variable distances. In this manner, if one gives way, another prevents inundation. In its present state, the work is still very insufficient, the dykes being oak, and constructed with materials that offer insufficient resistance.

The flow of the Yellow river varies much with the season. It has been reckoned to be a little over 4000 cubic yards per second, in its midst portion, near Chin-hu, Shantung. It is on the whole relatively small for such a great river, but this is partly accounted for by the waste of the water that filters through the embankments. The mud and sand, which it incessantly deposits in the Gulf of Shihli, constantly lessen the depth of the latter, and form new alluvial lands. Opposite the for or mouth of the river (111) one can see that great quantity of sediment has carried in its water.

The control of the Yellow river is today one of the most pressing of China's physical problems. Experience has shown that the doing of such rivers is insufficient and almost futile. Captain Willard Tyler, coast inspector of the Chinese lighthouse service, has presented a report on the Yellow River published by the inspector general of customs at Shanghai. In 1905, in which he proposes to control the river's lower reaches by providing for the depositing of the silt by
Deliberate flooding of large areas along the river, that is, to regulate its floods.

The Dutch hydraulic engineer Mykle, in his concerns upon the improvement and defense of the Yellow River, remarks, "Stopping the abuse of nature committed by the people would be in the interest of everyone in the whole region, in the interest of every plain, valley and dale in the mountains, as well as the plains in Honan and Shantung now liable to dreadful inundations during every rainy season. By deforestation and all it entails, almost every mountain and hill stream has become torrential, and this means that the rainwater keeps downward in waves as soon as it falls; it means further, as a matter of course, the misery of a water main in dry seasons."

For this as well as for other rivers subject to floods, very comprehensive surveys should be made and the history of the streams involved secured as accurately as possible.

Besides the two mentioned cases of devastating forces, the coast of China is subject to frequent and destructive typhoons. In order that there may be more timely warning, there are needed more observatories and better coordination in the ones existing in observatories throughout the Orient. There are, at the present time, well-established observatories at Tsingtau near Shanghai, maintained by French Jesuit mission-
aries, at Hong Kong, maintained by the British colonial government, and at Tsingtao by the German concession on Shantung peninsula. These observatories are more or less in receipt of communications from the observatories at Manila and Tokyo, and there are also observatories of more or less regularity at various lighthouses along the China coast and at some of the ports by the bureau masters in the custom service. But, there is a great deal more than this to be done, and the whole work needs to be put upon a sound basis in its scientific work and in its administration. One of the best things that Sir Robert Hart did in connection with the customs service was to give the China coast its needed light house, so that today it has a chain of such that will rival those found anywhere.

The country at large needs also a weather service. While this is primarily a duty of the government, Chinese universities and missionary colleges at the present time have a real opportunity to assist China in this connection. The physics department of each of the institutions throughout the country should make adequate and systematic meteorological observations so that when the time comes when the government is able to organize a service on its own basis, there will be qualified observers available, and an accumulation of valuable data upon which valid generalizations as to the
meteorological forces in China may be based. All this is closely connected with re-forestation, extensive farming and the control of rivers. Hence a thorough meteorological survey is a necessary preliminary if these problems are to be adequately solved, for it will require many years to gather the data that will render generalizations valuable. Partly as a preliminary to this the Carnegie Institution of Washington has for over eight years been carrying on magnetic observations throughout China in accordance with plans of Dr. C. L. Shanks submitted to them to be carried out in connection with their magnetic survey of the North Pacific. (Dr. C. L. Shanks is the president of the Canton Christian College and observer of the magnetic survey of China under the auspices of the Carnegie Institution of Washington.)

The best interests of a public domain require, for the purposes of intelligent administration, a thorough knowledge of its geology, natural resources, and products. Most nations have conducted geological surveys, generally with the view of discovering and developing natural resources, sometimes with the aim of promoting science. Last year (1915) China has awakened to the need of such a survey to realize her immense natural wealth. Hence it was organized under the Board of Agriculture and Commerce, and foreign geologists were immediately secured as advisors.
The object of the survey, the methods of procedure, and the plans of working are well adapted to the conditions of the country. It would be too tedious to review the whole in detail, therefore, the complete text of the survey, obtainable from the Board of Agriculture and Commerce of China, is recommended to those interested in the latter.

A topographic survey of the country should precede the geological survey, for one of the first needs of a geologist or engineer is a map showing not only the geographic features of the country to be examined, but also the relief of the surface. China has no such reliable maps. A system of cartography should be used that will best represent the characteristics of the topography and convey the greatest amount of practical information, limited only by considerations of costs. The maps thus constructed should be placed upon materials that are enduring, so that thereafter the plat's could be used by the government to meet all wants that may arise from time to time.

The use of a standard scale for mapping is also important. It would not be unwise for China to adopt one of the many systems used in other civilized countries. The vast experience of the world in this matter ought to be of some value to China. That the experience of all Europe, after the expenditure of hundreds of millions of dollars, has
clearly demonstrates the maps of about the scale adopted by the United States are most useful and practical. The scale in France for the general topographic map is 1:50,000; Great Britain, 1:63,000; India, 1:250,000; Germany 1:100,000; Russia, 1:100,000, and so on. In the United States the scale is 1:62,993 for some parts of the country, 1:150,000 and 1:350,000 for other parts.

Every mineral district should have a thorough topographic survey, and at convenient points throughout the district monuments should be erected and their absolute and relative positions determined by fixing their angular relations to each other and to the epodeic points of the general triangulation, and thus every miner would have an accurate and simple method by which the position of his claim could be fixed. Such properly constructed charts necessary for the identification of mineral claims and the proper recording of conveyances would cost all other parts. It would be a sufficient guide to engineer, for all general purposes, in the location of railways, highways and hydraulic works, and a sufficient map for all scientific purposes. If the work were properly done in the first instance, so as to be sufficient for all reasonable requirements, no duplication of the work would be necessary for any other purposes.

The scientific study of stratigraphy, mineralogy, palaeontology, physiography, and petrography should accompany
them all. By this research into the state of the earth and its inhabitants at former periods, a more perfect knowledge of its present condition, and more comprehensive views concerning the laws now governing its animate and inanimate productions can be acquired.

The geological explorations of Malthuson, Flegely, Evansill, Dicksee, Illis, and others have produced excellent results. They have greatly enlarged the knowledge of the geology of China. Also much exploration work has been done by mining companies and other corporations; and little benefit has come to China, since most of it remains buried in private reports. China will never get the benefit of a technical study of her enormous resources until she makes such a survey herself, and makes known her mineral wealth to her own people, as well as to foreign capitalists. Conservation of these resources by wise laws is a prime necessity. The system of concessions is wasteful and robs the people of their rights.

A great deal of investigation is particularly necessary in all that relates to the geology of a country, and the knowledge possessed on this head is, it must be conceded, still meagre. We have just a sufficient general idea of the formations, deposits, and contents of the mountains and mines, as well as the agencies at work in modifying the surface of this land. The descriptions and observed facts recorded in native books...
may furnish valuable hints when they can be compared with the places and productions. At present the difficulty of explaining the terms used, and understanding the processes described, renders these treatises hard to translate. The empirical character of Chinese science compels a careful sifting of all of its facts and speculations by comparison with nature, while the amount of real information contained in medical and geographical works renders them always worth examining. Large regions still await careful examination in every part of China; and it would be well for the Chinese Government with the newly organized Geographical Survey as its guide, to appraise and develop them for its own benefit.

In pure science it cannot be doubted that so peculiar a part of the world as China will, when thoroughly examined, solve many problems relating to geology, and disclose many important facts to illustrate obscure phenomena of other parts of the world.

Of the many scientific problems through which China has altered the original theories, or may disclose heretofore unknown facts, the following are a few:

The loess-seds, covering a great part of northern China, are among the most peculiar natural phenomena and interesting fields for geological investigation on the world's surface. Since attention was first directed to this deposit by Jaspahck in 1864, its formation and extent
have been more carefully examined by other geologists, whose hypotheses (aquaeus) are pretty generally discarded for that of ichthofen (aeolian). The term "loess" now generally accepted, has been used to designate a tertiary deposit appearing in the thine valley and several isolated sections of Europe; its formation was formerly ascribed to glaciers, but its enormous extent and thickness in China demand some other origin.

At present our knowledge of the glacial phenomena of China, and the elevated plateaux and bordering mountain chains of central China is very limited. There is in the middle of the continent and unmistakable evidence of a great extension of the glaciers at no very distant geological date, ancient moraines being found in many valleys. Very little is known of the old glacial phenomena of Tibet. Many explorers could find no trace of any general and extensive glaciation, while others do not even mention glacial phenomena. Tibet may not have been covered with ice during glacial time, but this "roof of the world" has not yet been sufficiently explored to enable anyone to assert that in the glacial time it must have been so dry and desiccated a region as it is at present. "For many years it used to be confidently stated, according to James Beikie, that no glaciers had existed in the "All Mountains"—but recent research has proved this to be erroneous." It is not at all improbable that rescued
investigation of the Tibetan plateaux and other regions of China may similarly modify the present views as to the condition of those regions during the Glacial Period.

According to Przevalski, undoubted traces of former glaciation are seen in the Tuna Nada range, west of Hailan in China, and similar evidence occurs in the high ground near the south of Tur and among mountains on the borders of Lanchuria and Doras. Recent exploration in Tsina (177) has shown the existence, on the Yangtze River, in latitude 30°, of a thick formation (177 feet) of boulder-bearing rock of the typical glacial kind containing many striated boulders of diverse sort of rock. The striate appear to be of the distinctive glacial type and the matrix in which the striated stones are imbedded is such as to bear out the evidence of the stones themselves. The formation lies at the very base of the Palæozoic terraces of the region, and beneath the series that carries the Cambrian trilobites. It is therefore to be referred either to very early Cambrian, or to pre-Cambrian time. The most probable interpretation, with present knowledge is that these boulder-bearing formations of Tur and China belong either to the transition period that accompanied and followed the deformation that closed the Palæozoic, or to the Palæozoic previous to the undoubted Cambrian, with some preference for the latter. Whatever their precise age, their profound significance is obvious. [Rech, in the January 1916 issue]
of the Koenigshohe, states that he and Tiesen have many
times brought forth the fact that the glaciation of China
has been proven to be iermain instead of pre-Temarian.

Pre-Temarian rocks are extensively developed in
Northern China, forming the fundamental mappe round and
over which the later rocks have been laid down. According
to Schloemer (1931), the oldest portions of the series are
nic-schists and gneisses, granite, hornblende-schists,
mica-schists, etc., having a strike and steep
incline. Apparently of later date are some carbonite-
gneisses and hornblende-gneisses, with intercalations
of mica-gneiss and granite, but without felsic-granite,
such as in North Taihli and Chiansi, and marked by a persistent
strike. These rocks are succeeded uncon-
formably by a great series of groups which may belong to
distinct periods. They consist of mica schists, crystalline
limestone, black eumorfites, hornblende-schists, coarse
conglomerates, and green schists. The whole series underwent
great plication and denudation before the deposition of the
older Paleozoic formations. The recent work of Miller and
Macfayden places the pre-Temarian stratigraphy of north
China on a systematic basis, and shows there is a remarkable
similarity between the Archean and the Temrian of China
and similar groups in North America. (1901)

And as we go up the geologic column, particularly the
Carboniferous, which, in China, covers an area of many thousand
square miles, forming a succession of vast tablelands.
It has been found by Kienefesen (1931), to be composed
of three stages: first, a massive brown bituminous limestone,
which from its foraminifera is obviously the equivalent
of the Carboniferous limestone of Europe; 2nd, productive
coal-seams with both bituminous and anthracite coals,
and containing a characteristic coal-measure flora; 3rd,
upper Carboniferous sandstones, conglomerates, and then
limestones, containing marine fossils, among which are the
world wide characteristic ones.

The careful research of the different geologic
processes, together with the further study of the geologic
history as outlined (largely hypothetically) by Kienefesen,
and the structural geology of the country will undoubtedly
reveal much to the scientific mind.

Conclusion: The solution of all these problems
largely depends on education; the education of the people
to furnish the background of general enlightenment, and the
education of the Chinese leaders upon whom must rest the
responsibility for carrying out in detail such plans as
may be formed for the alleviation of the conditions of the
people. In order to determine just what method should be
followed, there should be first a thorough study of present
conditions by the best consulting geologists, engineers,
and scientists who can be secured. There is, at the present
a most important function for foreign experts to fill in connection with the development of China. Their work is a necessary preliminary and hence it is highly important that China seek and use the assistance of such men.