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Such then are the views, which have been held by the Chinese, of Human nature and Sin; and it is very interesting to notice, how thoroughly the question has been sifted. It proves that the Chinese are a thinking people, and that some of the most abstract and perplexing questions have not escaped their notice. At present, the doctrine of Mencius, and the doctrine of Mencius as explained by Ch'ü tsi, are almost universally adopted.\* They believe with Mencius that human nature is radically good, and that there is no principle of evil in man; or, with Ch'ü tsi, that whilst the immaterial principle is radically and wholly good, the material may be bad and become the cause of vice. And hence the reason why they will not allow that the *nature* of man is of *can* be bad, whilst they do not hesitate to say that *man* may be so.

\* In the *T'ung i k'ih* there are some very ingenious remarks on the doctrines of human nature and sin, by Ching Yau-tien, an author of the present dynasty. His views are those of Ch'ü tsi. With him, he maintains that the immaterial principle is radically and unchangeably good,—that the material may be bad, and does often become the source of vice.

## ARTICLE III.

ON THE COSMICAL PHENOMENA OBSERVED IN THE NEIGHBORHOOD  
OF SHANGHAI, DURING THE PAST THIRTEEN CENTURIES.

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Read before the Society, December 23d, 1858.

A PHRASE, analogous to that which the Father of History applies to Egypt, is descriptive of the region where we now reside. If Egypt was the "gift of the Nile," this reclaimed plain, once a marsh, is the gift of the nobler Yangtze. At one period this region was the delta of the Great River; the numerous water-courses that intersected it, were so many *bayous*, such as characterize the embouchures of the Mississippi. The mineralogical character of the formation, on which this alluvial flat reposes, is a question of considerable interest in reference to the subterranean forces of which it is the seat; but whether it rests immediately upon granite, which forms the basis of the nearest mountains; or mediately upon new red sand-stone, of which some of the adjacent hills are composed; or upon limestone, which is found protruding at the Great Lake (Tai Hó), it is impossible for us, without more information, to determine.

On the present occasion, I merely invite your attention to a record of cosmical and other phenomena of this region. And I would premise here, that according to Chinese cosmogony, man is so intimately identified with the powers of nature, being what they term "a miniature heaven and earth," that, in order to be conversant with the science of civil government, one must study celestial and terrestrial phenomena,—as the deviations from the course of nature are all more or less portentous of evil, excepting a few, which are regarded as felicitous. Indeed, in high antiquity, they professed to have a revelation in a tabulated form, procured from the carapace of a tortoise, by which those who observed the weather and seasons, might form correct opinions on the political aspect of the times. In the Shu King, under the section Hung Fan, or Great Plan, this doctrine is summarily laid down thus:—

SEASONABLE RAIN, . . . . .	indicates <i>Decorum.</i>
EXCESSIVE RAIN, . . . . .	indicates <i>Dissoluteness.</i>
OPPORTUNE FINE WEATHER, . . . . .	indicates <i>Good Government.</i>
LONG-CONTINUED DROUGHT, . . . . .	indicates <i>Arrogance.</i>
MODERATE HEAT, . . . . .	indicates <i>Intelligence.</i>
EXCESSIVE HEAT, . . . . .	indicates <i>Indolence.</i>
MODERATE COLD, . . . . .	indicates <i>Deliberation.</i>
EXTREME COLD, . . . . .	indicates <i>Precipitation.</i>
SEASONABLE WIND, . . . . .	indicates <i>Perfection.</i>
CONTINUED TEMPEST, . . . . .	indicates <i>Stupidity.</i>

From these views, which have great influence on the minds of the Chinese, it happens that a fuller account of subterranean action, of meteorological wonders, and the like, are found in their records, than among the annals of any other people anterior to the birth of meteorology as a science.

The authority for the occurrences about to be detailed in this essay, are the Topographies or Miscellanies of Sungkiang and Shanghai. These works, the *Chi* or Miscellanies, so numerous in China, have attracted too little attention from foreigners, chiefly perhaps because they seem to contain a mass of dull and useless matter. Nevertheless they do contain also much that is of real value. The chapters on Natural history will generally, and those on Calamitous occurrences will always, repay investigation, if perused with discrimination and patience. At first sight, there is so much of the marvellous and fabulous, that the student is likely to be repelled from their perusal, but soon he may discover that their apocryphal character is due generally to the misapprehensions and erroneous explanation of the observers.

In a former communication to this Society, I took the liberty of calling attention to the importance of forming a Chinese Library, which should contain a complete collection of these Miscellanies. Of the numerous works of this description, that have come under my observation, the half dozen, I am about to name, may be taken as a fair specimen.

The *fu* or prefecture of Sungkiang, in which Shanghai is situated, forms the right lip of the embouchure of the Yangtze. It extends from north to south above 173 *li*, and from east to west 190 *li* more or less, of which some 30 *li*, has been recently acquired from the sea. It is divided into eight *hien* or districts. The subjoined statistics have been derived from the Miscellanies of five

of these districts, viz., Shanghai Nanhwai, Funghien, Tsingpu, and Lau, together with that of the entire prefecture Sungkiang. I have not yet been able to procure the works on the districts of Chuensha, Hwating, and Kinshan; but as the volumes on Sungkiang prefecture comprehend those districts, the record may be considered nearly complete. One explanatory remark more, allow me here to add. It will be observed that the later centuries seem crowded with incidents, while comparatively few occurrences are noted in earlier ages. It must not be inferred that the phenomena have been of more frequent occurrence in modern times;—the difference is doubtless due to greater care in observing and recording them, and also perhaps to the fact that sometimes, in new editions of these works, selections only have been given.

For the sake of convenience, these records, about to be laid before the reader, may be arranged into four sections, in the following order of phenomena,—(1) Subterranean, (2) Meteorological, (3) Botanical, and (4) Zoölogical; each of these larger divisions will be divided into sub-sections; and each occurrence or phenomenon numbered.

## SECTION I. SUBTERRANEAN.

### *Sub-section 1. EARTHQUAKES.*

The oldest of these records dates back only about four centuries; I will specify the *year, moon, day* of each occurrence, and its *direction*; then subjoin the *remarks* of the native chroniclers; and thereupon add such brief *notes* of my own, as may seem necessary for the elucidation of our subject.

No. 1. A. D. 1406; 4th moon. Great motion of the earth—an earthquake—was observed, and white hairs were seen.

No. 2. 1509; 9th moon. An earthquake, which extended over seven prefectures, including that in which Nanking is situated.

No. 3. 1506; 9th moon. An earthquake, preceded by a wind like fire coming from the south-east; a few days after this, a meteor was observed.

No. 4. 1525; 2nd moon, 15th day. An earthquake at night.

No. 5. 1550. White hairs issued from the ground at Tsingpu.

No. 6. 1552. White hairs, like horsetail hairs, with a yellowish hue, about a foot long appeared.

No. 7. 1584; 1st moon. Implements and furniture rattled in the houses, and blood fell at Tsingpu.

No. 8. 1596; 1st moon. W. to S.E. A drum sound in the sky; houses shook several successive days; white hairs issued on the sea coast.

No. 9. 1629; 12th moon. N.W. to S.E. A great motion; noise as of wind and rain; houses were shaken.

No. 10. 1648; 4th moon, 3d day. White hairs issued from the earth, after a storm.

No. 11. 1669; 6th moon, 17th day. N.W. to S.E. Houses shaken; canal waters bubbled for two hours; and white hairs issued from the earth.

No. 12. 1670; 6th moon. White hairs five or six inches long produced from the ground.

No. 13. 1673; 7th moon. Many shocks of earthquakes at different times during this month.

N. B.—The following Nos. of this record are from the author's private notes.

No. 14. 1846, August; S.W. to N.E. Midnight, a shock of considerable violence—felt at Ningpo also. The weather had been remarkably dry and hot.

No. 15. 1850, April; S.W. to N.E. Very slight.

No. 16. 1852, December 16th; S. W. to N.E. 8h. 13m. P. M. Continued about fifty seconds with an undulatory motion. At 10h. P. M. a slighter shock was felt. These shocks communicated motion to bells, lamps, pictures and other suspended articles, and stopped clocks. In some places cornices and portions of wall fell. The first shock was felt at Ningpo about the same time. Meteors, known as St. Elmo's light, were observed at the adjacent islands, and mud, exposed by the ebbing tide, presented the appearance of ebullition; thermometer 55°; barometer 33° 10'. The afternoon of that day at Shanghai and Ningpo was hazy, in consequence of a quantity of fine yellow sand diffused through the atmosphere. Some persons experienced a peculiar sickening sensation at the time. No noises were heard. At Ningpo a second shock was felt at 11h. P. M.

No. 17. 1853, April 14th; S.S.W. to N.N.E. 11h. 13m. P. M. It lasted more than a minute; twenty minutes after, a weaker shock was felt; some walls and chimnies were thrown down; the motion was vibratory. At Ningpo, at 11h. A. M. 4h. 30m. and 9h. P. M. subterranean noises were heard, which were precursors of a succession of earthquakes; the first and most violent occurred at

11h. 35m. P. M. and continued about fifty seconds; the barometer fell from 30° 43' to 30° 25'. About twenty minutes later there was a slight shock; and five minutes after, a third, so gentle as to be scarcely perceptible. It was blowing at the time half a gale of wind, with heavy rain.

No. 18. 1853, April 15th; S.S.W. to N.N.E. The day following the last, very slight, at 12h. 28m. P. M. accompanied (at Ningpo) by a fall of the barometer. On those two or three days, the whole number of shocks felt by some persons was eighteen. There was perhaps more or less of a tremor the whole time.

No. 19. 1853, April 15th; S.S.W. to N.N.E. At 3h. A. M., and another at 11h. P. M.

No. 20. 1853, April 23d; S.S.W. to N.N.E. At 8h. P. M. a slight vibration.

*Note 1.* It will be observed, that more than two thirds of these earthquakes are within the two centuries which date back from that last recorded in the local annals; a reason has already been offered in explanation of this.

2. The harmlessness of these earthquakes is noteworthy; no houses are thrown down, no lives lost. Chinese dwellings are calculated to bear considerable motion without being overthrown; but the brick pagodas that diversify the plain seem fair marks for this destructive agency. It follows that if structures of that description are safe, the mercantile palaces recently erected here can be in no danger from subterranean forces. Sometimes indeed, as I have myself observed, there are earthquakes so very slight and of such limited extent, as to be felt by only a few persons, peculiarly situated at the time. Slight motions of this description are probably not recorded by native observers. A few numbers in the foregoing list are not registered as earthquakes; I have placed them in that category on account of the formation of "hairs" on the ground on those occasions. They were doubtless earthquakes not otherwise appreciable.

3. They appear to occur with the same frequency in each of the four seasons; but there are series of years when they are often observed, followed by long periods of quiet.

4. Observations in a few instances have been recorded respecting their supposed direction; which seems to accord with what have been observed in other parts of this and in adjacent provinces, showing that the motion is generally directed from north-west to south-east or contrariwise.

5. What do Chinese writers mean by a production of *hairs* from the ground after or during earthquakes? Some years since, as an explanation, I offered the probability they were crystals formed by the union of some gas with a salt of the soil—a sulphate of alumina? An inquiry into the phenomena attending earthquakes in the south-western part of the United States and Mexico will throw some light on this subject. Similar deposits on the ground, it is stated, have been there observed after earthquakes. Some cases are recorded in China without an earthquake, as in two of the above list. I have placed them there on the assumption, that an earthquake occurred, but too slight to be observed. The bubbling up of water and mud, mentioned, indicates an emission of gas.

*Sub-section 2. SUBMARINE ACTION.*

No. 1. A. D. 1357; 6th moon, 23d day. At the sea side, towards dawn, the tide rose suddenly, causing great alarm, as it was not the time for high-water. At the proper high-water time it rose again, so that it was known that the first rise was not the tide. At places which are situated quite beyond the reach of tide, in the canal and lakes near Pingkiang and Kiahing, the waters suddenly rose some four or five feet.

No. 2. 1634; 8th month. Three tides in one day at Nanhwai.

No. 3. 1642; 8th month. At Wangpoo, there were three tides in one day; at the same time a violent wind and rain, that injured the crops.

No. 4. 1648; 7th moon, 21st day. Three tides in one day.

No. 5. 1661; 7th moon, 26th day. Three tides in one day.

No. 6. 1662; 7th moon. Three tides in one day.

No. 7. 1719; 9th moon, 19th day. Three tides in one day at Lau.

No. 8. 1754; 8th moon. Three tides in one day at Tsingpu.

No. 9. 1778; 8th moon. Three tides in one day at Nanhwai.

*Note.* What explanation can be afforded of the appearance of three tides in twenty four hours? I have too much confidence in the truthfulness of Chinese records, to reject the statements. In the first place, we are to bear in mind the proximity of this coast to the chain of volcanoes that girt the continent to the east; next, that when the great earthquakes occurred at Lisbon, inland waters in Scotland were elevated; and finally that on the

occasion of the recent earthquake at Simoda, the inland waters of this part of China experienced a sudden rise, and an immense wave deluged the harbor of Port Lloyd. From these facts we may conclude, that the supernumerary tides of this coast are probably due to subterranean action. Or, they may have been mere storm waves, as the period of their occurrence coincides with the typhoon season. Typhoons, however, would not account for the phenomenon with which the list commences.

*Sub-section 3. DEPRESSIONS OF LAND.*

An ancient map, of the prefecture of Sungkiang, indicates the site of Tsiangshwui, now a lake, *Mau*. A legend respecting that catastrophe, is to be found in all the adjacent topographies of Chehkiang and Kiangsu. Children got up a report that when blood was seen on the city gates, the city would sink and become a lake. The keepers of the gate observing an old woman coming every morning to see if the gates were bloody, killed a dog and smeared the gates with its blood by way of hoaxing her. The next day, seeing the ominous mark, she hurried out of the city not daring to look behind her. Suddenly there was a great flood, the city sank and became a lake. It is certain that the city suddenly sank in the latter half of the third century of our era. Instances of sudden sinking of land in this part of the country are not wanting; one of these, the ancient city of Haiyen, is rather out of the district to which this paper is limited. There are a few instances related of small portions of uninhabited land sinking and becoming in like manner pools, but neither the places nor dates can be easily ascertained.

*Sub-section 4. ERUPTIONS.*

No. 1. A. D. 419. At Tinglin, the earth opened several feet; there was a sound of waves and an emission of fire.

No. 2. 964. From a hill on the Tien lake, a torrent of water gushed out and discharged into the lake.

No. 3. 1634; 6th moon. A 蛟 *Kiau* rose at Tsungkwei king and damaged the grain and vegetables.

No. 4. 1548. During a violent wind a 屋 *Shin* issued from a decayed tree, accompanied with much rain and great waves; one could not see more than a pace. Suddenly a strange fragrant vapor was perceived in an adjoining pagoda, the summit of which shone brightly.

No. 5. 1562; 5th moon. Nine *Kiau* issued from Fa hill at Tsingpu; the water forced its way to the river; a black vapor issued from the ground and went to the north-west.

No. 6. 1598; 5th moon. A *Kiau* issued from Chungkia hill; the south-west corner of the hill fell.

No. 7. 1599. Blood issued from beneath a kitchen.

No. 8. 1609; 5th moon. A *Kiau* issued from Funghwang hill; a tomb in front instantly became a pool of water.

No. 9. 1642. A spring spontaneously appeared; the water was not good, and it was stopped up.

No. 10. 1644. Blood issued from a pool.

No. 11. 1692; 6th moon. There was a noise in the ground as of thunder, with sudden rain, which on level ground was three feet deep; a *Kiau* with two horns forced its way out of the earth and escaped.

No. 12. 1763; 7th month. Two *Kiau* rose from the top of Shin hill; two openings were made in the rock above ten feet in size; there was a great wind, and the rain fell two feet in depth at level places.

*Note 1.* Under this sub-section I place those accounts of the sudden rushing out of water, usually from a hill, attributed to the fabulous *Shin* or *Kiau*. The *Shin* is popularly described as an embryotic dragon, or a dragon in the first stage of existence. It is formed by the perspiration of that animal falling from the sky upon terrestrial beings. Animals thus affected become *Shin*, sink into the ground and remain there, some say thirty, some a hundred years, emerging in heavy rains as a *Kiau*, which is subsequently transformed into a dragon. These fabulous beings are charged with much that is otherwise inexplicable in the world of matter.

2. The first-named phenomenon does not belong to the doings attributed to fabulous monsters. It seems to have been a transient volcano emitting an ignited gas, not dissimilar to one I have elsewhere described as occurring in Manchuria. Carburetted hydrogen is freely emitted at different points of this district, and permanently from what is known as the "Bubbling well."

3. One of the cases, No. 6, seems to have been a landslide; some of the others were due probably to accumulations of water bursting forth from hill sides. Sometimes nocturnal waterspouts appear to have been the cause. Animals overtaken and disfigured by such

floods and dimly seen, have been regarded as *Shin* or *Kiau*. No. 11 was probably a case of this description. Electrical phenomena attended the case No. 4. The two cases of the emission of blood are not easily accounted for. Instances of that kind occurring elsewhere, have evidently been spontaneous fountains deeply tinged with oxide of iron.

## SECTION II. METEOROLOGICAL.

### *Sub-section 1. FRESHETS.*

No. 1. A. D. 825. Taihu Great, Lake overflowed.

No. 2. 998. A flood, causing scarcity of food.

No. 3. 1074. A rain continued from 1st to 6th month; the lakes overflowed; the land could not be cultivated; houses were destroyed; the inhabitants discarded their lands and went away to beg.

No. 4. 1082; 6th moon. Excessive rains and calamitous, over Kiangsu and Chehkiang.

No. 5. 1118; 8th moon. Freshets over this and four adjacent *fus*.

No. 6. 1121. Freshets over this and four adjacent *fus*.

No. 7. 1295; 6th moon. An extensive "water calamity."

No. 8. 1330; 7th moon. Destruction of 36,600 *chin* = 61,000 acres; above 45,000 families suffered in this and adjoining places.

No. 9. 1341; 4th moon. A water calamity occurred.

No. 10. 1376; 12th moon. A freshet.

No. 11. 1404; 6th moon. Excessive rain for 10 days; high places were covered several feet; low places more than ten feet.

No. 12. 1425. Summer the rains injured the crops.

No. 13. 1454; 7th moon. Flood over six neighboring *fus*.

No. 14. 1455; 7th moon. Flood over this and Suchau *fu*.

No. 15. 1492. Crops damaged by rain.

No. 16. 1493. Crops damaged by rain.

No. 17. 1699; 6th moon. An overflow of the sea and lakes (no mention of a storm).

No. 18. 1560; 7th moon. Rain from the 6th to the 11th day and night carrying away houses.

No. 19. 1518. Six prefectures suffered from a flood.

No. 20. 1520; 8th moon. A great wind and rain destroyed the crops and occasioned a dearth.

No. 21. 1523. A severe storm, [perhaps it may have been a typhoon,] the next day water suddenly rose above its usual level.

- No. 22. 1523; 6th moon. Great rain, hail and lightning.  
 No. 23. 1523; 8th moon. Flood over four *fus*.  
 No. 24. 1541; 6th moon. Freshet drowned several tens of thousands.  
 No. 25. 1559; 5th moon. Flood.  
 No. 26. 1602. Spring and autumn, over four *fus* excessive and continued rain, damaging wheat.  
 No. 27. 1626; 3rd moon. Wind, rain, and hail, damaged wheat.  
 No. 28. 1627; 2nd moon. Wind, rain, and hail, damaged wheat.  
 No. 29. 1636. Spring, a flood.  
 No. 30. 1648. Autumn, a flood.  
 No. 31. 1652; 4th moon, 5th day. Great rains, flooding the river.  
 No. 32. 1654; 5th moon. Great rain for ten days; and again in next month, damaging rice.  
 No. 33. 1662; 1st moon. Great rains.  
 No. 34. 1668; 6th moon, 14th day. Violent wind and sudden torrents of rain; river swollen four or five feet, destroying innumerable houses, accompanied with a water spout.  
 No. 35. 1671; 4th moon, 11th day. Excessive rain; again in next month with violent winds, tore up trees, levelled houses, continued three days and nights; next day a freshet. There was a famine that year.  
 No. 36. 1675; 6th moon. Great wind and flood.  
 No. 37. 1675; 10th moon. Protracted rains.  
 No. 38. 1677; 6th moon. Flood.  
 No. 39. 1678; 5th moon. Hail-storm.  
 No. 40. 1681; 5th moon. Flood.  
 No. 41. 1681; 8th moon. Sudden torrent of rain and rise of water, undermining and overturning a part of the Shanghai walls, killing several persons.  
 No. 42. 1684; 1st moon. Steady rain till fifth month; damaged wheat.  
 No. 43. 1695; 9th moon. Great rains; sudden rise of rivers and calamities.  
 No. 44. 1696. Summer, long rain injured crops.  
 No. 45. 1698. Autumn, flood.  
 No. 46. 1703. Autumn, flood.

- No. 47. 1706. Summer, continued rain; flood in autumn.  
 No. 48. 1709. Summer, continued rain; flood in autumn.  
 No. 49. 1710. Autumn, protracted rain.  
 No. 50. 1711. Summer, protracted rain; flood.  
 No. 51. 1716. Spring and autumn, continued rains; a bad harvest.  
 No. 52. 1719. Protracted winds and rains; a bad year.  
 No. 53. 1727; 8th moon. Heavy and continued rain damaged the rice crop.  
 No. 54. 1740; 4th moon. Heavy rain; hail, damaged wheat.  
 No. 55. 1759. Summer, a flood.  
 No. 56. 1762; 6th moon. A flood.  
 No. 57. 1767. Summer, a flood.  
 No. 58. 1770. Summer, a flood.

*Note 1.* The distinction between this and the following sub-section is not well marked. Some of the cases recorded in this might be placed in that and *vice versa*. Those however are mainly sea storms, while these are from the mountains.

2. If earthquakes are harmless, the same cannot be said of storms. This and the following, if not of much interest, will yet be useful for reference and comparison.

*Sub-section. 2. TYPHOONS AND STORMS.*

- No. 1. A. D. 496; 7th moon. This and the two years following, violent wind, destroyed houses, broke trees and killed people.  
 No. 2. 962; 7th moon. Violent wind, tore up trees.  
 No. 3. 1088. A sea wind destroyed fields.  
 No. 4. 1132; 11th moon. At night a fierce wind, with lightning and solid hail of the size of lichis, destroying dwellings and boats.  
 No. 5. 1147; 10th moon. Wind, thunder, and hail like a shower of arrows; destroyed houses and boats.  
 No. 6. 1195; 7th moon. Great wind; the tide seaward destroyed the crops.  
 No. 7. 1310. Great wind; sea flowed over the fields.  
 No. 8. 1335; 5th moon. Hail-storm; hailstones varying in size, from water lily seeds to hen's eggs.  
 No. 9. 1371; 7th moon, 16th day. A great wind rose from the sea, dust and sand filled the sky, there were also observed things like hawks and tiles. A flagstaff was broken and carried

to a distant place where the wind ceased, leaving bank-notes or sacrificial paper scattered about a villager's house.

No. 10. 1391. The sea suddenly overflowed and drowned 20,000 persons.

No. 11. 1405; 7th moon, 2nd day. A great wind and rain; sea overflowed, drowning above 1,000 persons.

No. 12. 1440; 7th moon. Suchau, Sungkiang and two adjacent *fus* visited by a violent wind, which tore up trees and damaged crops.

No. 13. 1445; 7th moon, 17th day. Great wind, which tore up trees and levelled houses; rain for a day and night incessant. Lake and sea overflowed. Several places were covered several feet with water; innumerable dwellings floated away.

No. 14. 1474; 7th moon, 17th day. A great wind and rain which tore up trees; sea overflowed, and drowned 10,000 persons.

No. 15. 1487; 7th moon. A great wind and rain.

No. 16. 1504; 4th moon. A hail-storm, killed wheat, cattle, and men.

No. 17. 1506. Overflow of the sea, with great wind and rain.

No. 18. 1511; 6th moon. A great wind damaged the fields; the people were scattered, and there was a famine and pestilence of which countless numbers died.

No. 19. 1523; 7th moon. Destructive storms of wind and rain.

No. 20. 1540; 7th moon. A roaring of the sea; a N.E. wind; several myriads were drowned; it was a year of dearth; men and crops perished.

No. 21. 1541; 7th moon. In five prefectures the sea overflowed.

No. 22. 1566; 7th moon. A great wind and rain, levelling houses and one monumental gate.

No. 23. 1570; 6th moon. The sea rose with a great S.E. wind, occasioning destruction of dwellings and loss of life, inundating the land with salt water; when a species of crab appeared in great numbers damaging plants.

No. 24. 1575; 12th moon. A great N.W. wind, levelled houses, tore up trees, and made tiles fly; it lasted a day and a night.

No. 25. 1576; 3rd moon. A great wind; the sea overflowed the dykes, salting the fields, destroying houses and drowning people.

No. 26. 1583; 7th moon, 13th day. The dykes gave way in a storm of wind and rain of twenty-four hours duration; innumerable men and animals destroyed; also a loss of crops in consequence, followed by famine.

No. 27. 1583; 10th moon, 13th day. Violent N.W. wind; vessels capsized in the river.

No. 28. 1588. Summer and autumn, strange thunder and typhoon; rice, wheat, and beans were broken down.

No. 29. 1589; 7th moon. A great wind; trees were torn up and grain injured.

No. 30. 1590. An overflow of the sea, destroying several thousand houses, drowning innumerable animals and more than 10,000 people.

No. 31. 1627; 7th moon, 1st day. A typhoon with rain destroyed trees and dwellings; another a few days after.

No. 32. 1634; 7th moon. A great wind and rain damaged houses and grain.

No. 33. 1642; 8th moon. A great wind, rain, and hail, damaged rice.

No. 34. 1643; 10th moon. At night violent thunder; wind and rain broke trees and carried off tiles.

No. 35. 1645. Autumn, a great wind; the sea broke the dyke, salted the land, and thereby destroyed the rice.

No. 36. 1648; 4th moon, 3rd day. A hail-storm; hailstones the size of a fist wounding cattle and damaging crops.

No. 37. 1654; 3rd moon. A great wind and hail.

No. 38. 1665; 7th moon. A typhoon; the sea broke embankments, people floated out to sea on the wrecks of houses; some were rescued by an officer.

No. 39. 1673; 7th moon, 20th day. Hail two or three catties weight, killing horses and oxen.

No. 40. 1688; 7th moon, 10th day. A great wind, rain, thunder, and lightning; the next day the storm was still worse; it extended over a thousand *li*; destruction of life and property in every direction.

No. 41. 1691; 7th moon. Storm and flood, damaging the crops.

No. 42. 1697; 6th moon, 1st day. A typhoon, destructive of life and property.

No. 43. 1703; 3rd moon. An overflow of the sea.



No. 44. 1716; 7th moon. A typhoon; a bad harvest.

No. 45. 1724; 4th moon, 8th day. A great hail-storm, in lumps of fifty catties, killed one and wounded many persons.

No. 46. 1725; 7th moon, 18 day. Typhoon; a sudden torrent of rain from morning till night; it whirled about; next month the sea overflowed.

No. 47. 1732; 7 moon. Typhoon several days, tore up trees and levelled houses; sea overflowed; cities flooded.

No. 48. 1735; 7th moon. A great wind; sea overflowed.

No. 49. 1738; 10th moon, 5th day. Violent wind from N.W.; flocks of sea birds filled the sky; the storm devastated the grains for over a month and then dispersed.

No. 50. 1748; 7th moon. A great wind; sea overflowed, and drowned above 20,000 people.

No. 51. 1752; 6th moon, 16th day. A great typhoon, continuing a day and a night; threw down walls and houses innumerable; the sea overflowed.

No. 52. 1764; 11th moon, 11th day. A storm with hail; but as harvest was already gathered, it did no damage.

No. 53. 1772; 6th moon, 18 day. A great wind; rain and trees torn up; overturned vessels and houses.

No. 54. 1791; 4th moon, 5th day. A severe hail-storm.

*Note.* The above for the most part were no doubt typhoons, although that term *kiu-fung* is applied to a few of them only. All those that occurred from the 5th to the 9th month were of this class, and some others. Inundations of the sea are more hurtful than freshets, more destructive of life, and always damaging for a time to the soil. The former however are of wider extent, and attended with epidemics and famines. In some cases inundations of the sea are mentioned without storms, but it does not necessarily follow that none took place at the time.

*Sub-section 3. WATERSPOUTS.*

No. 1. A.D. 1189. At Tien lake there was a great wind, when two dragons were seen fighting, and the decorations of a neighboring temple were blown away; in an instant the dragons whirled over the top of the temple, and were visible far and near.

No. 2. 1512; 6th moon. A dragon was seen to the S.E. of Whangpu; it scorched paddy and destroyed houses in its course.

No. 3. 1519; 8th moon. There was a great flood at Shanghai and nine dragons fighting at sea.

No. 4. 1605. A couple of dragons fought at Whangpu and tore up a large tree, and demolished several tens of houses.

No. 5. 1608; 4th moon. A gyrating dragon was seen over the decorated summit of a pagoda; all around were clouds and fog; the tail only of the dragon was visible; in the space of eating a meal, it went away, leaving the marks of its claws on the pagoda.

No. 6. 1609; 6th moon. A white dragon was seen at Whangpu; on its head stood a god.

No. 7. 1452; 6th moon. A dragon at the Tsau stream taking up water, lifted a boat, and transported it to the middle of a field; rain fell to the depth of several feet, soaking plants to death.

No. 8. 1660; 1st moon. A dragon seen, attended with great rain.

No. 9. 1667; 6th moon, 14 day. Dragons were seen fighting in the air; there was a violent wind and excessive rain; the canal rose four or five feet; many houses were destroyed, a tree above ten arms-length in circumference was torn up, &c.

No. 10. 1773; 7th moon, 20th day. A group of dragons burnt paddy in the fields, drew houses into the air and travellers also; hailstones of two or three catties weight fell, killing horses and animals.

No. 11. 1735. A dragon destroyed dwellings, tore up trees and damaged paddy.

No. 12. 1739; 9th moon, 3rd day. Dragons fought at Mau lake, and went off S.E. to the sea, destroying the paddy as they went.

No. 13. 1749; 12th moon, 8th day. A dragon seen during great thunder and rain; the night following was very cold, and followed by a three days snow storm.

No. 14. 1769. Winter. Tien lake rose into an ice hill; several tens of *tsiang* (50 feet?) high, and two *li* (two thirds of a mile) long; just before it occurred the residents heard a noise as of a myriad of soldiers; looking out of the windows by night, they saw more than a thousand lights; in the morning they saw the ice hill, it remained a month before melting.

No. 15. 1787; 7th month. Dragons fought; a great wind overturning houses, and carrying off, no one knows where, half a stone bridge.

*Note* Hitherto, Chinese accounts of the dragon have been regarded as wholly unworthy of credit. At first sight the notices

given above of this formidable animal of the upper regions seem rather dubious. They are too well attested, and of too striking a character not to be received by Chi-men, and he who admonishes the natives against giving credence to such fables, will labor in vain. A moment's reflection will lead the reader to agree with me in calling them waterspouts.

It is remarkable that they should be of such frequent occurrence on land, a circumstance due in part no doubt to the lacustrine feature of the country. They seem to occur at all seasons. The electrical phenomena of some will be noted, particularly their scorching character; also the fall of heavy hail-stones. No 14 is a phenomenon not easily explicable; no mention is made of a dragon. I have placed it among waterspouts, conjecturing that one of those miniature cyclones swept over the little lake at a moment of extreme cold, and drew up the water. An absorption of latent caloric, and also a disengagement of heat, seem to be among the concomitants of those little storms. No. 10, affords an illustration of both, in the scorching effects and the heavy fall of hail.

*Sub-section 4. DROUGHTS.*

- No. 1. A. D. 504. A great drought; the five grains all failed; rice was 5,000 cash a *tau*; many starved to death.
- No. 2. 1319. A great drought.
- No. 3. 1360. A great drought.
- No. 4. 1519. A great drought over five *fus*.
- No. 5. 1523. A great drought.
- No. 6. 1531. A great drought which included Suchau.
- No. 7. 1545. A great drought.
- No. 8. 1546. Greater drought; rice very dear.
- No. 9. 1589. Spring, a drought.
- No. 10. 1590. No rain from fifth to seventh month; the Mau lake was dry.
- No. 11. 1636. Summer, a drought.
- No. 12. 1641. Drought with locusts.
- No. 13. 1642. Drought with locusts.
- No. 14. 1653. A very hurtful drought.
- No. 15. 1662. Great drought; a bad harvest.
- No. 16. 1666. Great drought.
- No. 17. 1680. Great drought; no rain from 3rd to eighth month.
- No. 18. 1672; 7th moon. A great drought.

- No. 19. 1694. A great drought; bad harvest.
- No. 20. 1697; 5th moon. A great drought.
- No. 21. 1705; 7th moon. A great drought.
- No. 22. 1706. Summer, a drought; autumn, a dearth.
- No. 23. 1708. Summer, a great drought.
- No. 24. 1715. Summer, a great drought.
- No. 25. 1723. Summer, a great drought.
- No. 26. 1724. Autumn, a great drought.
- No. 27. 1734. Summer, a great drought and epidemic.
- No. 28. 1787. A great drought.

*Note.* Taking the last hundred years of this record as a standard, one drought may be calculated on in ten years, at varying intervals however.

*Sub-section 5. FAMINES.*

- No. 1. A. D. 502. A year of drought; harvest failed; rice was 5,000 cash a *tau*; many starved to death.
- No. 2. 1165. People ate bran.
- No. 3. 1281. Wide-spread famine.
- No. 4. 1305. A famine.
- No. 5. 1320. A famine.
- No. 6. 1331; 7th moon. A famine, with water calamity.
- No. 7. 1333. A famine.
- No. 8. 1336. During this and two following years, there were no harvests; people boiled and ate their sons and daughters.
- No. 9. 1386. A famine.
- No. 10. 1403. A famine at Shanghai city.
- No. 11. 1405. A famine over this and three neighboring *fus*.
- No. 12. 1483. A famine (following a winter in which there was a thunder storm).
- No. 13. 1496. A famine through the four neighboring *fus*.
- No. 14. 1506. A famine.
- No. 15. 1563. A famine, rice costing 170 (the figure is probably a misprint); the people scattered; attacks were made on granaries; the leader of the riots was beheaded.
- No. 16. 1568. A famine over two *fus*.
- No. 17. 1583. A famine.
- No. 18. 1589. A famine; people ate bran, roots of grass and leaves of trees; many drowned themselves.
- No. 19. 1590. A famine, from drought.
- No. 20. 1591. A famine, and epidemic.

- No. 21. 1610. A famine.  
 No. 22. 1625. A famine, after excessive rains.  
 No. 23. 1633. A famine; rice extremely dear.  
 No. 24. 1653. A famine, in consequence of a drought.  
 No. 25. 1662. A very scarce year, from drought.  
 No. 26. 1679. A very scarce year, from drought.  
 No. 27. 1690. A famine from drought.  
 No. 28. 1694. A scarce year, owing to drought.  
 No. 29. 1706. A famine.  
 No. 30. 1708. A scarce year.  
 No. 31. 1709. A famine; rice very dear, owing to flood.  
 No. 32. 1716. A scarce year.  
 No. 34. 1722. A famine.  
 No. 33. 1723. A scarce year.

*Note.* Tempests and typhoons, accompanied by inundations of the sea, droughts, and locusts, have been the occasion of these calamities; their attendant, disease, also played its part with survivors. The best protective against visitations of this kind, is a system of rail-roads. Generally speaking famines have been local; and but for the imperfect means of transportation, these could not have occurred.

*Sub-section. 6. EPIDEMICS.*

- No. 1. A. D. 1333 An epidemic 疾疫 *tsih yuh*.  
 No. 2. 1455. Summer, a great 疫 *yuh*; deaths innumerable.  
 No. 3. 1493; 6th moon. An epidemic and famine; half the population of Shanghai died.  
 No. 4. 1576. A great *yuh*; the six gates of Shanghai gave exit to nothing but wheel-barrows bearing corpses; there was an insufficient supply of coffins, and mats were used for covering the dead.  
 No. 5. 1591. Epidemic and famine.  
 No. 6. 1664. Epidemic.  
 No. 7. 1678; 6th moon. A great 疫癘 *yuh li*.  
 No. 8. 1679. A great 疫 *yuh*.  
 No. 9. 1680; 8th moon. A great *yuh*.  
 No. 10. 1698. Summer, a great *yuh*.  
 No. 11. 1710. Summer, a great *yuh*.  
 No. 12. 1729. Summer, a great *yuh*, with drought.  
 No. 13. 1734. Summer, a great *yuh*.

- No. 14. 1750. Summer, a great *yuh*.  
 No. 15. 1757. Summer, a great *yuh*.  
 No. 16. 1787. Summer, a great *yuh*.

*Note.* Our Chinese authorities afford us no information on this the most important subject in this collection. Yet this bare record is not without its value. An attempt has been made to trace the rise of the epidemic of the middle ages, so long the terror of Europe, to this part of China. The conjecture is supported as yet by very few facts, although in consulting records of this character, I have paid some attention to the investigation of this question. Further research is needed.

*Sub-section 7. IRREGULAR SEASONS AND EXTREMES OF TEMPERATURE.*

- No. 1. A. D. 1147; 10th moon. Thunder and hail.  
 No. 2. 1445; 12th moon. Snow fell seven days and nights; it was 12 feet deep; people were obliged to remain in their houses until streets were cut out of the snow.  
 No. 3. 1483; 11th moon. At the winter solstice, great thunder and lightning and snow; the following year there was a famine.  
 No. 4. 1510. An extremely cold winter; bamboo, cedar and orange trees killed; for several years no oranges in the markets; there was ice several feet thick, for a month in the river.  
 No. 5. 1575. In summer a poisonous heat killed many ploughmen and oxen.  
 No. 6. 1577; 5th and 6th moons. (Summer) a rain as cold as winter; it damaged the crops.  
 No. 7. 1590; 6th moon, 18th day. At night (summer), snow fell from midst of the moon, like the fine flowers of the willow, or shreds of silk; taken in the hand all found to be hexagonal.  
 No. 8. 1592; 10th moon. Thunder, lightning and hail.  
 No. 9. 1618. 12th moon. Midnight, great thunder and lightning.  
 No. 10. 1620; 10th moon, 20th day. Excessive lightning, that night the moon was as round as on the 15th (full).  
 No. 11. 1627; 12th moon. A great fall of snow, over five feet in one night; bamboo and other trees broken; birds and animals died.  
 No. 12. 1628; 2nd moon. A fall of snow (say in March).  
 No. 13. 1631; 12th moon. Thunder.

No. 14. 1637; 12th moon. Very cold; the Whangpu river and lakes frozen.

No. 15. 1643; 10th moon. At night violent thunder, rain and wind, broke trees and carried off tiles.

No. 16. 1653; 11th moon, 13th day. Great thunder, three times; shaking.

No. 17. 1655. Winter, Mau and Tien lakes frozen over; for several days, people could walk over them.

No. 18. 1668; 12th moon. Thunder and a rainbow.

No. 19. 1677. Winter, a thunder storm with snow.

No. 20. 1684; 12th moon. Excessively hot, like summer; at night, there were heavy peals of thunder, with torrents of rain.

No. 21. 1690; 9th moon. Rain without clouds; no harvest that season.

No. 22. 1694. Winter, ice in the Whangpu river.

No. 23. 1695; 12th moon. Thunder and lightning at night with great rain.

No. 24. 1705; 4th moon. A great rain for ten days, as cold as winter.

No. 25. 1711. A rainbow in the east on new year's day.

No. 26. 1691; 12th moon. Snow for four or five days; men horses, and animals frozen to death; for half a month it was so cold that no one went abroad.

No. 27. 1747; 6th moon. Snow fell.

*Note.* The Chinese record calls for no explanation. Electrical action in mid-winter, and a temporary reversal of seasons in summer and winter might be looked for in such a history. Excessively severe winters are often noted in records of this kind. The case of excessive heat in summer, that killed men and animals in the fields, is the only one of the kind I have met with. It may have been a meteor caused the "poisonous heat." If its ravages were limited to a particular tract, that explanation will suffice.

*Sub-section 8. METEORS.*

No. 1. A. D. 519; 5th moon. A shooting star fell and became a stone.

No. 2. 1359. A goat-herd observed a shooting star, from the midst of which a fish fell.

No. 3. 1306; 9th moon. A wind like fire came from the south-east, followed by an earthquake; a few days after, a star shot from the north-east and fell into the sea.

No. 4. 1561. Summer, a stone fell at Sungkiang; several days afterwards the stone moved of itself suddenly on a rainy night.

No. 5. 1587; 2nd moon. A fall of yellow sand; all who ate of the vegetables on which it fell died.

No. 6. 1596; 1st moon. A sound of a drum in the sky.

No. 7. 1797; 12th moon, 23rd day. At the Mau lake, at Kwangyin pavilion, there was suddenly seen a white streak of light, like a roll of silk a thousand feet long; the wind that day was from the north-east; the temple flags turned in that direction.

No. 8. 1600; 7th moon. Near night, the sound of demons was heard in the heavens; suddenly the noises came from all quarters and crackers were fired off; it was regarded as a sign that government was again about to issue paper money.

No. 9. 1623; 2nd moon. Yellow sand fell, filling all quarters, the sun was of a dusky hue; another shower, two days after, quite obscured the sun.

No. 10. 1624; 3rd moon. Heaven drummed.

No. 11. 1625; 2nd moon. Shower of sand; the sun was white; no brightness for three days.

No. 12. 1626; 6th moon. At night a sound of swordsmen in the sky; a decayed tree gave out blood.

No. 13. 1637; 3rd moon. Yellow sand fell.

No. 14. 1638; 11th moon. Sand red as blood fell.

No. 15. 1642; 2nd moon. A black fog fell; nine days after, yellow sand fell.

No. 16. 1642; 3rd moon. Wind and sand filled the heavens.

No. 17. 1660; 3rd moon, 16th day. A star fell on the ground, with a noise like thunder.

No. 18. 1677; 5th moon. A star fell at Piau lake, striking the ground with a noise; the people went to dig it up, and found a black stone warm to the touch; it weighed nineteen cattles; when broken up and used for sharpening knives, it emitted sparks.

No. 19. 1723; 7th moon. Night, a large star shot from north-west to the Great Bear, of the size of a peck measure; the glare lighted the heavens.

No. 20. 1745; 2nd moon, 9th day. Hail fell the size of mill-stones, killing birds, beasts and men; at the time it was suddenly as dark as night; lamps were lighted; again suddenly the sun shone brightly; it lasted about four hours.

No. 21. 1782; 6th moon, 18th day. A great wind and rain; trees were torn up, boats capsized, and houses thrown down; sea-water was carried into the canals, making them briny for two weeks. The day before this tornado, there was seen outside of Yuling, something of the size of a house, formless, without head or feet, resting on the ground, and then bounding over the dyke into the sea, furrowing the ground in its course; no one knew what it was.

*Note.* The instances of the fall of yellow sand, recorded above, must have been excessive in degree; as we have long discovered to our inconvenience, these showers occur every spring. As I have elsewhere described them, I shall here only note the poisonous one, No. 5, and state that I have been unable to ascertain what mineral it was that fell. Whirlpillars, taking their rise in the north or north-west, may raise up and carry to this place dust or sand of any description. On this occasion it bore some very potent mineral. For want of a better place, an electrical phenomenon has been introduced as No. 7. Several cases of lightning striking buildings have been omitted. The sound of a drum in the heavens is often met with in records of this kind. These are owing sometimes probably to thunder without lightning, or more frequently to invisible aerolites. The noise of demons may be due to this also. Two large aerolites are to be seen preserved in a public building at Sungkiang. The meteor accompanied by the fall of huge lumps of ice is remarkable; they could not have been less than a foot and a half in diameter. I am at a loss what to say about the case which closes this sub-section.

*Sub-section 9. ATMOSPHERIC ILLUSIONS.*

No. 1. A. D. 1337. A hen was seen sitting on the sun; its feet were not visible.

No. 2. 1348; 7th moon, 15th day. At night a star as large as a bowl, of a white and slightly azure color, with a tail about 50 feet long, lightened the sky, with a rumbling noise flew from the north-east, and entered the midst of the moon, the moon then looking as a reversed tile,—i. e. upright.

No. 3. 1505; 6th moon. At the north-west a five-colored (variegated) cloud was seen, at first like the wings of a phoenix, then as a range of hills, of a bright gorgeous light; in two hours it disappeared.

No. 4. 1554; 1st moon. The 6th day after an eclipse of the sun, black suns confusedly fell a couple of hours and then stopped.

No. 5. 1590; 7th moon. A small star was expelled from the midst of the moon.

No. 6. 1593. A star issued out of the moon.

No. 7. 1611; 4th moon. A white rainbow, having the sun in its centre.

No. 8. 1622; 8th moon. Before sunset there was a white rainbow several tens of feet long; extending from north-east to south-west.

No. 9. 1622; 10th moon, 20th day. On that night (five days after full), the moon was round as if full.

No. 10. 1625; 3rd moon. A black rainbow seen to the south; it was so long as to span the sky.

No. 11. 1626; 7th moon. Beneath the sun was a halo like a black sun; also a large star was seen in the east with a red glare irradiating it.

No. 12. 1650; 7th moon, 20th day. Near night, a belt of black vapor darted from the sun's midst to the zenith; when from the sea another rose, uniting with the black one from the sun as a bridge; at night it disappeared.

No. 13. 1651. Summer, a black rainbow crossed the sun, its head and tail touching the earth.

No. 14. 1678; 7th moon, 6th day. At night, the moon being crescented, suddenly a black vapor severed the moon into two parts, leaving a path between them a foot wide; the halves were also divided by a narrower strip; the vapor disappeared in a couple of hours, and the parts reunited; a large star followed with a glare like a roll of silk.

No. 15. 1680; 1st moon. A black vapor from west to east over the expanse of heaven.

No. 16. 1681; 1st moon, 15th day. The moon red and without light.

No. 17. 1718; 12th moon. A belt of red light extending from north to south, fell into the sea with a noise.

No. 18. 1773; 2nd moon. A sea market was seen at Kungshan, visible a whole day.

*Note.* I make no pretensions to be an interpreter of nature, professing to be a mere interpreter of the Chinese language, and shall not be expected to offer explanations of all that Chinese

observers record. The cases of parhelia will be readily recognized. The phrase "fighting suns," by which these brilliant phenomena are usually described, may also be rendered by "suns being in opposition." Thus in translations of the 網鑑易知 it is said,— "When the Hia dynasty perished (1765 B. C.), two suns fought in the heavens." By the sea market (18), a mirage is intended; its duration was remarkable. That part of the sea on Hangchau Bay which lies near Kiahing, often exhibits this illusion. It is more frequently seen from the opposite side. "Sea market" is the general term by which the mirage is designated, and it is noted as occurring at different points of the coast from Canton to Shantung.

### SECTION III. BOTANY.

#### Sub-section 1. STRANGE PRODUCTIONS.

No. 1. A. D. 200? About the middle of the third century, there was a spontaneous growth of rice.

No. 2. 1023; 6th moon. The lakes and fields as far as Kiahing and Suchau produced sacred rice. The hungry people ate it.

No. 3. 1350? A willow tree made a noise like an ox three successive times.

No. 4. 1357; 4th moon, 15th day. At the fifth tything of Yangkiang western azure temple, there was a sound emitted from the wooden pillars of a building of nineteen rooms, resembling the beating upon a tub inverted in water; on applying the hand to the pillars, it was shook and repelled; it lasted a couple of hours.

No. 5. 1489. A felicitous bamboo; a single root gave rise to a pair of parallel stems, having corresponding branches, and both of the same size and height; four years later the same thing occurred.

No. 6. 1492. Spring, a *kai* (a coarse kind of mustard usually two feet high) grew in a shady place to the height of ten feet, with leaves the size of the plantain; the flowers rose two feet above the walls of the court.

No. 7. 1505. Another instance of a double bamboo.

No. 8. 1511; 2nd moon. At Pehsha village, 14th tything, there was a tree that made a noise.

No. 9. 1568; 3rd moon. In Shanghai a decaying tree gave out smoke, like threads of silk, from an aperture.

No. 10. 1569; 10th moon. On a winter night there was thunder and lightning; pear and peach trees flowered, grain sprung up, and plum and maiden-hair trees fruited.

No. 11. 1626; 6th moon. A very old tree gave out blood.

No. 12. 1645; 1st moon. A decayed tree at Kinshan ignited of itself.

No. 13. 1768. Spring, in the court of the literary chancellor, a pair of bamboos sprang from one root.

No. 14. 1773; 6th moon, 17th day. Afternoon, during a fine rain there was a sudden clap of thunder, when a decayed cypress tree in front of the district magistracy revived and flourished.

*Note.* Two instances will be noted of the effects of electric action on vegetation, and two of spontaneous combustion; the other cases the reader will reject or explain as he sees fit.

#### Sub-section 2. ABUNDANT HARVESTS.

No. 1. A. D. 1511. Summer, wheat had many branches and heads.

No. 2. 1663. A year of great abundance; rice was excellent and double the usual quantity.

No. 3. 1667. A great harvest; one *hoh* of rice (133 lbs.) cost only two *tsien* [say 70 or 80 cash] at that time at Hukwang, and the right of the river it was still cheaper. The fields did not yield enough to pay taxes; the granaries of the rich were overflowing, but they discarded it; goods of every description were without purchasers; people called that the year of "ripe dearth."

No. 4. 1683. A very productive year; single stems of rice had double heads, some three or four. Specimens were rolled up, and deposited in a temple, with a written account; the circumstances became known from the discovery eighty-four years after, on repairing the temple.

No. 5. 1713. A year of abundance.

No. 6. 1731. A year of great abundance.

No. 7. 1737. A year of abundance; some stalks had double, others four or five heads.

No. 8. 1744. A year of abundance.

No. 9. 1749. Rice with double heads, some with six or seven.

No. 10. 1753. A year of abundance; a *tau* of rice cost less than one hundred cash.

No. 11. 1754. A year of abundance.

No. 12. 1761. A year of abundance.

No. 13. 1769. A year of abundance.

No. 14. 1773. A year of abundance.

No. 15. 1776. A year of abundance.

No. 16. 1787. A year of abundance.

No. 17. 1788. A year of abundance, and double-headed rice.

*Note.* The only pleasing feature in the records of which this sub-section is composed, is marred somewhat by "too much of a good thing." The agriculturist and political economist, the merchant and vegetable physiologist will read with interest the brief note on the distress occasioned by that year of remarkable productiveness, 1667.

#### SECTION IV. ZOOLOGY.

##### *Sub-section 1. HETEROLOGOUS.*

No. 1. B. C. 167. Horns grew on a horse.

No. 2. A. D. 1352; 8th moon. A spayed bitch had a litter of eight pups, one of which had claws as red as blood.

No. 3. 1523; 6th moon. Tanchuen, a female servant in the Hwang family at Shanghai, gave birth to a son, on the top of whose head there were two horns of flesh, and whose eyes were in the forehead, resembling the devil's bailiff; it was cast into the canal.

No. 4. 1526. At Hwangking, a farmer named Kungfang had a fleshy tumour over the ribs, on the side of the body, which being cut open, a foetus was discovered enclosed.

No. 5. 1552. A woman had a beard.

No. 6. 1554; 6th moon. At the village of Tuling there was a boy born, who slipped under the bed and wailed; it was put to death; it was hairy and had horns like the devil's bailiff (a demon with a cow's head, to whom Yenlo king of hades sends the souls of wicked men on dying).

No. 7. 1568. A sow brought forth a pig, having on its right side for a paw a human hand.

No. 8. 1588. A pig born with eight legs.

No. 9. 1588. A black hog changed to white.

No. 10. 1593. A young cock on breaking its shell, was found to have a comb hanging down like a fringe; in the middle it had a horn.

No. 11. 1596; 3rd moon. A pregnant woman suddenly vomited a foetus an inch long; its body and limbs were rather perfect; it caused alarm and it was thrown away.

No. 12. 1600. A sow belonging to the Yen family produced a pig, with a human head, white body, and long square nose; its fore legs had human hands.

No. 13. 1601. A buffalo brought forth a calf with two heads and four fore and two hind feet.

No. 14. 1613; 4th moon. The Séu family had a chicken, with one head, four wings, four legs and two tails.

No. 15. 1614. At Yangkia pang a boy aged fourteen years, had on his abdomen, a human head, face, mouth, and nose complete, but the eyes had no lustre.

No. 16. 1632. A Mrs. Li changed into a man and begat a son.

No. 17. 1637; 7th moon. A three-legged chicken was produced.

No. 18. 1646; 5th moon. The wife of one Yang had a son with three eyes, and a horn from each temple.

No. 19. 1656; 12th moon. Outside of the great east gate, Shanghai, a pregnant woman went twelve months and produced something like a pig, the eyes at the side of the ears, its whole body being full of hairs.

No. 20. 1658. A child born with two heads.

No. 21. 1644. A fisherman caught at Tsiangmau a large fish weighing thirty-five catties, resembling a tench, with five eyes in its head.

No. 22. 1680. At Kingshan a male child was born with its eyes set in its forehead, and a fleshy horn on its head.

No. 23. 1680; 8th moon, 16th day. At Hwangnetun, a strange fish was caught; it had no scales, a man's head, and a tortoise back, of the size of an ox.

No. 24. 1685. A goat produced a kid and a monkey.

No. 25. 1694. At Chansha in a litter of eight pigs, one of them had but one eye, and had a fleshy head.

No. 26. 1694. A child born with two heads, face to face; it soon died.

*Note.* Records analogous to the above are to be met with in Western history, and do not here call for special remark.

##### *Sub-section 2. RARE VISITORS.*

No. 1. A. D. 200? About the middle of the 3rd century, five large birds were seen in the spring of the year; they were considered the phoenix.

No. 2. 290-307. At Lau district a sound was suddenly heard in the ground at the Hwaiyau family residence, as of a dog barking; digging they got a dog and a bitch; their eyes were not

yet opened; they resembled ordinary-sized dogs; they were fed, and many came to see them; old folks said they were rhinoceros dogs, and that the captors would get rich.

No. 3. 456. A white bird was caught and sent up to the emperor.

No. 4. 1305. Locusts.

No. 5. 1351. Among a brood of seven chickens, there was one that was like a full-grown cock; it stretched its wings and crowed.

No. 6. 1367. Mrs. Tsiang, a blacksmith's wife had triplet sons; the scholar Pang wrote an ode on the occasion.

No. 7. 1516. The south hills of Shanghai visited by a tiger which devoured people.

No. 8. 1530; 7th moon. Locusts filled the heavens; a typhoon carried them off to sea; those that fell on the ground became crabs, which devoured the paddy or rice.

No. 9. 1540. Locusts ate all the paddy.

No. 10. 1552. A pair of tigers swam from the sea to Kinshan, and wounded three men.

No. 11. 1570; 6th moon. Devastation of the crops on the coast by a small species of crab, after an inundation of the sea.

No. 12. 1589. An animal resembling a monkey was seen on the Lí pagoda; it disappeared after a few days.

No. 13. 1595; 3rd moon. A deer above ten feet high swam from Lang island and came to Shanghai, crossing the river; the district magistrate sent above ten boats after it; it was pierced by an arrow, and stoned to death.

No. 14. 1798; 2nd moon. Black rain fell; people's clothes were spotted with it as by ink.

No. 15. 1606; 6th moon. A gigantic variegated bird lighted at Hwating, five or six feet high; its head had beautiful tufts floating in the wind.

No. 16. 1606; 9th moon. A couple of tigers swam from the sea to Kinshan and wounded three men.

No. 17. 1632. A tiger issued from amidst reeds at the Whangpu; chased to Kanpu and captured.

No. 18. 1633; 4th moon. It rained blood, from Wutsau stream to the north-east.

No. 19. 1633; 11th moon. Blood fell at Hwating.

No. 20. 1639; 4th moon. Mrs. Pau had triplet sons.

No. 21. 1640. Spring; two monstrous fish were stranded near Kinshan; one was black, without scales, about a hundred feet

long; its intestines were like a cart wheel, and its tongue was ten feet long; the other was smaller and white; they had no eyes.

No. 22. 1641. Locusts filled the sky.

No. 23. 1642; 3rd moon. Locusts.

No. 24. 1643. Spring, young locusts came out; meeting rains, they were changed into crabs.

No. 25. 1645; 2nd moon. Four white swallows made their nests at the east gate of Sungkiang.

No. 26. 1648. A tiger was hunted by the military, and pierced in the eye by an arrow.

No. 27. 1654. A fall of sweet dew.

No. 28. 1659; 4th moon. A white tiger was seen at Kinshan, which suddenly entered the city and carried off an old woman; the military fought with it, and four of them were bitten; doors were all shut; next day it suddenly disappeared.

No. 29. 1666; 6th moon. In the latter half of the month, sea birds came and rested on the sea shore.

No. 30. 1673. Locusts filled the sky; they came from the north and went to the south; where they passed, they ate leaves of the bamboo and heads of the reeds only, not touching grains; a prefect on his way from Suchau observed them clinging to the heads of the rice all dead.

No. 31. 1680. Summer, sand insects damaged the paddy.

No. 32. 1680; 8th month. Locusts filled the air; they came from the north and went to south; they lighted on reeds, not touching rice.

No. 33. 1682. A tiger came from the west, and devoured a boy; the soldiers could not capture it.

No. 34. 1685; 8th moon, 4th day. At night a huge fish was brought in by the tide; it was without scales; the flesh weighed above 2,000 catties, over 3,000 lbs.

No. 35. 1689. Autumn, insects ate the rice.

No. 36. 1690. Summer, a dog crossing a river, fell off the bridge, and suddenly sank; in an instant a great fish like a silure with beard several feet long, was seen holding the dog in its jaws, when they disappeared.

No. 37. 1692; 4th moon, 24th day. At Tea hill, Great stone village, a willow tree several tens of feet was split asunder by lightning, and in the middle a centipede was discovered, minus its head, eight or nine feet long; it was of a dark reddish hue.



No. 38. 1704; 8th moon. Two large fish were seen sporting beneath a bridge; they resembled boats, about them were innumerable small fish.

No. 39. 1725; 5th moon. Locusts.

No. 40. 1728; 11th moon. Sweet dew on trees; taste of honey.

No. 41. 1229; 1st moon. Sweet dew fell; the governor of the province reported it to the emperor Yungching.

No. 42. 1729; 8th moon. Aphides destructive.

No. 43. 1732; 7th moon. Insects ate the paddy.

No. 44. 1733; 7th moon. Aphides ate above half the rice.

No. 45. 1738; 10 moon, 5th day. Sea birds came in vast flocks and devoured the crops; they remained a month.

No. 46. 1740; 4th moon. Mrs. Hiame Luh had three sons at a birth.

No. 47. 1740; 10th moon. Wild birds filled the heavens and damaged the crops.

No. 48. 1752; 11th and 12th moons. During these two months, sweet dew fell five times.

No. 49. 1756; 6th moon. An insect 蟻 produced; that summer the weather was cold as winter, and the crops failed.

No. 50. 1760; 7th moon. An aphid damaged the rice.

No. 51. 1768; 10th moon. A tiger wounded men; chased by husbandmen to Kwang hill, where they killed it.

No. 52. 1768; 8th moon. Fishermen caught a tortoise; on the belly were the characters perfectly distinct 子午 *tz' nu* [horary characters].

No. 53. 1775; 10th moon. Sweet dew fell.

No. 54. 1776; 8th moon, 17th day. Sweet dew fell on trees and vegetables, glistening like eyes; the taste was like that of sweet-cakes; it fell for three nights.

No. 55. 1777. Grubs of young locusts appeared; after a few days they were found clinging to the grass dead.

No. 56. 1780; 1st moon. Sweet dew fell.

No. 57. 1784; 7th moon. Following the tide, there came several myriads of centipedes, which entered the canal at Tsihpauching; people did not dare drink the water.

No. 58. 1788; 12th moon. Sweet dew fell for three days.

*Note.* ALBINAS. Nos. 3 and 25 were perhaps Albinos. TRIPLETS. Three cases are recorded between 1367 and 1640. The number should be doubled, for it is to be presumed that there was as many cases of triplet girls.

LOCUSTS. The harmlessness of some of these swarms is noteworthy, as also the fact that in periods of drought they are of more frequent occurrence. Since the opening of this port to foreigners, viz. 1843, this part of the country has been several times visited by them. In Chihli they committed great ravage, but here their force seemed spent, doing but little harm. Depredations from other insects and crabs are recorded.

BLOODY AND INKY RAIN. Presuming that these were the secretions of birds and insects, they have been placed in this subsection.

SWEET DEW. This is also probably an animal secretion. The report sent to Yungching respecting the phenomenon, attributed it to the virtues of the monarch, which called down this signal manifestation of heaven's favor. His Majesty gracefully declined taking the honor to himself, as it did not fall in the palace; but ascribed it to the goodness of the officers and people of this place, and enjoined on them the duty of acknowledging and proving themselves worthy of the heavenly token.

TIGERS. That this part of China should sometimes be visited by hungry tigers, will be thought less strange, when it is borne in mind that one of these animals, large and fierce was killed a few months since at Amoy.

WHALES AND SEALS. Reference seems to be made to these animals in the above record.

#### Sub-section 3. PSYCHOLOGICAL.

No. 1. A. D. 441. At Lau district, a young woman on a windy rainy night went wildly into the city; she perceived that she had gone from home, and that her clothes were not moistened; at dawn she went to the gates of the magistracy, and desired word to be sent to the officer saying, — "I am a heavenly messenger; his worship must rise and show me in, and he shall become rich and powerful; but if he refuses, a calamity will befall him." "He treated her as one raving, and put her in prison;" she was found by her friends, and her release procured in a few days. Twenty days after, the magistrate was capitally executed.

No. 2. 1332; 6th moon. A rumor rose among the people, that young men and maidens were to be seized for slaves; instantly all were married or betrothed.

No. 3. 1489. A rumor arose in the market place, that soldiers were coming, when there was a general flight; women threw themselves into wells and were drowned.

No. 4. 1554. At that time there were many phantoms and supernatural occurrences at Tsingpu. The wife of the district magistrate took alarm and died at seeing a toad jump out of a bowl as she was eating. The animal jumped about, was pursued, and could not be caught.

No. 5. 1557. Summer, a black apparition 青 *shang* was seen. Winter, phantom fires were seen, like lighting boats floating on the water.

No. 6. 1559; 8th moon. An idle rumor was spread that a fox had become transformed into a sprite; from night till morning people beat gongs.

No. 7. 1568. A rumor prevailed that the emperor had sent officers to get virgins for the palace; children of every age were married or betrothed, and very many were badly mated.

No. 8. 1590. When there was a calamity from an inundation of the sea, above 10,000 persons drowned, and the survivors were attending to their interment, there was an alarm that Japanese were coming, all fled to Shanghai city, and several thousand were trampled to death.

No. 9. 1636; 2nd moon. A rumor got abroad that a fox had been metamorphosed into a sprite.

No. 10. 1636. On an alarm that Japanese were coming, people all fled from the sea-side.

No. 11. 1632; 2nd moon, 19th day. An alarm in the day time, in consequence of the hissing and screaming of demons everywhere in town and country.

No. 12. 1620; 1st moon. At daybreak a hissing was heard, as of several tens of demons; a noise as of carts or birds, extending from south-east to north-west.

*Note 1.* Panics sometimes seize the public mind in China, spreading like epidemics — sometimes from superstitious fears arising from inexplicable phenomena, and at other times the result of a hoax. The above affords instances of both kinds.

2. It will be observed, that our grouping or classification of facts is defective. It will, however, be found more convenient than the simple chronological arrangement of the authorities quoted. Comets, eclipses, and conjunctions have been omitted, as also cases of conflagration, and cases of pious fraud.

## ARTICLE IV.

## ON THE ANCIENT MOUTHS OF THE YANGTSÍ KIANG.

BY THE REV. J. EDKINS.

Read before the Society, March 18th, 1860.

WHILE the Yellow River has been a source of constant trouble and expense to the Chinese government through changes in its direction, the Yangtsí kiang has for many years past retained its present course unaltered. But evidence exists in the books of the country that at an earlier period it flowed to the ocean, not as now through one broad channel, but through three. Of these the southernmost proceeding into Hangcheu Bay was the largest.

The most ancient account of Chinese geography is that found in the Book of History or Shu King. One of the early chapters in that work is called Yü kung. This is the account in question. It is said to have been written by the emperor Yü, who lived about B. C. 2000. He was actively engaged in subduing the inundations of the time, known as the Chinese flood. When this work was done, he prepared a general description of the country, and afterwards became emperor. He says, that the Three Rivers (kiang) empty themselves into the sea in the province of Hangcheu, by (as he appears to mean) separate embouchures. Of these he mentions the northern under the name, Peh Kiang, North river, and the central under that of Chung Kiang, Middle river. The reason why the southern branch is not particularly referred to probably was that it was the principal stream.

In the T'sien Han shu, History of the early Han dynasty, by Panku, who lived soon after the commencement of the Christian era, it is said that the water of the Kiang enters the sea at Yü-yau, a locality indicated by the city of that name thirty miles to the west of the modern Ningpo. He also states that the parting of the branches occurs at Shihc'heng and that the southern branch proceeds from this point (which is a little above the present C'hicheu fu), and enters the sea at a distance of 1200 Chinese miles, or 400 English miles.