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Ref.: Catalog of Naked-Eye Sunspots (Large Sunspots Catalog)

Dear Helen Coffey,

Thanks for your E-mail of 5 June. Of course you may include the listing of ancient sunspots by Wittmann and Xu in your web site, in particular if this would be useful for the astronomical community.

Since its first publication in 1987 I have maintained and occasionally updated that catalog, and I am enclosing here the MOST RECENT version, which now extends until 1918, for your convenience and for distribution through your web site.

I am preparing (slowly, as my spare time permits...) an extension of the data from 1918 up to the present. In order to preserve the integrity and to maintain the consistency of the data, I suggest that suggestions for corrections, inclusions, modifications, etc. be mailed to ME personally, so that I can always keep an original (authentic) version of the catalog at my site (which of course will and can then be re-distributed).

As the first version of the catalog stems from old UNIVAC times, it is still mostly in capitals, but this may be changed if necessary... I have added a few explanatory notes at the beginning, which I think might be helpful for the non-specialist user: These should not be taken off the file.

Best wishes, sincerely

Axel Wittmann (USG, 6.6.97).

Catalog of Naked-Eye Sunspot Observations and Large Sunspots
Compiled by Axel D. Wittmann
University Observatory Goettingen (USG)
Last update: 06 June 1997

Notes:

- a) Large ('naked-eye') sunspots may serve as one of the primary indicators of solar activity; their distribution shows the typical features of solar activity (11-year cycle, butterfly diagram, bimodal maxima, Maunder-type maxima and minima, etc.). Historical naked-eye sunspot observations are one of the very few direct (non-proxy) means of studying solar activity during the past.
- b) This catalogue contains observations of large sunspots (or what may possibly have been a large sunspot!) with the naked eye. 'Modern' spots (more recent spots observed telescopically) are only included if they were large enough to be (in principle, at least) visible to the naked eye.
- c) When trying to interpret the data, and in particular the ancient Chinese observations, note that they are not at all systematic, i.e. 'dense' in time (or statistically 'complete'), but were made more or less by chance, or were often cited inaccurately in the chronicles! In particular, the ancient astronomers were trying to determine the phase of the new moon (for calendar purposes), and that is why often sunspots were preferably detected near the day of new moon (whereas their actual 'maximum' was sometime else): So be careful and don't misinterpret the meager statistics!
- d) Data from 165 BC to AD 1684 were compiled by Axel D. Wittmann, University Observatory, Goettingen, Germany, and Zhen-Tao Xu, Purple Mountain Observatory, Nanjing, China; cf. Ref. [27].
- e) This data has been updated and expanded (in particular for the time from 1685 to 1918) by data taken from the catalog of Kevin K.C. Yau and F. Richard Stephenson, University of Durham (cf. Ref. [25]) by A.D. Wittmann in 1988.
- f) The 'modern' observations (after AD 1764, and in particular those of the 20th century) were compiled by A.D. Wittmann; if possible they include the measured area and the observed heliographic latitude. The date usually is that of the CMD passage.
- g) The format of (most) entries is as follows:
 - Julian day number (JD, approximate if day unknown)/ Western date (Julian until 4 October 1582, Gregorian thereafter) / Chinese date (format: dynasty/emperor/reign/year/month('=intercalated)/day) / Country [town if known],
 - Description (text from original source if possible)
 - Notes

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1661262 -164 MAR / MAY (HAN/WENDI/QIANYUAN/15/-/-) CHINA
Text: "THE CHARACTER 'WANG' ("KING") APPEARED IN THE SUN".
["CHE-FU-YUAN-GUI"; SCHOVE (1950); XU (1983); YAU & STEPHENSON (1988)/1]

1705842 -42 MAY 5 / JUN 3 (YUNG-KUANG/1/4/-) CHINA

Text: "THE SUN WAS WHITISH BLUE IN COLOR AND CAST NO SHADOWS. RIGHT AT ITS CENTRE, THERE WERE FREQUENTLY SHADOWS AND NO BRILLIANCE. THAT SUMMER WAS COLD UNTIL THE 9TH MONTH, WHEN THE SUN REGAINED ITS BRILLIANCE".
["HAN SHU"; YAU & STEPHENSON (1988)/2]

1709817 -31 MAR 8 / APR 5 (CHENGDI/JIANSHI/1/2/-) CHINA
Text: "THE SUNLIGHT WAS DIM (THE SKY BECAME ORANGE), AND A BLACK VAPOUR WAS IN THE SUN".
["HAN SHU"; XU (1983); YAU & STEPHENSON (1988)/3]

1711326 -27 MAY 10 (CHENGDI/HEPING/1/3/56) CHINA
Text: "ON A *JI-WEI* DAY THE SUN WAS YELLOW AT RISING, AND A BLACK VAPOUR AS LARGE AS A CASH (COIN) WAS OBSERVED AT ITS CENTRE".
NOTE: DAY GIVEN AS "I-WEI" (32), BUT IN THE 3RD MONTH THERE WAS NO I-WEI DAY. SHOULD PROBABLY READ "CHI-WEI" (56).
["QIAN HAN SHU, WU XING ZHI"; LI TIAN-CI (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/4]

1726619 15 MAR 10 / APR 7 (XING/TIANFUNG/2/2/-) CHINA
Text: "A GENERAL AMNESTY WAS DECLARED FOR THE WHOLE COUNTRY. AT THAT TIME A STAR WAS SEEN IN THE SUN".
["HAN SHU"; XU (1983); YAU & STEPHENSON (1988)/5]

1728439 20 MAR 17 (XIN/WANG MANG/DIHUANG/1/2/9) CHINA {CHANG-AN}
Text: "THE SUN'S MIDDLE WAS (VERY) BLACK, AND (WANG) MANG DISLIKED IT AND ISSUED AN EDICT AS FOLLOWS: 'REGARDING THE DARKNESS RECENTLY VISIBLE IN THE SUN, YIN IS FORCING YANG, AND A BLACK VAPOUR (IN THE SUN) IS AN ABNORMALITY'. ALL THE PEOPLE WERE ALARMED BY THE STRANGE OMEN".
["HAN-SHU", BIOGRAPHY OF WANG MANG; ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/6]

1789423 187 MAR 5 (ZHONGPING/4/2/33) CHINA
"ON THE SUN THERE WAS A BLACK MASS (VAPOUR) AS BIG AS A MELON".
["HOU-HAN-SHU, ZHI"; ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/7]

1789785 188 FEB 15 / MAR 15 (ZHONGPING/5/1/-) CHINA
"THE SUN WAS REDDISH-YELLOW (ORANGE) IN COLOUR, AND ON IT THERE WAS A BLACK VAPOUR LIKE A FLYING MAGPIE. AFTER SOME MONTHS IT GRADUALLY FADED AWAY".
["HOU-HAN-SHU, ZHI"; "TUNG-ZHI" (SECONDARY SOURCE); HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/8]

1808870 240 (WU/CHWU/3/-/-) CHINA
"WITHIN THE SUN A THREE-LEGGED CROW WAS OBSERVED".
["KAI YUAN ZHAN JING"; XU (1983); YAU & STEPHENSON (1988)/9]

1819302 268 DEC 23 (JIN/WUDI/TAISHI/4/11/32) CHINA
"WITHIN THE SUN THERE WAS A BLACK SPOT".
["TONG-ZHI" (SECONDARY SOURCE); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978)]

1829386 296 JUL 17 / AUG 16 (JIN/HUIDI/YUANKANG/6/6/-) CHINA
"WITHIN THE SUN THERE WAS SOMETHING LIKE A FLYING SWALLOW FOR SEVERAL MONTHS".
["KAI YUAN ZHAG JING"; XU (1983)]

1830327 299 FEB 17 / MAR 18 (HUIDI/YUANKANG/9/1/-) CHINA
"WITHIN THE SUN THERE WAS SOMETHING LIKE A NUMBER OF FLYING SWALLOWS. THEY VANISHED AFTER SEVERAL DAYS. THIS PORTENT WAS INTERPRETED BY WANG YIN AS A PRESAGE OF THE ABDICATION AND DEATH OF THE TWO EMPERORS MIN AND HUAI".
["JIN-SHU, ZHI"; "SONG-SHU, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/10]

1830942 300 NOV 5 (HUIDI/YONGKANG/1/10/32) CHINA
"THERE WAS A SUN'S FIGHTING, AND YELLOW FOG COVERED ALL AROUND".
["SONG SHU WU XING ZHI"; XU (1983)]

1831017 301 JAN 19 (YONGKANG/1/12/47) CHINA
ON A GENG-SHU DAY THERE APPEARED A BLACK VAPOUR ON THE SUN. ACCORDING TO THE YI ZHUAN OF JING FANG, THESE ABNORMALITIES ARISE FROM FAILURE TO APPEASE THE HEAVENS".
["JIN-SHU, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/11]

1831291 301 OCT 20 (YONGNING/1/9/21) CHINA
"ON A JIA-SHEN DAY A SPOT APPEARED IN THE SUN. ACCORDING TO THE PROGNOSTICATION OF JING FANG'S YI ZHUAN, SUNSPOTS APPEAR WHENEVER GOVERNMENT OFFICIALS FAIL TO PREVENT THE EMPEROR FROM TAKING THE WRONG COURSE, AND ALLOW IT TO BECOME KNOWN TO THE PEOPLE".
["JIN-SHU, ZHI"; "SONG-SHU, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/12]

1831729 302 DEC 6 / 303 JAN 4 (TAI'AN/1/11/-) CHINA
"WITHIN THE SUN THERE WAS A BLACK VAPOUR".
["JIN-SHU, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/13]

1832460 304 DEC 14 / 305 JAN 11 (YONGXING/1/11/-) CHINA
"THERE WAS A BLACK VAPOUR WITHIN THE SUN, DIVIDING THE SUN".
["JIN-SHU, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/14]

1833562 308 JAN 8 (HUAIDI/YONGJIA/1/11/12) CHINA
"A DARK-YELLOW VAPOUR COVERED THE SUN".

["JIN-SHU, ZHI"; MOIDREY (1904); XU (1983)]

1834747 311 APR 7 (HUAIDI/YONGJIA/5/3/57) CHINA

"WITHIN THE SUN THERE WAS SOMETHING RESEMBLING A FLYING SWALLOW".

"ON A GENG-SHEN DAY THE SUNLIGHT WAS SCATTERED, GIVING THE IMPRESSION OF STREAMS OF BLOOD FLOWING DOWNWARDS AND TURNING ALL ILLUMINATED OBJECTS INTO RED COLOUR. THERE APPEARED INSIDE THE SUN OBJECTS (SOMETHING) RESEMBLING (A) FLYING SWALLOW(S)".

["JIN-SHU, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP

(1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/15]

1838050/1838410 320 APR 22 / 321 APR 17 (YUANDI/DAXING/3 OR 4/3/60) CHINA

"THERE WAS A BLACK SPOT WITHIN THE SUN". PROBABLY THE SAME AS 321 MAY 7.

["JIN-LING-XIN-ZHI"; XU (1983)]

1838430 321 MAY 7 (YUANDI/DAXING/4/3/20) CHINA

"ON A GUI-WEI DAY WITHIN THE SUN THERE WAS A BLACK SPOT. PRISONERS WERE INTERROGATED ON DAY 53 (JUNE 9)".

["JIN-SHU, ZHI"; "SONG-SHU, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/16]

1838978 322 NOV 6 (YONGCHANG/1/10/28) CHINA {NANJING}

"ON A XIN-MAO DAY WITHIN THE SUN THERE APPEARED A BLACK SPOT, (AND THE SUN WAS DIM)".

["JIN-SHU, ZHI"; SONG-SHU, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/17]

1841558 329 NOV 29 (HOWZHAO/4/10/28) CHINA

"WITHIN THE SUN THERE WAS A BLACK SPOT".

NOTE: PROBABLY THE SAME AS 322 NOV 6.

["HUAI-LAI-XIAN-ZHI"; XU (1983)]

1846026 342 FEB 22 (XIANKANG/8/1/56) CHINA

"ON A JI WEI DAY THERE WERE SOLAR ECLIPSE AND BLACK SPOT WITHIN THE SUN".

NOTE: TOTAL ECLIPSE VISIBLE IN THE SOUTHEAST PACIFIC ON 21 FEB 342.

["TU-SHU-JI-CHENG"; XU (1983)]

1846039 342 MAR 7 (CHENGDI/XIANKANG/8/1/9) UNTIL MAR 11 CHINA

"ON A REN-SHEN DAY WITHIN THE SUN THERE WAS A BLACK SPOT. IT LASTED UNTIL (IT DID NOT DISAPPEAR BEFORE) DAY 13 (MAR 11)".

["JIN-SHU, ZHI"; "SONG-SHU, WU-XING-ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS

RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/18]

1849778 352 (MUDI/YONGHE/8/-/-) CHINA {LIANG-ZHOU}

"THE SUN WAS OBSERVED BY ZHANG CHONG HUA AT LIANG-ZHOU AND FOUND TO BE SCORCHING (DAZZLING) RED (LIKE FIRE). WITHIN THE SUN THERE WAS SOMETHING

LIKE A THREE-LEGGED CROW, WHOSE SHAPE WAS SEEN SHARP AND CLEAR. IT
LASTED
FOR FIVE DAYS".

NOTE: SAME AS 342 MAR 7-11 ?

["JIN-SHU, ZHI"; ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK
AND STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/19]

1850667 354 NOV 7 (YONGHE/10/10/17) CHINA

"ON A GENG-CH'EN DAY THERE WAS (WERE) A BLACK SPOT(S) IN THE SUN AS
LARGE
AS (A) HEN'S EGG(S)".

["JIN-SHU, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH
GROUP
(1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON
(1988)/20]

1850815 355 APR 4 (YONGHE/11/3/45) CHINA

"ON A WU-SHENG DAY THERE WERE TWO BLACK SPOTS IN THE SUN AS BIG AS
PEACHES. AT THAT TIME THE EMPEROR WAS YOUNG AND WEAK, AND FOR A LONG
TIME DID NOT ATTEND TO STATE AFFAIRS".

["JIN-SHU, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH
GROUP
(1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON
(1988)/21]

1852493 359 NOV 7 (SHENPING/3/10/43) CHINA

"ON A BING-WU DAY WITHIN THE SUN A BLACK SPOT AS LARGE AS A HEN'S EGG
WAS OBSERVED. SHORTLY AFTERWARDS THE EMPEROR DIED".

["JIN-SHU, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH
GROUP
(1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON
(1988)/22]

1856166 369 NOV 27 (HAIXIGONG/TAIHE/4/10/56) CHINA

"ON A JI-WEI DAY THERE APPEARED A BLACK SPOT ON THE SUN".

NOTE: SOURCE GIVES DAY 32, BUT THERE WAS NO DAY 32 IN MONTH 10. PROBABLY
READ DAY 56.

["JIN-SHU, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH
GROUP
(1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON
(1988)/23]

1856288 370 MAR 29 (TAIHE/5/2/58) CHINA

"ON A XIN-YOU DAY THERE WAS ONE BLACK SPOT ON THE SUN AS LARGE AS A
PLUM".

["JIN-SHU, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH
GROUP
(1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON
(1988)/24]

1857264 372 NOV 29 / 373 JAN 28 (JIANWENDI/XIAN'AN/2/10/14) CHINA

"ON A DING-CH'OU DAY THERE WAS A BLACK SPOT OBSERVED ON THE SUN".

NOTE: THERE WAS NO DAY 14 IN MONTH 11, HENCE THE MONTH IS PROBABLY
WRONG AND SHOULD READ 10 OR 12.

["JIN-SHU, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); XU (1983); YAU & STEPHENSON (1988)/25]

1857656 373 DEC 26 (XIAOWUDI/NINGKANG/1/11/46) CHINA

"ON A JI-YOU DAY WITHIN THE SUN THERE WAS A BLACK SPOT AS LARGE AS A PLUM (PEAR)".

["JIN-SHU, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/26]

1857757 374 APR 6 (XIAOWUDI/NINGKANG/2/3/27) CHINA

"ON A GENG-YIN DAY WITHIN THE SUN THERE WERE TWO BLACK SPOTS AS LARGE AS DUCK'S EGGS".

["JIN-SHU, ZHI"; HIRAYAMA (1889); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/27]

1858031 375 JAN 5 (NINGKANG/2/11/1) CHINA

"WITHIN THE SUN THERE WAS A BLACK SPOT AS LARGE AS A HEN'S EGG".

NOTE: SAME AS 375 JAN 10 ?

["GUAN-XIANG-WUAN-ZHAN"; XU (1983)]

1858036 375 JAN 10 (NINGKANG/2/11/6) CHINA

"WITHIN THE SUN THERE WAS A BLACK SPOT AS LARGE AS A HEN'S EGG. AT THAT TIME THE EMPEROR HAD ALREADY ATTAINED MANHOOD, YET THE EMPRESS K'ANG-XIAN CONTINUED TO RUN STATE AFFAIRS. THIS WAS AGAINST THE FEUDAL CODE, AND THEREFORE DEFECTS WERE MANIFESTED BY THE SUN".

["JIN-SHU, ZHI"; WILLIAMS (1873); HOSIE (1879); HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/28]

1862867 388 APR 2 (TAIYUAN/13/2/37) CHINA

"ON A GENG-ZI DAY WITHIN THE SUN THERE WERE TWO BLACK SPOTS AS LARGE AS PLUMS".

NOTE: POSSIBLY ALSO SEEN ON APR 1.

["JIN-SHU, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/29]

1863338 389 JUL 17 (TAIYUAN/14/6/28) CHINA

"ON A XIN-MAO DAY WITHIN THE SUN THERE WAS AGAIN OBSERVED A BLACK SPOT AS LARGE AS A PLUM".

["JIN-SHU, ZHI"; ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK AND STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/30]

1865678 395 DEC 13 (TAIYUAN/20/11/28) CHINA

"ON A XIN-MAO DAY THERE WAS AGAIN A BLACK SPOT WITHIN THE SUN (AS LARGE AS A PLUM)".

["JIN-SHU, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/31]

1867498 400 DEC 6 (ANDI/LONG'AN/4/11/48) CHINA
"ON A XIN-HAI DAY THERE WAS A BLACK MOLE (SPOT) ON THE SUN".
["JIN-SHU, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH
GROUP
(1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON
(1988)/32]

1895799 478 (BEIWEI/XIAOWENDI/TAIHE/2/-/-) CHINA
"WITHIN THE SUN THERE WAS A BLACK VAPOUR".
["TONG-ZHI"; XU (1983)]

1896213 479 JUL 5 / AUG 4 (TAIHE/3/6/-) CHINA
"WITHIN THE SUN THERE WAS A BLACK VAPOUR".
["TONG-ZHI"; XU (1983)]

1903502 499 JUL 4 (N.WEI/XIAOWENDI/TAIHE/23/6/52) CHINA
"ON DAY 16 THERE WAS A BLACK VAPOUR ON THE SUN".
NOTE: NO DAY 16 IN MONTH 6, PROBABLY READ DAY 52.
["WEI-SHU, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH
GROUP
(1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON
(1988)/33]

1903711 500 JAN 29 (TAIHE/23/12/21) CHINA
"THERE WAS A BLACK VAPOUR ON THE SUN AS LARGE AS A PEACH".
["WEI-SHU, ZHI"; ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK &
STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/34]

1903712 500 JAN 30 (S.QI/DONGHUNHOU/YONGYUAN/1/12/22) CHINA
"THERE WERE THREE BLACK SPOTS ON THE SUN".
["NAN-QI-SHU, ZHI"; HOSIE (1879); HIRAYAMA (1889); ANCIENT SUNSPOTS
RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983);
YAU & STEPHENSON (1988)/34]

1904295 501 SEP 4 (N.WEI/XUANWUDI/JINGMING/2/8/5) CHINA
"THE SUN WAS RED AND WITHOUT BRILLIANCE. ON IT THERE WAS A SINGLE BLACK
SPOT".
["WEI-SHU, ZHI"; ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK &
STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/35]

1904452,55,56 502 FEB 8,11,12 (JINGMING/3/1/42,45,46) CHINA
"IN THE SUN THERE WAS A BLACK VAPOUR LIKE A GOOSE'S EGG. IT WAS AGAIN
SEEN ON DAYS 45 AND 46. THERE WERE ALSO TWO BLACK VAPOURS THREADING
ACROSS THE SUN".
["WEI-SHU, ZHI"; ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK &
STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/36]

1904498 502 MAR 26 (JINGMING/3/3/28) CHINA
"WITHIN THE SUN THERE WAS A BLACK VAPOUR (MOLE) LIKE A GOOSE'S EGG".
NOTE: SOURCE GIVES MONTH 2, BUT THERE WAS NO DAY 28 IN MONTH 2.
PROBABLY READ MONTH 3.
["WEI-SHU, ZHI"; ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK &
STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/37]

- 1905513 505 JAN 4 (ZHENGSHI/1/12/23) CHINA
"A BLACK VAPOUR THREADED THROUGH THE SUN".
"WITHIN THE SUN THERE WAS A BLACK VAPOUR LIKE THE MOON, AND IT COLLIDED (WITH) THE SUN FROM (THE) SOUTH-EAST".
["TONG-ZHI"; XU (1983); YAU & STEPHENSON (1988)/38]
- 1905971 506 APR 7 (ZHENGSHI/3/2/1) CHINA
"WITHIN THE SUN THERE WERE TWO BLACK VAPOURS".
["WEI-SHU, ZHI"; XU (1983)]
- 1906610 508 JAN 6 (ZHENGSHI/4/11/40) CHINA
"WITHIN THE SUN THERE WERE TWO BLACK VAPOURS AS LARGE AS PEACHES".
["TONG-ZHI"; XU (1983)]
- 1907411 510 MAR 17 (YONGPING/3/2/1) CHINA
"WITHIN THE SUN THERE WERE TWO BLACK VAPOURS".
["WEI-SHU, ZHI"; ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/39]
- 1908050 511 DEC 16 (N.WEI/XUANWUDI/YONGPING/4/11/40) CHINA
"ON THE SUN THERE WERE TWO BLACK VAPOURS AS LARGE AS PEACHES".
["WEI-SHU, ZHI"; ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/40]
- 1908538 513 APR 17 (YANCHANG/2/2'/48) CHINA
"WITHIN THE SUN THERE WAS A BLACK VAPOUR".
["WEI-SHU, ZHI"; ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/41]
- 1927877 566 MAR 29 (L.ZHOU/WUDI/TIANHE/1/2/7) CHINA
"THE SUN FOUGHT THE LIGHT (WAS SHAKING) AND FADED (HAD NO BRILLIANCE), AND A CROW APPEARED INSIDE IT".
["ZHOU-SHU, WUDIZHI"; "SHUI-SHU, ZHI"; ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/42]
- 1928498 567 DEC 10 (TIANHE/2/10/28) UNTIL DEC 18 CHINA
"AT SUNRISE AND AT SUNSET THERE WAS A BLACK VAPOUR AS LARGE AS A CUP IN THE SUN. ON DAY 31 (DEC 13) ANOTHER BLACK MASS WAS ADDED AND LASTED FOR SIX DAYS, ONLY THEN DID THEY EXTINGUISH".
["ZHOU-SHU, WUDIZHI"; "SHUI-SHU, ZHI"; ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/43]
- 1932171 577 DEC 30 ? (CHIEN-TE/6/12/41) CHINA
"AT THE HOUR 'PU' (I.E. 3-5 PM) WITHIN THE SUN THERE WAS A BLACK SPOT AS LARGE AS A CUP".
NOTE: SOURCE GIVES MONTH 11, BUT THERE WAS NO DAY 41 IN MONTH 11. PROBABLY READ MONTH 12.
["SUI-SHU"; YAU & STEPHENSON (1988)/44]
- 1932630 579 APR 3 (XUANDI/DAXIANG/1/2/20) UNTIL APR 6 CHINA
"SHORTLY AFTER SUNRISE AND SHORTLY BEFORE SUNSET, ON BOTH OCCASIONS, A

BLACK PATCH AS LARGE AS A HEN'S EGG WAS SEEN IN THE SUN, AND IT LASTED FOR FOUR DAYS (WHEN IT EXTINGUISHED)".

["BEI-ZHOU-SHU, BEN-JI"; HOSIE (1879); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/45]

2015890 807 MAR 17 UNTIL MAR 24 GERMANY [LORSCH MONASTERY ?]

Text: "NAM ET STELLA MERCURII XVI. KAL. APRIS VISA EST IN SOLE QUASI PARVA MACULA, NIGRA TAMEN, PAULULUM SUPERIUS MEDIO CENTRO EIUSDEM SIDERIS, QUAE A NOBIS OCTO DIES CONSPICITUR. SED QUANDO PRIMUM INTRAVIT VEL EXIVIT, NUBIBUS IMPEDIENTIBUS MINIME ADNOTARE POTUIMUS". Translation: "THE STAR MERCURY WAS SEEN ON 17 MAR IN THE SUN LIKE A SMALL BLACK SPOT, SLIGHTLY ABOVE THE CENTRE OF THAT CELESTIAL BODY, WHICH WAS VISIBLE TO US FOR EIGHT DAYS. WHEN IT FIRST ENTERED OR LEFT (THE SUN) COULD NOT BE NOTED BY US DUE TO CLOUDS".

NOTE: A SUNSPOT THOUGHT TO BE MERCURY IN TRANSIT. THE RELIABILITY OF THE SOURCE IS PROVEN BY THE CORRECTNESS OF ACCOUNTS OF OTHER CELESTIAL EVENTS. THE DATE QUOTED BY EINHARD IN HIS "VITA CAROLI MAGNI" (AD 814) IS, HOWEVER, NOT CORRECT.

["ANNALES REGNI FRANCORUM"; RAU (1977); SCHOVE (1983)]

2022881 826 MAY 7 (TANG/JINGZONG/BAOLI/2/3/31) CHINA

"WITHIN THE SUN THERE WAS A BLACK VAPOUR (MASS) LIKE A CUP".

["XIN-T'ANG-SHU, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH

GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/46]

2022898 826 MAY 24 (TANG/JINGZONG/BAOLI/2/4/48) CHINA

"ON A XIN-HAI DAY THERE WAS A BLACK SPOT ON THE SUN".

SOURCE GIVES MONTH 3, WHICH HAS NO XIN-HAI DAY: SHOULD PROBABLY READ MONTH 4.

["XIN-T'ANG-SHU, ZHI"; ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/47]

2025057 832 APR 21 (WENZONG/DAHE/6/3/47) CHINA

"THERE WAS A BLACK SPOT ON THE SUN".

["XIN-T'ANG-SHU, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH

GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/48]

2025072 832 MAY 6 (WENZONG/DAHE/6/4/2) CHINA

"A BLACK VAPOUR OBSCURED OUT THE SUN".

["XIN-T'ANG-SHU, ZHI"; MOIDREY (1904); XU (1983)]

2027128 837 DEC 22 (KAICHENG/2/11/18) CHINA

"IN THE SUN THERE WAS A BLACK SPOT AS LARGE AS A HEN'S EGG. THE SUN WAS RED LIKE OCHRE, AND DURING DAYTIME IT WAS LIKE EVENING UNTIL DAY KUEI-WEI (20)".

["XIN-T'ANG-SHU, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH

GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/49]

2028013 840 MAY 25 UNTIL AUG 23 MIDDLE EAST

"ANNO EGIRAE 225. REGNANTE ALMOTASEMO CALIPHA, VISA EST IN SOLE PROPE MEDIUM NIGRA QUAEDAM MACULA, IDQUE FERIA 3. DIE 19. MENSIS RAGEBI ANNO SUPRA RELATO; ADEO UT NONNISI DUOS POST DIES FUNESTAE ILLAE CALAMITATES EVENERIT. HANC QUIDEM MACULAM DIES 91. IN SOLE PERDURASSE TESTATUR ALCHINDUS, PAULOQUE POST ALMOTASEMI OBITUM ACCIDISSE. TAM VERO ANTE IMPERATORIS CALIPHAE MORTEM COMETA DUO CAUDATI IN AERE CONSPICTI SUNT, PERINDE AC ALIOS NON PAUCOS ANTE RASCHIDI IMPERATORIS INTERITUM EXORTOS FUISSE TRADITUR. IDEM SUBJUNGIT ALCHINDUS, EAM MACULAM FUISSE SOLIS ECLIPSIM PER VENERIS INTERJECTUM ET CONJUNCTIONEM CUM SOLE PER SUPRA DICTUM TEMPORIS SPATIUM."

"IN THE YEAR 225 DURING THE CALIPHATE OF AL-MU'TASIM THERE APPEARED A BLACK SPOT CLOSE TO THE MIDDLE OF THE SUN. THIS TOOK PLACE ON TUESDAY 19 RAJAB 225 (840 MAY 25), AND WHEN TWO DAYS HAD GONE FROM THIS DATE, CALAMITIES OCCURRED. AS AL-KINDI HAS TESTIFIED, THIS SPOT PERSISTED ON THE SUN FOR 91 DAYS, AND SOON THEREAFTER MU'TASIM DIED. BEFORE THE DEATH OF AL-MU'TASIM TWO COMETS APPEARED, AS SOME HAD BEFORE THE DEATH OF AL-RASHID. AL-KINDI MENTIONED THAT THIS SPOT WAS DUE TO THE OCCULTATION OF THE SUN BY VENUS WHICH WAS IN CONJUNCTION WITH THE SUN DURING THE ABOVE-MENTIONED TIME INTERVAL."

[(FROM THE HANDWRITINGS OF IBN JAAFAR B. AL-MUKTAFI); CASIRI (1760); SCHÖVE (1983)]

2028597 841 DEC 30 (WUZONG/HUICHANG/1/11/47) CHINA

"WITHIN THE SUN THERE WAS A BLACK SPOT (MOLE)".

["XIN-T'ANG-SHU, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH

GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/50]

2032241 851 DEC 22 (RENSHOU/1/11/11) JAPAN, CHINA

"THE SUN HAD NO POWER. WITHIN IT THERE WAS A BLACK DOT AS LARGE AS A PLUM".

NOTE: YAU & STEPHENSON (1988)'S DATE IS DEC 2.

["MONTOKU JITSUROHU"; "WEN-DE-SHI-LU"; CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/51]

2037045 865 JAN 31 / MAR 1 (YIZONG/XIANTONG/6/1/-) CHINA

"A WHITE RAINBOW ('BAI HONG') STRETCHED ACROSS THE SUN, AND WITHIN THE SUN THERE WAS A BLACK VAPOUR LIKE A HEN'S EGG".

["XIN-T'ANG-SHU, ZHI"; ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/52]

2040438 874 (XIZONG/QIANFU/1/-/-) CHINA

"WITHIN THE SUN THERE WAS A BLACK SPOT (SHAPED LIKE A FLYING BIRD)".

["XIN-T'ANG-SHU, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH

GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/53]

2040803 875 (XIZONG/QIANFU/2/-/-) CHINA

"WITHIN THE SUN THERE WAS AN OBJECT RESEMBLING A FLYING SWALLOW".
["XIN-T'ANG-SHU, ZHI"; ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977);
CLARK & STEPHENSON (1978); XU (1983);
YAU & STEPHENSON (1988)/54]

2051293 904 FEB 19 (ZHAOZONG/TIANYOU/1/2/3) CHINA
"THE (ASTERISM) 'NORTHERN DIPPER' WAS SEEN WITHIN THE SUN".
["XIN-T'ANG-SHU, ZHI"; CLARK & STEPHENSON (1978); XU (1983);
YAU & STEPHENSON (1988)/55]

2059277 925 DEC 29 (HOUTANG/ZHANGZONG/TONGGUANG/3/12/7) CHINA
"IN THE SUN THERE WAS A BLACK VAPOUR OBSCURING THE SUN".
["JIU-WU-DAI-SHI, ZHI"; XU (1983)]

2059712 927 MAR 9 (MINGZONG/TIANCHENG/2/2/22) CHINA
"WITHIN THE SUN THERE WAS A BLACK VAPOUR SHAPED LIKE A HEN'S EGG".
["WEN-XIAN-T'UNG-K'AO"; ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977);
CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/56]

2067279 947 NOV 26 (HOuhan/GAOZHU/TIANFU/12/10/29) WINTER CHINA
"IN THE SUN THERE WAS A BLACK SPOT LIKE A HEN'S EGG".
["JIU-WU-DAI-SHI, BENJI"; XU (1983); YAU & STEPHENSON (1988)/57]

2076873 974 MAR 3 (SONG/TAIZU/KAIBAO/7/2/23) CHINA
"WITHIN THE SUN THERE WERE TWO BLACK SPOTS".
["SONG-SHI, TAIZUJI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH
GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON
(1988)/58]

2114378 1076 NOV 7 (XINING/9/10/28) UNTIL NOV 21 CHINA
"IN THE SUN THERE WAS A BLACK SPOT LIKE A PLUM. IT DISPERSED ON
DAY 42 (NOV 21)".
["XU-ZI-ZHI-TONG-JIAN-CHANG-BIAN"; XU (1983)]

2114498 1077 MAR 7 (SHENZONG/XINING/10/2/28) UNTIL MAR 21 CHINA
"WITHIN THE SUN THERE WAS A BLACK SPOT LIKE A PLUM (APPLE), IT DISPERSED
ON DAY 42 (MAR 21)".
["SONG-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH
GROUP
(1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON
(1988)/59]

2114590 1077 JUN 7 (LIAO/DAOZONG/TAIKANG/3/5/60) NORTHERN CHINA
"THERE WAS A BLACK SPOT ON THE SUN".
["LIAO-SHI, BEN-JI"; ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977);
CLARK &
STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/60]

2114867 1078 MAR 11 (SONG/SHENZONG/YUANFENG/1/1'/37) UNTIL MAR 29 CHINA
"WITHIN THE SUN THERE WAS A BLACK SPOT LIKE A PLUM, UNTIL MONTH 2, DAY
55
(MAR 29), ALTOGETHER 19 DAYS, THEN IT DISPERSED".
["SONG-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH
GROUP

(1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/61]

2115173 1079 JAN 11 (YUANFENG/1/12/43) UNTIL JAN 22 CHINA

"WITHIN THE SUN THERE WAS A BLACK SPOT AS LARGE AS A PLUM, UNTIL DAY 54 (JAN 22), ALTOGETHER 12 DAYS, THEN IT DISPERSED".

["SONG-SHI, ZHI"; HOSIE (1879); HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS

RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/62]

2115241 1079 MAR 20 (YUANFENG/2/2/51) UNTIL MAR 29 CHINA

"THERE WAS A BLACK MOLE (SPOT) ON THE SUN LIKE A PLUM, UNTIL DAY 60 (MAR 29), WHEN IT DISPERSED".

["SONG-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP

(1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/63]

2124999 1105 DEC 6 (HUIZONG/CONGNING/4/10/29) CHINA

"WITHIN THE SUN THERE WAS A BLACK SPOT AS LARGE AS A DATE".

NOTE: SONG-SHI 52 INCORRECTLY GIVES THE YEAR AS THE 3RD YEAR OF THE CH'UNG-NING REIGN PERIOD.

["SONG-SHI, HUIZHONGJI"; ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/64]

2127338 1112 MAY 2 (ZHENGHE/2/4/28) CHINA

"ON THE SUN THERE WERE BLACK SPOTS, SOMETIMES TWO, SOMETIMES THREE, AS BIG AS CHESTNUTS".

["SONG-ZHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP

(1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/65]

2129758 1118 DEC 17 (ZHENGHE/8/11/48) CHINA

"WITHIN THE SUN THERE WAS A BLACK SPOT AS LARGE AS A PLUM".

["SONG-ZHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP

(1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/66]

2130296 1120 JUN 7 (XUANHE/2/5/46) CHINA

"WITHIN THE SUN THERE WAS A BLACK SPOT AS LARGE AS A DATE".

["SONG-ZHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/67]

2130878 1122 JAN 10 (XUANHE/3/12/28) CHINA

"WITHIN THE SUN THERE WAS A BLACK SPOT AS LARGE AS A PLUM".

["SONG-SHI, ZHI"; WILLIAMS (1873); HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/68]

2133506 1129 MAR 22 (JIN/TAIZONG/TIANHUI/7/3/16) [DAY OF NEW MOON]

NORTHERN CHINA

"THERE WAS A BLACK MOLE ON THE SUN". NOTE: NEW MOON ON 21 MAR 1129 AT 22:11 UT.

["JIN-SHI, ZHI"; WILLIAMS (1873); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP

(1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/69]

2133506 1129 MAR 22 (GAOZONG/JIANYAN/3/3/16) UNTIL APR 14 NORTHERN CHINA
"WITHIN THE SUN THERE WAS A BLACK SPOT WHICH LASTED UNTIL DAY 39
APR 14), WHEN IT FINALLY MELTED AWAY".

["SONG-SHI, ZHI"; XU (1983); YAU & STEPHENSON (1988)/69]

2134226 1131 MAR 12 (SONG/GAOZONG/SHAOXING/1/2/16) UNTIL MAR 14/15 CHINA
"THERE WAS A BLACK SPOT WITHIN THE SUN (AS LARGE AS A PLUM) FOR THREE
(OR FOUR) DAYS, ONLY THEN DID IT MELT AWAY (DISAPPEAR)".

["SONG-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP

(1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/70]

2136309 1136 NOV 23 (SHAOXING/6/10/59) UNTIL NOV 27 CHINA

"THERE WAS A BLACK SPOT ON THE SUN AS BIG AS A PLUM UNTIL MONTH 11,
DAY 3 (NOV 27), WHEN IT BEGAN TO MELT AWAY".

["SONG-SHI, ZHI"; ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK &

STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/71]

2136313 1136 NOV 27 (JIN/XIZONG/TIANHUI/14/11/3) NORTHERN CHINA

"WITHIN THE SUN THERE WERE BLACK SPOTS, THEY WERE MOVING AT AN (OBLIQUE)
ANGLE (WITH RESPECT TO EACH OTHER)".

["JIN-SHIH, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP

(1977); CLARK & STEPHENSON (1978); YAU & STEPHENSON (1988)/71]

2136407 1137 MAR 1 (SONG/GAOZONG/SHAOXING/7/2/37) UNTIL MAR 11 CHINA

"WITHIN THE SUN THERE WAS A BLACK SPOT AS LARGE A PLUM, AFTER TEN DAYS
IT BEGAN TO MELT AWAY".

["SONG-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP

(1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/72]

2136475 1137 MAY 8 (SHAOXING/7/4/45) UNTIL THE END OF MAY CHINA

"WITHIN THE SUN THERE WAS A BLACK SPOT. IT MELTED AWAY IN MONTH 5".

["SONG-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP

(1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/73]

2136787 / 2136788 1138 MAR 16 / 17 (SHAOXING/8/2/57 OR 58) CHINA

"THERE WAS A BLACK SPOT IN THE SUN (RESEMBLING A LARGE DATE)".

["SONG-SHI, GAOZHONGJI"; "SONG-SHI, ZHI"; HIRAYAMA (1889); ANCIENT

SUNSPOTS RECORDS RESEARCH GROUP (1977); XU (1983); YAU & STEPHENSON (1988)/74]

2137042 1138 NOV 26 (SHAOXING/8/10/12) CHINA

"THERE WAS A BLACK SPOT ON THE SUN".

["SONG-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP

(1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/75]

2137168 1139 MAR (SHAOXING/9/2/-) UNTIL APR (/3/-) CHINA

"IN THIS MONTH THERE WAS A BLACK SPOT ON THE SUN. AFTER SOMEWHAT MORE THAN A MONTH, ONLY THEN DID IT FADE AWAY".

["SONG-SHI, BENJI"; ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK &

STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/76]

2137282 1139 JUL 24(?) BOHEMIA

"QUARTO DECIMO KAL. AUGI OBSCURITAS AERIS FACTA EST; FUMUS ENIM INUSITATI

FOETORIS QUASI NEBULA EXHALABAT, SED NEQUE DIE NEQUE NOCTE FUMIGARE CESSABAT,

EA OBSCURITATE SIC PER SEPTIMANAM DURANTE, IX KAL. EIUSDEM MENSIS NIGREDO

DENSIOR SOLITO CIRCA MERIDIEM AEREM OBFUSCAVIT PUTRIDISSIMO FOETORE, ET VELUT AB INFERIS EXEUNTE ODORATUS HOMINUM PERSUFFLANTE. FUERUNT ETIAM NONULLI,

QUI DICEBAND SE QUASI FISSURAM IN SOLE VIDISSE". ("SOME PEOPLE SAID THEY HAD

SEEN A FISSURE IN THE SUN").

["COSMAE CHRONICON BOEMORUM CUM CONTINUATORIBUS"; KRIVSKY (1985)]

2137401 1139 NOV 20 (SHAOXING/9/10/11) CHINA

"THERE WAS A BLACK SPOT ON THE SUN".

["SONG-SHI, BENJI"; ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977);

CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/77]

2139473 1145 JUL 23 (SHAOXING/15/7/43) UNTIL JUL 24 (DAY 44) CHINA

"WITHIN THE SUN THERE WAS A BLACK VAPOUR FADING AND REAPPEARING. ON THE FOLLOWING DAY, THERE WAS A BLACK SPOT ON THE SUN, AND THE SUN HAD NO BRILLIANCE". NOTE: SOURCE GIVES MONTH 6, DAY 43, BUT THERE WAS NO DAY 43 IN MONTH 6. POSSIBLY READ MONTH 7.

["SONG-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP

(1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/78]

2141540 1151 MAR 21 (YIZONG/5/3/10) KOREA

"WITHIN THE SUN THERE WAS A BLACK SPOT AS LARGE AS A HEN'S EGG".

["KORYO-SA"; CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/79]

2141550 1151 MAR 31 (YIZONG/5/3/20) UNTIL APR 1 KOREA

"ON DAY 20 AND 21 (MAR 31 AND APR 1) IT WAS THE SAME".

["KORYO-SA"; CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/79]

2144177 1158 JUN 9 (JIN/ZHENGLONG/3/5/7) CHINA
"WITHIN THE SUN THERE WAS A BLACK SPOT SHAPED LIKE A MAN".
["QU-WUO-XIAN-ZHI"; XU (1983)]

2144806 1160 FEB 28 (YIZONG/14/1/36) UNTIL MAR 1 KOREA
"WITHIN THE SUN THERE WAS A STRANGE VAPOUR FOR THREE DAYS".
["KORYO-SA" 47; YAU & STEPHENSON (1988)/80]

2145017 1160 SEP 26 (JIN/ZHENGLONG/5/8/7) NORTHERN CHINA
"WITHIN THE SUN THERE WAS A BLACK SPOT SHAPED LIKE A MAN".
["JIN-SHI, ZHI"; ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/81]

2145020 1160 SEP 29 (YIZONG/14/8/10) KOREA
"WITHIN THE SUN THERE WAS A BLACK SPOT".
["KORYO-SA"; CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/82]

2149058 1171 OCT 20 (MINGZONG/1/9/28) KOREA
"ON THE SUN THERE WAS A BLACK SPOT AS LARGE AS A PEACH".
["KORYO-SA"; CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/83]

2149085 1171 NOV 16 (MINGZONG/1/10/55) KOREA
"ON THE SUN THERE WAS A BLACK SPOT AS LARGE AS A PEACH".
["KORYO-SA"; CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/84]

2153486 1183 DEC 4 (MINGZONG/13/11/16) UNTIL DEC 5 KOREA
"ON THE SUN THERE WAS A BLACK SPOT FOR TWO DAYS".
["KORYO-SA"; CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/85]

2153920 1185 FEB 10 (SONG/XIAOZONG/CHUNXI/12/1/30) SOUTHERN CHINA
"IN THE SUN THERE WAS BORN A BLACK SPOT AS LARGE AS A JUJUBE (DATE)".
["SONG-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/86]

2153921 1185 FEB 11 (MINGZONG/15/1/31) KOREA
"ON THE SUN THERE WAS A BLACK SPOT AS LARGE AS A PEAR".
["KORYO-SA"; CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/86]

2153925 1185 FEB 15 (CHUNXI/12/1/35) UNTIL FEB 27 SOUTHERN CHINA
"WITHIN THE SUN FOR THE WHOLE TIME FROM DAY 35 (FEB 15) UNTIL DAY 47 (FEB 27) THERE WAS A BLACK SPOT".
["SONG-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP

(1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/87]

2153965 1185 MAR 27 (MINGZONG/15/2/15) KOREA
"ON THE SUN THERE WAS A BLACK SPOT AS LARGE AS A PEAR".
["KORYO-SA"; CLARK & STEPHENSON (1978); XU (1983);
YAU & STEPHENSON (1988)/88]

2153987 1185 APR 18 (MINGZONG/15/3/37) UNTIL APR 19 KOREA
"ON THE SUN THERE WAS A BLACK SPOT, ON DAY 38 (APRIL 19) IT WAS THE SAME".
["KORYO-SA"; CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/89]

2154197 1185 NOV 14 (MINGZONG/15/10/7) KOREA
"ON THE SUN THERE WAS A BLACK SPOT".
["KORYO-SA"; CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/90]

2154387 1186 MAY 23 (CHUNXI/13/5/17) UNTIL MAY 27 CHINA
"WITHIN THE SUN THERE WAS BORN A BLACK SPOT AS LARGE AS A DATE, UNTIL DAY 21 (MAY 27), WHEN IT MELTED AWAY".
["SONG-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP
(1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/91]

2154390 1186 MAY 26 (CHUNXI/13/5/20) CHINA
"WITHIN THE SUN THERE WAS A BLACK SPOT".
["SONG-SHI, BEIJI"; CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/91]

2157138 1193 DEC 3 (GUANGZONG/SHAOXI/4/11/8) UNTIL DEC 12 CHINA
"WITHIN THE SUN THERE WAS A BLACK SPOT UNTIL DAY 17 (DECEMBER 12), WHEN IT BEGAN TO FADE AWAY".
["SONG-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP
(1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/92]

2159620 1200 SEP 19 (SHENZONG/3/8/30) KOREA
"ON THE SUN THERE WAS A BLACK SPOT AS LARGE AS A PLUM".
["KORYO-SA"; CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/93]

2159622 1200 SEP 21 (NINGZONG/QINGYUAN/6/8/32) UNTIL SEP 26 SOUTHERN CHINA
"ON THE SUN THERE WAS A BLACK SPOT AS LARGE AS A DATE (JUJUBE) WHICH LASTED UNTIL DAY 37 (SEP 26)".
["SONG-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP
(1977); XU (1983); YAU & STEPHENSON (1988)/94]

2159732 1201 JAN 9 (QINGYUAN/6/12/22) UNTIL JAN 29 CHINA
"ON THE SUN (AN)OTHER BLACK SPOT(S) WAS (WERE) BORN WHICH LASTED UNTIL
DAY 42 (JAN 29), WHEN IT MELTED (FADED) AWAY".
["SONG-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH
GROUP
(1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON
(1988)/95]

2159819 1201 APR 6 (SHENZONG/4/3/49) KOREA
"WITHIN THE SUN THERE WAS A BLACK SPOT AS LARGE AS A PLUM".
["KORYO-SA"; CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON
(1988)/96]

2160323 1202 AUG 23 (SHENZONG/5/8/13) KOREA
"WITHIN THE SUN THERE WAS A BLACK SPOT AS LARGE AS A PEAR".
["KORYO-SA"; CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON
(1988)/97]

2160441 1202 DEC 19 (JIATAI/2/12/11) UNTIL DEC 31 CHINA
"WITHIN THE SUN THERE WAS PRODUCED (BORN) A BLACK SPOT AS LARGE AS A
DATE,
IT LASTED UNTIL DAY 23 (DEC 31), WHEN IT FINALLY DISSOLVED".
["SONG-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH
GROUP
(1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON
(1988)/98]

2160852 1204 FEB 3 (SHENZONG/7/1/2) UNTIL FEB 5 KOREA
"WITHIN THE SUN THERE WAS A BLACK SPOT AS LARGE AS A PLUM, ALTOGETHER
FOR THREE DAYS".
["KORYO-SA"; WILLIAMS (1873); CLARK & STEPHENSON (1978); XU (1983);
YAU & STEPHENSON (1988)/99]

2160870 1204 FEB 21 (JIATAI/4/1/20) SOUTHERN CHINA
"ON THE SUN THERE WAS A BLACK SPOT (MOLE) AS LARGE AS A DATE (JUJUBE)".
["SONG-SHI, ZHI"; ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK
&
STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/100]

2161308 1205 MAY 4 (KAIXI/1/4/38) CHINA
"WITHIN THE SUN THERE WAS A BLACK SPOT AS LARGE AS A DATE (JUJUBE)".
["SONG-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH
GROUP
(1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON
(1988)/101]

2173576 1238 DEC 5 (LIZONG/JIAXI/2/10/6) CHINA
"WITHIN THE SUN THERE WAS A BLACK SPOT (MOLE)".
["SONG-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH
GROUP
(1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON
(1988)/102]

2180800 1258 SEP 15 (GAOZONG/45/8/30) UNTIL SEP 16 KOREA
"WITHIN THE SUN THERE WAS A BLACK SPOT AS LARGE AS A HEN'S EGG.
THE NEXT DAY (SEP 16) THERE WAS ANOTHER ONE SHAPED LIKE A MAN".
["KORYO-SA"; CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON
(1988)/103]

2186797 1275 FEB 27 / MAR 29 (GONGZONG/DEYOU/1/2/-) CHINA
"WITHIN THE SUN THERE WAS A BLACK SPOT SHIMMERING FOR A LONG TIME".
["YONG-ZHOU-FU-ZHI"; XU (1983)]

2187164 1276 FEB 17 (GONGZONG/DEYOU/2/2/34) [DAY OF NEW MOON]
SOUTHERN CHINA, VIETNAM
"WITHIN THE SUN THERE WERE BLACK SPOTS, ROLLING ABOUT (ROCKING ONE
ANOTHER)
LIKE GOOSE'S EGGS". NOTE: NEW MOON ON 16 FEB 1276 AT 10:16 UT.
["SONG-SHI, ZHI"; "DAI-VIET SU'-KY TOAN-THU"; HIRAYAMA (1889);
HO PENG-YOKE (1964); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977);
CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/104]

2187193 1276 MAR 17 / APR 15 (BAO-PHU/4/3/-) [VIETNAM]
"WITHIN THE SUN THERE WAS A BLACK SPOT AS LARGE AS A HEN'S EGG. IT
APPEARED TO SCINTILLATE FOR A LONG TIME".
["DAI-VIET SU'-KY, BAN-KI TOAN-THU"; YAU & STEPHENSON (1988)/105]

2188090 1278 AUG 31 (ZHONGLIEWANG/4/8/60) KOREA
"WITHIN THE SUN THERE WAS A BLACK SPOT AS LARGE AS A HEN'S EGG".
["KORYO-SA"; CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON
(1988)/106]

2216431 1356 APR 4 (GONGMINWANG/5/3/21) UNTIL APR 5 KOREA
"THE SUN HAD NO BRILLIANCE, AND WITHIN IT THERE WAS A BLACK SPOT. ON
DAY 22 (APRIL 5) IT WAS AGAIN LIKE THIS. ON DAY 23 (APRIL 6) THE SUN
WAS FAINT AND DIM; IT COULD BE VIEWED WITHOUT DAZZLING THE EYES".
["KORYO-SA"; CLARK & STEPHENSON (1978); XU (1983);
YAU & STEPHENSON (1988)/107]

2218238 1361 MAR 16 (GONGMINWANG/10/2/28) KOREA
"ON THE SUN THERE WAS A BLACK SPOT".
["KORYO-SA"; CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON
(1988)/108]

2218806 1362 OCT 5 (GONGMINWANG/11/9/56) KOREA
"ON THE SUN THERE WAS A BLACK SPOT".
["KORYO-SA"; CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON
(1988)/109]

2219776 1365 (YUAN/ZHIZHENG/25/-/-) CHINA
"ONE DAY THE GRAND ASTRONOMER LIU JI SAW THAT WITHIN THE SUN THERE WAS
A BLACK SPOT. GENERAL HU SHEN WAS KILLED WHEN FIGHTING INTRUDERS AT
THE BORDER AT FUKIEN". NO CLEAR INDICATION ABOUT THE DATE OF
OBSERVATION.
[XU (1983); YAU & STEPHENSON (1988)/110]

2219820 1365 SUMMER RUSSIA

"THE SUN WAS LIKE BLOOD AND THERE WERE DARK SPOTS ON IT, AND THE HAZINESS LASTED FOR HALF OF THE YEAR".
["NIKONOVSKY CHRONICLE"; VYSSOTSKY (1949)]

2220902 1368 (MING/HONGWU/1/-/-) CHINA
"FROM MONTHS 1 TO 12 THERE OFTEN WERE BLACK SPOTS WITHIN THE SUN".
["HU-HAN-TONG-ZHI"; XU (1983); YAU & STEPHENSON (1988)/111]

2220902 1368 (MING/HONGWU/1/-/-) CHINA
"THIS AUTUMN THE SKY ROARED AND TREMBLED. WITHIN THE SUN THERE WERE SPOTS, FROM ONE TO THREE AT A TIME; THEY WERE SEEN EVERY DAY".
[YAU & STEPHENSON (1988)/112]

2221464 1369 DEC 30 / 1370 JAN 28 (MING/HONGWU/2/12/-) CHINA
"WITHIN THE SUN THERE WERE (WAS) FREQUENTLY (A) BLACK SPOT(S)".
["ER-SHEN-YE-LU"; XU (1983); YAU & STEPHENSON (1988)/113]

2221451 1370 JAN 1 (MING/TAIZU/HONGWU/2/12/1) CHINA
"ON THE SUN THERE WAS A BLACK SPOT".
["MING-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/114]

2221492 1370 JAN 28 (HONGWU/3/1/- UNTIL 34) UNTIL FEB 3 CHINA
"THE ASTRONOMICAL BUREAU REPORTED THAT FROM DAY 1 (JAN 28) UNTIL TODAY (FEB 3) THERE HAS BEEN A BLACK SPOT ON THE SUN".
["MING-SHI, TAIZUJI"; XU (1983); YAU & STEPHENSON (1988)/115]

2221565 1370 APR 25 (HONGWU/3/3/55) CHINA
"AT THIS TIME, WITHIN THE SUN REPEATEDLY THERE WAS A BLACK SPOT".
[YAU & STEPHENSON (1988)/117]

2221725 1370 OCT 2 (HONGWU/3/9/35) CHINA
"THERE WAS A BLACK MOLE ON THE SUN".
["MING-SHI, ZHI"; ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/118]

2221744 1370 OCT 21 (HONGWU/3/10/54) CHINA
"THERE WAS A BLACK MOLE ON THE SUN".
["MING-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/119]

2221791 1370 DEC 7 (HONGWU/3/11/41) CHINA
"WITH REGARD TO THE FORTHCOMING ANNUAL SACRIFICE TO HEAVEN AND BECAUSE OF THE FREQUENT BLACK SPOTS WITHIN THE SUN, HIS IMPERIAL MAJESTY ISSUED AN EDICT...".
["MING-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP

(1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/120]

2221803 1370 DEC 19 (HONGWU/3/12/53) CHINA
"WITHIN THE SUN REPEATEDLY THERE WAS A BLACK SPOT".
["KUO-CHUEH"; YAU & STEPHENSON (1988)/121]

2221817 1371 JAN 2 (GONGMINWANG/19/12/7) KOREA
"ON THE SUN THERE WAS A BLACK SPOT".
["KORYO-SA"; CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/122]

2221829 1371 JAN 14 (HONGWU/3/12/19) CHINA
"IN THIS YEAR, FROM THE FIRST MONTH UNTIL THIS MONTH, THERE WERE FREQUENTLY BLACK SPOTS WITHIN THE SUN. HIS IMPERIAL MAJESTY APPEALED TO COURT OFFICIALS TO REPORT ERRORS (OF THE THRONE)". NOTE: WRONGLY DATED [1370 DEC 19] BY REF. [23].
["MING-ZHAO-DAI-DIAN"; XU (1983); YAU & STEPHENSON (1988)/116]

2221905 1371 MAR 31 (HONGWU/4/3/35) CHINA
"THERE WAS A BLACK MOLE ON THE SUN".
["MING-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/123]

2221979 1371 JUN 13 (HONGWU/4/5/49) UNTIL JUL 12 (HONGWU/4/5/18) CHINA
"FROM DAY JEN-TZU (JUNE 13) UNTIL TODAY (JUL 12) THERE WAS A BLACK SPOT WITHIN THE SUN".
["MING-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/124]

2222011 1371 SUMMER RUSSIA
"THERE WERE DARK SPOTS ON THE SUN, AS IF NAILS WERE DRIVEN INTO IT".
["NIKONOVSKY CHRONICLE"; VYSSOTSKY (1949)]

2222125 1371 NOV 6 (HONGWU/4/9/15) CHINA
"THERE WAS A BLACK MOLE ON THE SUN".
["MING-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/126]

2222140 1371 NOV 21 (GONGMINWANG/20/10/30) KOREA
"ON THE SUN THERE WAS A BLACK SPOT". SOURCE GIVES MONTH 9, BUT THERE WAS NO DAY 30 (KUEI-SZU) IN THAT MONTH. SHOULD POSSIBLY READ MONTH 10.
["KORYO-SA"; CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/125]

2222217 1372 FEB 6 (HONGWU/5/1/47) CHINA
"WITHIN THE SUN THERE WAS A BLACK SPOT".

["MING-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/127]

2222274 1372 APR 3 (HONGWU/5/2/44) CHINA
"THERE WAS A BLACK MOLE ON THE SUN".

["MING-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/128]

2222309 1372 MAY 8 (GONGMINWANG/21/4/19) KOREA
"ON THE SUN THERE WAS A BLACK SPOT".

["KORYO-SA"; CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/129]

2222351 1372 JUN 19 (HONGWU/5/5/1) CHINA
"WITHIN THE SUN THERE WAS A BLACK SPOT".

["MING-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/130]

2222418 1372 AUG 25 (HONGWU/5/7/8) CHINA
"THERE WAS A BLACK MOLE ON THE SUN".

["MING-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/131]

2222662 1373 APR 26 (GONGMINWANG/22/4/12) UNTIL APR 27 KOREA
"ON THE SUN THERE WAS A BLACK SPOT FOR TWO DAYS".

["KORYO-SA"; CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/132]

2222842 1373 OCT 23 (GONGMINWANG/22/10/12) KOREA
"ON THE SUN THERE WAS A BLACK SPOT".

["KORYO-SA"; CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/133]

2222865 1373 NOV 15 (HONGWU/6/11/35) [DAY OF NEW MOON]
CHINA

"THERE WAS A BLACK SPOT WITHIN THE SUN". NOTE: NEW MOON ON 15 NOV 1373
AT
06:05 UT.

["MING-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/134]

2222997 1374 MAR 27 (HONGWU/7/2/47) UNTIL MAR 31 CHINA

"THERE WAS A BLACK MOLE ON THE SUN UNTIL DAY 51 (MAR 31), WHEN IT WAS THE SAME".

["MING-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/135]

2223355 1375 MAR 20 (XINYU/1/2/45) UNTIL MAR 21 KOREA
"ON THE SUN THERE WAS A BLACK SPOT. ON DAY 46 (MAR 21) IT WAS THE SAME".
["KORYO-SA"; CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/136]

2223357/8 1375 MAR 22/23 (HONGWU/8/2/47 OR 48) CHINA
"THERE WAS A BLACK MOLE (SPOT) ON THE SUN".
["MING-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/136]

2223570 1375 OCT 21 (HONGWU/8/9/20) CHINA
"THERE WAS A BLACK MOLE (SPOT) ON THE SUN".
["MING-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/137]

2223660 1376 JAN 19 (HONGWU/8/12/50) CHINA
"THERE WAS A BLACK MOLE (SPOT) ON THE SUN".
["MING-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/138]

2225549 1381 MAR 19 (HONGWU/14/2/19) UNTIL MAR 25 (HONGWU/14/2/22) CHINA
"FROM DAY 19 (MAR 22) UNTIL TODAY (MAR 25) THERE WAS A BLACK SPOT WITHIN THE SUN".
["MING-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); CLARK & STEPHENSON (1978); YAU & STEPHENSON (1988)/139]

2225550 1381 MAR 23 (XINYU/7/2/20) KOREA
"ON THE SUN THERE WAS A BLACK SPOT".
["KORYO-SA"; CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/139]

2225901 1382 MAR 9 (XINYU/8/2/11) UNTIL MAR 11 KOREA
"ON THE SUN THERE WAS A BLACK SPOT AS LARGE AS A HEN'S EGG, ALTOGETHER FOR THREE DAYS".
["KORYO-SA"; CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/140]

2225913 1382 MAR 21 (HONGWU/15/2'/23) CHINA
"WITHIN THE SUN THERE WAS A BLACK MOLE (SPOT)".
["MING-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP

(1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/141]

2226208 1383 JAN 10 (HONGWU/15/12/18) CHINA
"WITHIN THE SUN THERE WAS A BLACK MOLE (SPOT)".
["MING-SHI, ZHI"; HIRAYAMA (1889); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP
(1977); CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/142]

2227764 1387 APR 15 (XINYU/13/3/14) KOREA
"ON THE SUN THERE WAS A BLACK SPOT".
["KORYO-SA"; CLARK & STEPHENSON (1978); XU (1983); YAU & STEPHENSON (1988)/143]

2233457 1402 NOV 15 (TAIZONG/2/10/7) KOREA
"WITHIN THE SUN THERE WAS A BLACK DOT".
["CHUNGBO MUNHON PIGO"; "WEN-XIAN-BEI-KAO"; CLARK & STEPHENSON (1978); XU (1983); JIANG AND XU (1986); YAU & STEPHENSON (1988)/144]

2273097 1511 MAY 27 / JUN 24 (ZHENGDE/6/5/-) CHINA {NAN-CHANG/PROVINCE
JIANG-XI}
"THERE WAS A BLACK VAPOUR (BLACK SHADOW) FLOATING IN THE SUN".
["JIANG-XI-TONG-ZHI"; HOSIE (1879); MOIDREY (1904); JIANG AND XU (1986)]

2275564 1518 FEB 26 (ZHENGDE/13/1/54) CHINA
"AT 3 TO 5 HOURS IN THE AFTERNOON THE SUN'S LIGHT SHIMMERED".
[JIANG AND XU (1986)]

2276306 1520 MAR 9 (ZHONGZONG/15/2/16)
KOREA, CHINA
"WITHIN THE SUN THERE WERE BLACK VAPOURS ROCKING ONE ANOTHER".
["CHUNGBO MUNHON PIGO"; "WEN-XIAN-BEI-KAO"; CLARK & STEPHENSON (1978); XU (1983); JIANG AND XU (1986); YAU & STEPHENSON (1988)/145]

2289494 1556 APR 17 (MINGZONG/11/3/4) KOREA
"WITHIN THE SUN THERE WAS A BLACK SPOT AS LARGE AS A HEN'S EGG. THE
SKY WAS COVERED WITH A DENSE VAPOUR".
[XU (1983); JIANG AND XU (1986); YAU & STEPHENSON (1988)/146]

2291730 1562 (JIAJING/41/-/-)
"IN THE SUN THERE WAS A BLACK SPOT, AND IT WAS HAZY AND GLOOMY FOR THREE
DAYS".
[XU (1983); JIANG AND XU (1986); YAU & STEPHENSON (1988)/147]

2293069 1566 JAN 30 (JIAJING/45/1/39) UNTIL FEB 4 CHINA
"WITHIN THE SUN THERE WAS A BLACK SPOT AS LARGE AS A HEN'S EGG
SHIMMERING FOR FIVE DAYS (THEN IT WAS EXTINGUISHED)".
[XU (1983); JIANG AND XU (1986); YAU & STEPHENSON (1988)/148]

2293495 1567 SPRING (LONGQING/1/-/-) CHINA
"WITHIN THE SUN THERE WERE BLACK SPOTS AGITATING ONE ANOTHER".
[XU (1983); JIANG AND XU (1986); YAU & STEPHENSON (1988)/149]

2294152 1569 JAN 17 (LONGQING/3/1/42) [DAY OF NEW MOON]
CHINA

"WITHIN THE SUN THERE WAS (SOMETHING) FOR SEVERAL DAYS. AFTER ABOUT TEN DAYS IT DISAPPEARED. IN THE SUMMER A BLACK LIGHT AGITATED ON THE SUN".
NOTE: NEW MOON ON 17 JAN 1569 AT 06:29 UT.

[XU (1983); SCHOVE (1983); JIANG AND XU (1986); YAU & STEPHENSON (1988)/150]

2301933 1590 MAY 4 / JUN 1 (WANLI/18/4/-) CHINA

"WITHIN THE SUN THERE WAS A BLACK VAPOUR, AND THE SUN'S LIGHT WAS DIM FOR A LONG TIME".

[XU (1983); JIANG AND XU (1986); YAU & STEPHENSON (1988)/152]

2302136 1590 DEC 7 UNTIL DEC 8 AT SEA [OFF THE COAST OF WEST AFRICA]

"ON THE 7TH AT THE GOING DOWN OF THE SUNNE, WE SAW A GREAT BLACK SPOT IN THE SUNNE, AND ON THE 8TH DAY, BOTH AT RISING AND SETTING, WE SAW THE LIKE, WHICH SPOT TO OUR SEEMING WAS ABOUT THE SIZE OF A SHILLING". OBSERVED BY HENRY HUDSON AND OTHERS ON FROM ABOARD THE SHIP "RICHARD OF ARUNDELL".

[HOSIE (1879); SCHOVE (1983)]

2302893? 1593 JAN 2 (LIJI/SHIZONG/15/12/23?) [DAY OF NEW MOON]

VIETNAM, CHINA

"AT THE HOUR OF MAO (5-7 AM) WITHIN THE SUN THERE WERE TWO BLACK SPOTS SHAPED LIKE A THREE-LEGGED CROW (THREE BIRDS) FOR THREE DAYS".

NOTE: NEW MOON ON 2 JAN 1593 AT 18:51 UT.

["DAI-VIET SU'-KY TOAN-THU"; HO PENG-YOKE (1964); XU (1983); JIANG AND XU (1986); YAU & STEPHENSON (1988)/153]

2304518 1597 JUN 15 (SHENZONG/WANLI/25/5/28) [DAY OF NEW MOON] CHINA

"THE LIGHT OF THE SUN ROCKED AND (SOON) TURNED INTO A BLACK CAKE".

NOTE: NEW MOON ON 14 JUN 1597 AT 19:55 UT.

["MING-SHI"; ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); XU (1983); SCHOVE (1983); JIANG AND XU (1986)]

2306649 1603 APR 16 (XUANZU/36/3/59) KOREA, VIETNAM

"AT THE HOUR OF MAO (5-7 AM) THE SUN WAS RED AND WITHOUT BRILLIANCE, AND ON THE SUN THERE WERE THREE BLACK DOTS SHAPED LIKE A LARGE CASH (COIN). FROM THE NORTH OF THE SUN THEY SEEMED TO BE SEPARATING AND JOINING ACROSS THE SUN TOWARDS THE SOUTH".

["WEN-XIAN-BEI-KAO"; "DA-NAN-SHI-LU"; KANDA (1932); CLARK & STEPHENSON (1978); XU & JIANG (1982); XU (1983); YAU & STEPHENSON (1988)/154/155]

2307206 1604 OCT 24 (XUANZU/37/9'/16) UNTIL OCT 25 KOREA

"AT SUNRISE, WITHIN THE SUN THERE WAS A BLACK SPOT AS LARGE AS A HEN'S EGG. ON DAY 17 (OCT 25) AT SUNRISE, THERE WAS A BLACK SPOT WITHIN THE SUN AS LARGE AS A HEN'S EGG".

["CHUNGBO MUNHON PIGO"; KANDA (1932); CLARK & STEPHENSON (1978); XU & JIANG (1982); XU (1983); YAU & STEPHENSON (1988)/156]

2308152 1607 MAY 28 (MAY 18 JULIAN STYLE) CZECHIA [PRAHA]

"MONTAGS DEN 18. ODER 28. MAY ABENDS, ZWO STUND VOR UNTERGANG DER SONNEN,

HAB ICH ALLHIE ZU PRAG, DURCH MITTEL DES SONNENSCHENS IN FINSTERN

GEMAECHEN, DEN PLANETEN MERCURIUM INNERHALB DES GEZIRCKS DER SONNEN KUGEL GESEHEN: DEM SCHEIN NACH UNTERHALB ZUR LINCKEN, DAS WAERE, WENN MAN DAS GESICHT UMBGEWENDET UND IN DIE SONNE GEHALTEN HAETTE, OBERHALB UND AUCH ZUR LINKEN".

"SEQUENTIS IGITUR ANNI 1607, DIE LUNAE, QUI FUT 18 (28) MAIJ, POST MERIDIEM HORA CIRCITER QUARTA. SOLEM PER LAMINAE ROTUNDUM FORAMEN, DIAMETRO NONAE VEL DECIMAE PARTIS UNIUS POLLICIS ADMISSIMUS SPACIO CIRCITER 14. PEDUM A FORAMINE QUOAD SCHEMA [NOT REPRODUCED HERE] EXCREVIT AD PRAESENTEM MAGNITUDINEM. VIDIMUS AB INFERIORI ET SINISTRA SCHEMATIS PARTE (VULTA AD SCHEMA CONVERSO) PARVUM PUNCTUM, SATURAE NIGREDINIS VERSUS CENTRUM; DILUTIUS ET MINUS PRAECISUM VERSUS MARGINEM, MAGNITUDE ET SPECIE MACILENTI PULICIS; HOC CLARE, NEC SEMEL: ABERAT TERTIA DIAMETRI PARTE PLUS MINUS AB EXTREMO ET PROXIMO MARGINE" (b). AT ABOUT 4 PM ON 28 MAY 1607 A SUNSPOT DESCRIBED AS RESEMBLING A FLY WAS OBSERVED IN THE NORTHEAST QUADRANT OF THE SOLAR DISC, ABOUT ONE-THIRD OF THE SOLAR RADIUS FROM THE LIMB. NEAR ITS CENTRE IT WAS DEEP BLACK (UMBRA), WHILE ITS OUTER PART WAS MORE DIFFUSE (PENUMBRA). THE OBSERVATION WAS MADE BY KEPLER AND OTHERS IN A 4-CM SOLAR IMAGE PROJECTED BY A HOLE IN THE ROOF OF AN ARMATORY AT PRAGUE. [KEPLER (1608); KEPLER (1609)]

2308500 1608 MAY 10 (GUANGHAIJUN/1/3/50) KOREA
"FROM DAYBREAK UNTIL THE HOUR OF YU (5-7 PM) IN EVERY DIRECTION IT WAS DULL AND HAZY AS IF DUST WAS FALLING. AT THE HOUR OF MAO (5-7 AM) WITHIN THE SUN THERE WAS A BLACK SPOT AS LARGE AS A PEAR".
["GUANGHAIJUN SHI LU"; XU (1983); YAU & STEPHENSON (1988)/157]

2310285 1613 MAR 30 (WANLI/41/2/35) (WANLI/41/2/10 ?) CHINA
"THERE WAS A BLACK LIGHT MOVING ABOUT ON THE SUN".
["FUJIAN TONGZHI"; XU & JIANG (1982); XU (1983); YAU & STEPHENSON (1988)/158]

2311561 1616 SEP 11 / OCT 10 (WANLI/44/8/-) CHINA
"SUN'S LIGHT MOVING ABOUT FOR 5 OR 6 DAYS IN SUCCESSION. STOPPED ONLY AFTER A MONTH".
["ZHILI TONGZHOU ZHOUZHI"; XU & JIANG (1982)]

2311575 1616 OCT 10 (WANLI/44/8/5) CHINA
"WITHIN THE SUN THERE WAS A BLACK LIGHT".
["MING-SHI"; "ZHILI TONGZHOU ZHOUZHI"; HIRAYAMA (1889); KANDA (1932); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); XU & JIANG (1982); XU (1983); YAU & STEPHENSON (1988)/159]

2311668 1617 JAN 11 (WANLI/44/12/38) (WANLI/44/12/5 ?) CHINA
"BETWEEN THE HOURS OF CH'EN AND SZU (7-11 AM) ON ONE SIDE OF THE SUN THERE WERE SEVERAL BLACK SPOTS ROCKING TO AND FRO".
["JINGJIANG XIANZHI"; XU & JIANG (1982); XU (1983); YAU & STEPHENSON (1988)/160]

2311809 1617 (WANLI/45/-/-) CHINA
"ON THE SUN THERE WAS A BLACK SPOT ROCKING BACK AND FORTH".
["HU-GUANG-TONG-ZHI"; KANDA (1932); XU & JIANG (1982); XU (1983); YAU & STEPHENSON (1988)/161]

2312137 1618 APR 25 / MAY 23 (WANLI/46/4/-) CHINA
"WITHIN THE SUN THERE WAS A BLACK SPOT".
["MING-HUI-YAO"; XU & JIANG (1982); XU (1983); YAU & STEPHENSON (1988)/163]

2312166 1618 MAY 24 / JUN 21 (WANLI/46/4'/-) CHINA
"THERE WERE BLACK SPOTS ON THE SUN (SEEMINGLY) FIGHTING EACH OTHER".
"WITHIN THE SUN THERE WAS A BLACK SPOT LIKE A LADLE (MEASURING RICE TOOL 'DOU')". "THERE WAS AGAIN A BLACK SPOT ON THE SUN, ITS LIGHT WAS UNSTEADY".
["CHANGSHUXIAN SI-ZHI"; "FU-JIAN-TONG-ZHI"; XU & JIANG (1982); XU (1983); YAU & STEPHENSON (1988)/164]

2312193 1618 JUN 20 (WANLI/46/4'/23) UNTIL JUN 22 CHINA {NANJING}
"BLACK VAPOUR COMING IN AND OUT OF THE SUN, MOVING ABOUT. IT WAS SEEN UNTIL DAY 25 (JUNE 22)".
["MING-SHI"; KANDA (1932); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); XU & JIANG (1982); XU (1983); YAU & STEPHENSON (1988)/165]

2312195 1618 JUN 22 (WANLI/46/5/25) [DAY OF NEW MOON] CHINA
"WITHIN THE SUN THERE WAS A BLACK VAPOUR". NOTE: NEW MOON ON 22 JUN 1618 AT 10:47 UT.
["SONGJIANG FUZHI"; XU (1983); YAU & STEPHENSON (1988)/166]

2313041 1620 OCT 15 / OCT 24 (TAI-CHANG/1/9/-) CHINA
"WHEN HIS MAJESTY ASCENDED THE THRONE IN THE LAST DECADE (OF THE PREVIOUS MONTH), THERE WAS A BLACK VAPOUR ON THE SUN; IT WAS FIGHTING THE SUN".
["HSI-TSUNG SHIH-LU 9"; YAU & STEPHENSON (1988)/167]

2313261 1621 MAY 23 (XIZONG/TIANQI/1/4/11) CHINA
"THERE WAS A BLACK MASS ('QI') ON THE SUN ROCKING TO AND FRO".
["MING-SHI"; ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); XU & JIANG (1982); XU (1983); YAU & STEPHENSON (1988)/168]

2313419 1621 OCT 15 / NOV 12 (XIZONG/TIANQI/1/9/-) CHINA
"WITHIN THE SUN THERE WAS A BLACK SNAKE".
[XU (1983)]

2313643 1622 JUN 9 / JUL 7 (T'IENTH/2/5/-) CHINA
"WITHIN THE SUN (THE SHAPES OF) THE MOON AND A STAR WERE SEEN".
["MING-HUI-YAO 68"; YAU & STEPHENSON (1988)/169]

2314290 1624 MAR 17 (TIANQI/4/1/20) UNTIL MAR 20 CHINA
"THE SUN WAS DIM AND RED. THERE WERE TWO OR THREE BLACK SPOTS MOVING ABOUT ON ITS SIDE. THEIR NUMBER GRADUALLY INCREASED TO OVER A HUNDRED; THIS WENT ON FOR FOUR DAYS".
["MING-SHI"; HIRAYAMA (1889); KANDA (1932); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); XU & JIANG (1982); XU (1983); YAU & STEPHENSON (1988)/170]

2314320 1624 APR 16 (TIANQI/4/2/50) CHINA
"BLACK (CLOUD) MOVING ABOUT BY THE SIDE OF THE SUN".
NOTE: SAME AS MAR 17 ?
[KANDA (1932); XU & JIANG (1982); XU (1983)]

2314340 1624 MAY 6 (TIANQI/4/4/10) CHINA
"THERE WAS A BLACK VAPOUR MOVING ABOUT IN THE SUN".
NOTE: SOURCE GIVES DAY 10, BUT THERE WAS NO DAY 10 IN MONTH 4.
["MING-SHI"; KANDA (1932); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP
(1977);
XU & JIANG (1982); XU (1983); YAU & STEPHENSON (1988)/171]

2314705 1625 MAY 6 / AUG 2 (TIANQI/5/-/-) SUMMER CHINA
"STAR(S) WERE SEEN ON A DIM SUN, BLACK SPOTS BY ITS SIDE. THIS WENT
ON FOR TEN DAYS".
["ZHENJIANG FUZHI"; XU & JIANG (1982); XU (1983);
YAU & STEPHENSON (1988)/172]

2315124 1626 JUN 29 (TIANQI/6/6/6 [14?])) CHINA
"A LADLE (MEASURING RICE TOOL, 'DOU') WAS SEEN WITHIN THE SUN".
NOTE: JUN 21 WOULD CORRESPOND TO DAY 6.
["XIANGYUAN XIANZHI"; XU & JIANG (1982); XU (1983); YAU & STEPHENSON
(1988)/173]

2316826 1631 FEB 25 (CHONGZHEN/4/1/36) CHINA
"A BLACK SPOT WAS SEEN (PRESENT) ON THE SUN".
["XINCHENG XIANZHI"; XU & JIANG (1982); XU (1983); YAU & STEPHENSON
(1988)/174]

2318279 1635 FEB 17 / MAR 18 (CHONGZHEN/8/1/-) CHINA
"THERE WAS A BLACK LIGHT SHIMMERING IN THE SUN".
["HUNAN TONGZHI"; XU & JIANG (1982); XU (1983); YAU & STEPHENSON
(1988)/175]

2319114 1637 (CHONGZHEN/10/-/-) CHINA
"SEVERAL BLACK SPOTS WERE PRESENT ON THE SUN".
["JURONG XIANZHI"; XU & JIANG (1982); XU (1983); YAU & STEPHENSON
(1988)/176]

2319402 1638 MAR 16 (CHONGZHEN/11/2/32) (DAY OF NEW MOON) CHINA
"THE SUN'S LIGHT WAS SHIMMERING ALL THE DAY". NOTE: NEW MOON ON 15 MAR
1638
AT 17:26 UT.
["SHU GUI JIAN"; XU & JIANG (1982); XU (1983)]

2319578 1638 SEP 8 / OCT 6 (CHONGZHEN/11/8/-) CHINA
"BLACK SPOT(S) MOVING ABOUT ON THE SIDE OF THE SUN".
["TAICHANG ZHOUSHI"; XU & JIANG (1982); XU (1983); YAU & STEPHENSON
(1988)/177]

2319670 1638 DEC 9 (CHONGZHEN/11/11/60) CHINA
"THERE WAS A BLACK SPOT WITHIN THE SUN. THERE WAS ALSO A BLACK MASS
('QI ') AND PALE BLUE VAPOURS. AT SUNSET, THE LIGHT SHOOK AS IF THERE

WERE TWO SUNS".

["MING-SHI"; HIRAYAMA (1889); KANDA (1932); ANCIENT SUNSPOTS RECORDS RESEARCH GROUP (1977); XU & JIANG (1982); XU (1983); YAU & STEPHENSON (1988)/178]

2319728 1639 FEB 5 (CHONGZHEN/12/1/58) CHINA

"SUN'S LIGHT SHIFTING ABOUT ALL THE DAY".

[KANDA (1932); XU & JIANG (1982); XU (1983)]

2319767 1639 MAR 16 (CHONGZHEN/12/2/37) CHINA

"WHITE RAY(S) AND BLACK CLOUD(S) CROSS AND COVER ONE ANOTHER, LIGHT OF THE SUN SHIFTING ABOUT".

[KANDA (1932); XU & JIANG (1982)]

2319991 1639 OCT 26 (CHONGZHEN/12/10/21) (DAY OF NEW MOON) CHINA

"A LADLE (MEASURING RICE TOOL, 'DOU') WAS SEEN IN THE SUN". NOTE: NEW MOON ON

26 OCT 1639 AT 11:53 UT.

["ZHUJI XIANZHI"; XU & JIANG (1982); XU (1983);

YAU & STEPHENSON (1988)/179]

2321320 1643 JUN 16 / JUL 15 (CHONGZHEN/16/5/-) CHINA

"A STAR WAS SEEN WITHIN THE SUN".

["TAIHU XIANZHI"; XU & JIANG (1982); XU (1983);

YAU & STEPHENSON (1988)/180]

2321336 1643 JUL 2 (RENZU/21/5/46) KOREA

"WITHIN THE SUN THERE WAS A BLACK VAPOUR SHAPED LIKE A FLYING BIRD".

NOTE: FOR TELESCOPIC DRAWINGS OF THE SOLAR DISC CF. HEVELIUS (1647),

FIG. MM SHOWS A SMALL GROUP NEAR THE WEST LIMB, BUT NO LARGE SPOT.

THERE WERE SEVERAL LARGE SPOTS IN 1643/44, BUT ON OTHER DAYS.

A VERY LARGE AND ALMOST CIRCULAR SPOT WAS NEAR THE CENTRAL MERIDIAN

ON MAY 10, 1644 (FIG. CCC).

["INJO SILLOK 44"; XU (1983); YAU & STEPHENSON (1988)/181]

2322766 1647 (SHUNZHI/4/-/-) CHINA

"AN OBJECT RESEMBLING A SWORD (OR A CUTLASS) WAS SEEN ON THE SUN".

["CENXI XIANZHI"; XU & JIANG (1982); XU (1983);

YAU & STEPHENSON (1988)/182]

2322823 1647 JUL 28 (SHUNZHI/4/6/33) CHINA

"A STAR WAS SEEN ON THE SUN".

[XU (1983)]

2322995 1648 JAN 16 (RENZU/25/12/25) KOREA

"WITHIN THE SUN THERE WAS A BLACK SPOT".

["INJO SILLOK 48"; XU (1983); YAU & STEPHENSON (1988)/183]

2323176 1648 APR / AUG (SHUNZHI/5/-/-) CHINA

"A STAR WAS SEEN ON THE SUN".

["CHANG-SHAN-XIAN-ZHI"; YAU & STEPHENSON (1988)/184]

2324008 1650 OCT 25 (SHUNZI/7/10/18) (DAY OF NEW MOON) CHINA

"THE SUN WAS ECLIPSED. AT NOON, WITHIN THE SUN A LADLE ('DOU') WAS SEEN".

NOTE: NEW MOON ON 25 OCT 1650 AT 04:13 UT. TOTAL ECLIPSE VISIBLE IN CHINA.

[XU & JIANG (1982); YAU & STEPHENSON (1988)/185]

2325656 1655 APR 30 (SHUNZHI/12/3/46) CHINA

"AT THE HOUR OF SHEN (3-5 PM) THERE WAS A BLACK SPOT WITHIN THE SUN. AFTER A LONG WHILE IT THEN DISPERSED".

NOTE: YAU & STEPHENSON (1988) QUOTE DAY 24 = APR 30.

["SANGANG SHILUE"; XU & JIANG (1982); XU (1983); YAU & STEPHENSON (1988)/186]

2325927 1656 JAN 26 / APR 23 (SHUNZHI/13/-/-) SPRING CHINA

"WITHIN THE SUN THERE WAS A BLACK SPOT".

["HUGANG TONGZHI"; XU & JIANG (1982); XU (1983); YAU & STEPHENSON (1988)/187]

2327160 1659 JUN 12 (SHUNZHI/16/4/50) CHINA

"ON THE SUN THERE WAS A BLACK LIGHT SHIMMERING".

[XU (1983)]

2327505 1660 MAY 22 (XIANZONG/1/4/35) CHINA

"BLACK VAPOUR ON THE SUN".

NOTE: CONFIRMED BY WESTERN SOURCE: A SPOT WAS OBSERVED BY ROBERT BOYLE ON 25 MAY 1660 (PHIL. TRANS. ROY. SOC. LONDON 6, NO. 74, 2216 (1671)).

[XU (1983)]

2329235 1665 FEB 15 / MAR 16 (KANGXI/4/1/-) CHINA

"ON THE SUN THERE WAS A BLACK LIGHT WAVERING".

["CHAO-ZHOU-FU-ZHI"; XU(1985); YAU & STEPHENSON (1988)/188]

2329240 1665 FEB 20 (KANGXI/4/1/30) (4/1/6 ?) CHINA

"WITHIN THE SUN THERE WERE TWO BLACK SPOTS; THEY WERE ROCKING TO AND FRO FOR A LONG TIME".

["SHUANGLIN ZHENZHI"; XU & JIANG (1982); XU (1983); YAU & STEPHENSON (1988)/190]

2329294 1665 SPRING (KANGXI/4/-/-) CHINA

"ON THE SUN THERE WAS A BLACK SPOT ROCKING LIKE A SHUTTLE".

["LU-AN-ZHOU-ZHI"; XU(1985); YAU & STEPHENSON (1988)/190]

2329428 1665 AUG 27 (KANGXI/4/7/38) CHINA

"A STAR WAS SEEN ON THE SUN".

["YI-DU-XIAN-ZHI"; XU(1985)]

2329801 1666 SEP 4-5 (XIANZONG/7/8/5/51-52) KOREA

"BLACK VAPOURS ON THE SUN".

[XU (1983)]

2336204 1684 MAR 16 (KANGXI/23/2/34-36) UNTIL MAR 18 CHINA

"WITHIN THE SUN A MEASURING RICE TOOL ('DOU') WAS SEEN".

[XU (1983); YAU & STEPHENSON (1988)/192]

- 2345441 1709 (K'ANG-HSI/48/-/-) CHINA
"WITHIN THE SUN THERE WAS A BLACK SPOT ROCKING TO AND FRO".
["KAO-MI-CHIH 9"; YAU & STEPHENSON (1988)/193]
- 2349429 1720 JUN 1 (SUKJONG/46/4/59) KOREA
"AT SUNRISE, THE COLOUR (OF THE SUN) WAS RED AND IT WAS DIM. WITHIN THE SUN THERE WAS A BLACK VAPOUR".
["SUKONG SILLOK 65"; YAU & STEPHENSON (1988)/194]
- 2351761 1726 OCT 20 (YONGJO/2/9/51) UNTIL OCT 21 KOREA
"AT THE HOUR OF YU (5-7 PM) ON THE SUN THERE WAS A BLACK VAPOUR. ON DAY I-MAO (OCT 21) FROM DAYBREAK UNTIL THE HOUR OF MAO (5-7 AM) WITHIN THE SUN THERE WAS A BLACK VAPOUR".
["YONGJO SILLOK 10"; YAU & STEPHENSON (1988)/195]
- 2353791 1732 MAY 11 (YUNG-CHENG/10/4/17) CHINA
"THE COLOR OF THE SUN WAS RED AS BLOOD. WITHIN IT THERE WERE TWO BLACK SPOTS ROCKING BETWEEN WEI AND SHEN (I.E. IN THE SW QUADRANT)".
["TSEN-HSIU TENG-CHOW FU-CHIH 23"; YAU & STEPHENSON (1988)/196]
- 2357969 1743 OCT 19 (YONGJO/19/9/19) UNTIL OCT 21 KOREA
"WITHIN THE SUN THERE WAS A BLACK VAPOUR. ON DAY 20 (OCT 20) WITHIN THE SUN THERE WAS A BLACK VAPOUR. ON DAY 21 (OCT 21) WITHIN THE SUN THERE WAS A BLACK VAPOUR".
["YONGJO SILLOK 58"; YAU & STEPHENSON (1988)/197]
- 2362958 1757 JUN 16 / JUL 15 (CH'IEN-LUNG/22/5/-) CHINA
"ON THE SUN THERE WAS A BLACK SPOT ROCKING TO AND FRO".
["KAO-MI HSIEN-CJIH 10"; YAU & STEPHENSON (1988)/198]
- 2365453 1764 APR 15 WESTERN
[LALANDE, ASTRONIMIE, TOM. 3, p. 388]
- 2370992 1779 WESTERN
A=1750
[JOHN HERSCHEL, OUTLINES OF ASTRONOMY, P. 245]
- 2375757 1792 (CH'IEN-LUNG/57/-/-) CHINA
"WITHIN THE SUN THERE WAS A FLYING SWALLOW".
["CHEN-YUAN HSIEN-CHIH 7"; YAU & STEPHENSON (1988)/199]
- 2378167 1799 FEB 5 (CHIA-CH'ING/4/1/57) (DAY OF NEW MOON) CHINA
"WITHIN THE BEAUTIFUL SUN THERE WERE THREE MEN". NOTE: NEW MOON ON 4 FEB 1799 AT 20:28 UT.
["WU-CH'ANG HSIEN-CHIH 10"; YAU & STEPHENSON (1988)/200]
- 2379119 1801 SEP WESTERN
[BAJ 1804, P. 264]
- 2385668 1819 AUG 21 / SEP 18 (CHIA-CH'ING/24/7/-) CHINA
"BY VIEWING THE SUN REFLECTED IN WATER, THERE WAS SEEN WITHIN IT THE CHARACTER 'CHING'. IT WAS LIKE THIS FOR SEVERAL MONTHS".
["HSIN-HUI HSIEN-CHIH 14"; YAU & STEPHENSON (1988)/201]

2388867 1828 MAY 24 WESTERN
A=1700
[AN 6, P. 471]

2388981 1828 SEP WESTERN
[AN 6, P. 471]

2389193 1829 APR WESTERN

2391841 1836 JUL WESTERN
[AN 14, P. 315]

2392982 1839 AUG 30 WESTERN
[AN 17, P. 223]

2393028 1839 OCT WESTERN
[AN 17, P. 223]

2394018 1842 JUL 1 WESTERN
A=3900
[AN 20, P. 283]

2395637 1846 DEC 6 WESTERN
[AN 24, P. 185]

2395827 1847 JUN 14 WESTERN
[AN 27, P. 219]

2395858 1847 JUL - SEP WESTERN
[AN 27, P. 219]

2395981 1847 NOV WESTERN
[AN 27, P. 219]

2396151 1848 MAY 3 (TAO-KUANG/28/4/1 UNTIL 13) UNTIL MAY 15 CHINA
"WITHIN THE SUN THERE WAS A BLACK SPOT". CONFIRMED BY WESTERN
OBSERVATIONS
(1848 MAY 3, AREA UNKNOWN).
["FU-SHAN HSIEN-CHIH 8"; YAU & STEPHENSON (1988)/202]

2396206 1848 JUN 27 WESTERN

2396228 1848 JUL 19 WESTERN

2396240 1848 JUL 31 WESTERN

2396293 1848 SEP 22 WESTERN
A=3750

2396348 1848 NOV 16 WESTERN

2396387 1848 DEC 25 WESTERN

2396415 1849 JAN 22 WESTERN

2396489 1849 APR 6 WESTERN

2396519 1849 MAY 6 WESTERN

2396533 1849 MAY 20 WESTERN

2396564 1849 JUN 20 WESTERN

2396650 1849 SEP 14 WESTERN

2396702 1849 NOV 5 WESTERN

2396951 1850 JUL 12 WESTERN
A=2400

2397182 1851 FEB / APR (HSIEN-FENG/1/-/-) (SPRING) CHINA
"WITHIN THE SUN THERE WAS A BLACK SPOT".
["TING-NAN HSIEN-CHIH 6"; YAU & STEPHENSON (1988)/203]

2397482 1851 DEC 25 (HSIEN-FENG/1/11/4) CHINA
"ON THE FACE OF THE SUN THERE WAS A BLACK DOT".
["KAN-SU CH'UAN-SHENG HSIN-T'UNG-CHIH 2"; YAU & STEPHENSON (1988)/204]

2397507 1852 JAN 19 (HSIEN-FENG/1/11/29) (WINTER) CHINA
"WITHIN THE SUN THERE WAS A BLACK DOT".
["KAN-SU CH'UAN-SHENG HSIN-T'UNG-CHIH 2"; YAU & STEPHENSON (1988)/205]

2397570 1852 MAR 22 (HSIEN-FENG/2/2/2) CHINA
"THE DIRECTOR OF THE ASTRONOMICAL BUREAU REPORTED THAT ON ONE SIDE
OF THE SUN THERE WERE THREE BLACK SPOTS".
["I-HSIEN HSIEN-CHIH 15"; YAU & STEPHENSON (1988)/206]

2397581 1852 APR 2 (HSIEN-FENG/2/2/13) CHINA
"WITHIN THE SUN THERE WAS A BLACK SPOT".
["T'UNG-CH'ENG HSIEN-CHIH 10; YAU & STEPHENSON (1988)/207]

2397852 1852 DEC 29 (HSIEN-FENG/2/11/19) [JAN-DEC 1853: NONE] CHINA
"WITHIN THE SUN THERE WAS A FLYING CROW".
CONFIRMED BY WESTERN OBSERVATIONS:
2397853 1852 DEC 30 1852 +3.92 ---
["T'UNG-CH'ENG HSIEN-CHIH 10; YAU & STEPHENSON (1988)/208]

-> JAN-DEC 1853: NONE ACCORDING TO WESTERN SOURCES!!

2397893 1853 FEB 8 / MAR 9 (HSIEN-FENG/3/1/-) CHINA
"WITHIN THE SUN TWO SHADOWS WERE SEEN, ONE RED AND ONE BLACK, THEY
WERE FIGHTING ONE ANOTHER".
["HU-PEI T'UNG-CHIH 76"; YAU & STEPHENSON (1988)/209]

2397991 1853 MAY 17 (HSIEN-FENG/3/4/10) [SUMMER] CHINA
"ON ONE SIDE OF THE SUN THERE WAS A BLACK SPOT".
["AN-HUA HSIEN-CHIH 34"; YAU & STEPHENSON (1988)/210]

2398012 1853 JUN 7 / JUL 5 (HSIEN-FENG/3/5/-) CHINA
"WITHIN THE SUN THERE WAS A BLACK SPOT ROCKING TO AND FRO.
IT DISPERSED AFTER MORE THAN ONE 'K'O' (ABOUT 15 MINUTES)".
["HSU-HSIU TIEN-CHOW FU-CHIH 93"; YAU & STEPHENSON (1988)/211]

2398071 1853 AUG 5 / SEP 2 (HSIEN-FENG/3/7/-) CHINA
"WITHIN THE SUN THERE WAS A BLACK OBJECT LIKE A WOOLEN BALL, WITH
POINTING RAYS SHOOTING OUT ON ALL SIDES".
["T'UN-LIU HSIEN-CHIH 1"; YAU & STEPHENSON (1988)/212]

2398537 1854 NOV 14 WESTERN
A=2400

-> DEC 1854-DEC 1856: NONE ACCORDING TO WESTERN SOURCES!

2398604 1855 JAN 20 (HSIEN-FENG/4/12/3) CHINA
"WITHIN THE SUN THERE WAS SEEN A BLACK SPOT".
["T'UNG-CH'ENG HSIEN-CHIH 10"; YAU & STEPHENSON (1988)/213]

2398988 1856 FEB 8 (HSIEN-FENG/6/1/3) CHINA
"THE WIND WAS STRONG; WITHIN THE SUN THERE WAS A BLACK SPOT".
["PUCHOW CHIH 2"; YAU & STEPHENSON (1988)/214]

2399192 1856 AUG 30 / SEP 28 (HSIEN-FENG/6/8/-) CHINA
"WITHIN THE SUN THERE WAS SEEN A BLACK SPOT".
["LO-CH'I CHENG-CHIH 8"; YAU & STEPHENSON (1988)/215]

2399660 1857 DEC 11 WESTERN
A=1900

2399754 1858 MAR 15 WESTERN
A=3400
[AN 48, P. 235; IBID., P. 345]

2399835 1858 JUN 4 WESTERN

2399920 1858 AUG 28 WESTERN

2399953 1858 SEP 30 WESTERN

2399969 1858 OCT 16 WESTERN

2399993 1858 NOV 9 WESTERN

2400013 1858 NOV 29 WESTERN
A=2500

2400251 1859 JUL 25 WESTERN

2400288 1859 AUG 31 WESTERN
A=2500

2400346 1859 OCT 28 WESTERN
[AN 52, P. 65]

2400749 1860 DEC 4 (HSIEN-FENG/10/10/22) CHINA
"WITHIN THE SUN THERE WERE TWO BLACK SPOTS. ONE OF THEM WAS EXTREMELY
DARK
AND SITUATED NEAR THE CENTRE; IT WAS STATIONARY AND DID NOT MOVE. THE
OTHER
ONE WAS SLIGHTLY PALER AND SITUATED BELOW, BUT SEEMED TO BE UNSTABLE.
AFTER 5 OR 6 DAYS THEY WERE NOT SEEN".
["HSU-HANCHOW CHIH 20"; YAU & STEPHENSON (1988)/216]

2400865 1861 MAR 30 (HSIEN-FENG/11/2/20) UNTIL APR 10 CHINA
"AT THE HOUR OF 'CH'EN' (7-9 AM) WITHIN THE SUN THERE WERE TWO
BLACK SPOTS, (THEY LASTED) UNTIL THE FIRST DAY OF MONTH 3 (APRIL 10)
WHEN THEY EXTINGUISHED".
CONFIRMED BY WESTERN OBS. (2400864 1861 MAR 29; AN 56, P. 377).
["MIEN-CHU HSIEN-CHIH 18"; YAU & STEPHENSON (1988)/217]

2400885 1861 APR 19 WESTERN
[AN 56, P. 377]

2400922 1861 MAY 26 WESTERN
[56, P. 377]

2400989 1861 AUG 1 WESTERN
[AN 56, P. 377]

2401044 1861 SEP 25 WESTERN
[AN 56, P. 377; AN 59, P. 145; AN 62, P. 175; AN 63, P. 74/359]

2401104 1861 NOV 24 (HSIEN-FENG/11/10/22) CHINA
"WITHIN THE SUN THERE WAS A BLACK SPOT".
["TE-YANG HSIEN-CHIH 42"; YAU & STEPHENSON (1988)/218]

2401584 1863 MAR 19 (T'UNG-CHIH/2/2/14) CHINA
"WITHIN THE SUN THERE WAS A BLACK SPOT".
NOTE: NO LARGE SPOTS DURING 1863 ACCORDING TO WESTERN SOURCES.
["HUI-MIN HSIEN-CHIH 17"; YAU & STEPHENSON (1988)/219]

-> OCT 1861 - DEC 1863: NONE ACCORDING TO WESTERN SOURCES!

2401880 1864 JAN 9 WESTERN
LAT=-4 DEG

2402097 1864 AUG 13 WESTERN

2402168 1864 OCT 23 WESTERN

2402176 1864 OCT 31 WESTERN

2402183 1864 NOV 7 WESTERN

2402204 1864 NOV 28 WESTERN

2402323 1865 MAR 27 / APR 24 (T'UNG-CHIH/4/3/-) CHINA

"WITHIN THE SUN THERE WERE THREE HUMAN SHADOWS".
["HU-NAN T'UNG-CHIH 244"; YAU & STEPHENSON (1988)/220]

2402436 1865 JUL 18 (T'UNG-CHIH/4/5'/26) CHINA
"WITHIN THE SUN THERE WAS A SHADOW, BESIDE IT THERE WAS A STAR.
IT LASTED FOR FIVE OR SIX DAYS BEFORE VANISHING".
["WU-YANG CHIH-YU 5"; YAU & STEPHENSON (1988)/221]

-> JAN 1872-DEC 1881: NONE ACCORDING TO WESTERN SOURCES!

2405213 1873 FEB 23 (T'UNG-CHIH/12/1/26) UNTIL FEB 24 CHINA
"WITHIN THE SUN THERE WAS A BLACK SPOT".
NOTE: NO LARGE SPOTS DURING 1873 ACCORDING TO WESTERN SOURCES.
["T'AI-SHUN FEN-CHIANG LU-CHIH 10"; YAU & STEPHENSON (1988)/222]

2405583 1874 FEB / MAY (T'UNG-CHIH/13/-/-) SPRING CHINA
"WITHIN THE SUN THERE WAS A BLACK LIGHT ROCKING TO AND FRO".
["HAI-YANG HSIEN-CHIH 25"; YAU & STEPHENSON (1988)/223]

2405867 1874 DEC 9 (T'UNG-CHIH/13/11/1) (DAY OF NEW MOON) CHINA
"WITHIN THE SUN THERE WAS A BLACK SPOT". NOTE: NO LARGE SPOTS DURING
1874
ACCORDING TO WESTERN SOURCES. NEW MOON ON 9 DEC 1874 AT 00:06 UT.
["SHIH-MEN HSIEN-CHIH 11"; YAU & STEPHENSON (1988)/224]

2408553 1882 APR 17 WESTERN
A=2258

2408555 1882 APR 19 WESTERN
A=2109 LAT=-29

2408769 1882 NOV 19 WESTERN
A=2425 LAT=+19

2409171 1883 DEC 26 (KUANG-HSU/9/11/27) CHINA
"AT SUNSET, BLACK SPOTS MOVED TO AND FRO FOR A LONG WHILE".
NOTE: BIRDS ? NO LARGE SPOTS ACCORDING TO WESTERN SOURCES.
["LO-AN HSIEN-CHIH 13"; YAU & STEPHENSON (1988)/225]

2409268 1884 APR 1
A=2246

2409728 1885 JUL 5 (KUANG-HSU/11/5/58) CHINA
"WITHIN THE SUN, A BLACK VAPOUR MOVED TO AND FRO FOR A LONG WHILE".
["HUI-MIN HSIEN-CHIH 17"; YAU & STEPHENSON (1988)/226]

2412141 1892 FEB 12
A=3050 LAT=-28
[HIMMEL & ERDE 4, P. 484]

2412290 1892 JUL 10
A=2387 LAT=+11

2412683 1893 AUG 7

A=2621 LAT=-18

2413110 1894 OCT 8

A=2511 LAT=-12

2413820 1896 SEP 17

A=2458 LAT=+13

2413934 1897 JAN 9

A=2743 LAT=-07

[PASP 9, P. 42]

2414542 1898 SEP 9

A=2235 LAT=-12

2415066 1900 FEB 15 (KUANG-HSU/26/1/16) CHINA

"WITHIN THE SUN THERE WAS A BLACK SPOT". NOTE: NOT CONFIRMED BY WESTERN SOURCES.

["HSIANG-CH'ENG HSIEN-CHIH 37; YAU & STEPHENSON (1988)/227]

2416400 1903 OCT 12

A=2120 LAT=-21

[PASP 15, P. 237]

2416527 1904 FEB 16 (KUANG-HSU/30/1/1) (DAY OF NEW MOON) CHINA

"WITHIN THE SUN THERE WAS A BLACK SPOT". NOTE: NEW MOON ON 16 FEB 1904 AT

11:04 UT.

["CHUANG-HO HSIEN-CHIH 1"; YAU & STEPHENSON (1988)/228]

2417028 1905 (KUANG-HSU/31/-/-) CHINA

"WITHIN THE SUN THERE WAS A BLACK SPOT".

["LIN-AN HSIEN-CHIH 1"; YAU & STEPHENSON (1988)/229]

2416881 1905 FEB 4 (KUANG-HSU/31/1/1) (DAY OF NEW MOON) CHINA

"AT SUNRISE, WITHIN THE SUN THERE WAS A BLACK SPOT AS LARGE AS A CLENCHED FIST; IT LASTED FOR FIVE MINUTES AND THEN WAS EXTINGUISHED".

NOTE: NEW MOON ON 4 FEB 1905 AT 11:06 UT.

CONFIRMED: 2416881 1905 FEB 04 3350 -1.83 -15

["HSU-HSIU TA-CHU HSIEN-CHIH 15"; YAU & STEPHENSON (1988)/230]

2416913 1905 MAR 8

A=2550 LAT=+11

2417044 1905 JUL 17

A=2150 LAT=+13

2417139 1905 OCT 20

A=3000 LAT=+14

2417147 1905 OCT 28

A=1620 LAT=+07

2417150 1905 OCT 31 (KUANG-HSU/31/10/4) CHINA

"ON THE SUN THERE WAS A BLACK SPOT".

NOTE: CONFIRMED BY WESTERN OBSERVATIONS (CMP 1905 OCT 20 OR 28, AREA APPROX.

1617).

["FENG-YIN-HSIEN HSU-CHIH 28"; YAU & STEPHENSON (1988)/231]

2417619 1907 FEB 12

A=2550 LAT=-17

2417747 1907 JUN 20

A=2450 LAT=-14

2418185 1908 AUG 31

A=1900 LAT=+07

2419067 1911 JAN 30 (HSUAN-T'UNG/3/3/1) (DAY OF NEW MOON) CHINA

"WITHIN THE SUN THERE WAS PRODUCED A BLACK SPOT".

NOTE: NEW MOON ON 30 JAN 1911 AT 09:44 UT. NOT CONFIRMED BY WESTERN SOURCES!

["CH'ING-FENG HSIEN-CHIH 2"; YAU & STEPHENSON (1988)/232]

2421108 1916 JUL / OCT (5TH YEAR OF THE REPUBLIC) [AUTUMN] CHINA

"WITHIN THE SUN THERE WAS A BLACK SPOT".

NOTE: SEVERAL SPOTS IN WESTERN SOURCES (LARGEST WITH A=1160, CMP 24 SEP).

["CH'UEH-SHAN HSIEN-CHIH 20"; YAU & STEPHENSON (1988)/233]

2421271 1917 FEB 11 (6TH YR OF THE REPUBLIC/1/20) CHINA

"WITHIN THE SUN THERE WAS A BLACK SPOT LIKE A HEN'S EGG".

CONFIRMED (2421270 1917 FEB 10 A=3600 LAT=-16).

["FANG-CH'ENG HSIEN-CHIH 5"; YAU & STEPHENSON (1988)/234]

2421451 1917 AUG 10

A=3200 LAT=+16

[PASP 49, P. 87; D. MENZEL, "OUR SUN", P. 136]

2421636 1918 FEB 11 (7TH YR OF THE REPUBLIC/1/1) (DAY OF NEW MOON) CHINA

"A BLACK SPOT WAS SEEN WITHIN THE SUN. IT DISAPPEARED AFTER SEVERAL DAYS".

NOTE: NEW MOON ON 11 FEB 1918 AT 10:04 UT. SMALL SPOT (A=1008, CMP 16 FEB)

IN WESTERN SOURCES.

["FU-NING-HSIEN HSIN-CHIH 1"; "SZU-YANG HSIEN-CHIH 3"; YAU & STEPHENSON (1988)/235]

----- End-of-Catalog -----
