

1) Researches (Measurement & Experiment) For The Giant Stones Around Ashizuri Cape

SUMMARY :

(1) Objects of measurement and experiment

- (i) Measurement of reflective index of obsidian was made for identification of the stone-producing areas.
- (ii) Measurement and experiment about “Tojin”-stone, mirror for giving practical and positive answers to the questions, when observation was made of tinfoil (reflective foil) stuck to a stone surface (or stuck sideways--in case of the “Ohiwa” from a fixed point on land (pool side of Ashizuri Pacific Hotel and Usubae observation Platform) or from a moving point on sea (ship), how they are visible or not.
- (iii) The aforementioned experiment is for giving an answer to the question whether these groups of stones could possibly be the object of religious faith (sun faith) or Jomon lighthouse or not. (As to unearthed remains of “Jomon” era, see out next report.)
- (iv) Properly speaking, the following preliminary works are necessary.
 - (a) Overall polishing of the surface of a group of stones, so-called “mirror rock”, looking as if shaven against rising sun or Japan Current. (to be done by stone workers)
- (V) Since, however, these works require agreement of Environment Agency and Kochi Prefecture Office, such preliminary works were given up this time and instead the stone surface was covered with tinfoil. In so doing, however, a luminosity comparison test for polished stone surface and tinfoil was essential and this constituted an important part of the present experiment.

2) Experiment result

- (i) The result of observation and measurement from a point on land (“Tojin-daba”) and a moving point on sea (ship) with regard to reflective light against sunlight was better than expected despite the considerably long clouded time. (Detailed observation data from other two land points -- mirror-rock of “Dogamori” and giant stone and still other two points, pool side of Ashizuri Pacific Hotel and Usubae Observation Platform will be reported next time.)
- (ii) When the moving point on sea (ship) reached the Usubae zone (Where Japan current splashes against the cliff) “Tojin”-stone was visible shining through the recess between two mountains in the north-east direction. This was unexpected, indeed.

(iii) It was fine on the day of the preliminary experiment almost mysteriously at night (around 22 : 30) in the moonlight. (Observation was made from the road by “ Tojin” stone.) Judging from this situation, possibility of religious service done in the faith of sun or moon at “ Tojin-daba” may be taken in note as a future subject of study. This, too, was totally unexpected. (The picture was taken at night on November 4.)

(3) Hints for future study

- (i) Although, as mentioned above, the results of the present measurements and experiments were much better than expected, further long survey and research (measurement and experiment for giant stones) are considered essential instead of reaching a hasty conclusion.
- (ii) At the same time these group of giant stones along the joint between Japan current and Japanese Islands as the fore end of Asiancontinent (Usubae) have a possibility of being groups of giant masonry rare in the world, hence great care shall be taken avoid damage, for safe-keeping thereof instead of reaching any hasty conclusion. To be remembered is the proverb. “ It is no use crying over split milk.”
- (iii) Further experiments (including observation from a ship) after polishing stone surface and trimming hiding trees as necessary are considered essential. Existence of these groups of giant stones (mirror rocks), more than 100 as counted by Mr. Bujio Tomita in Tosashimizu City, should be proven, the argument of whether they are natural or artificial will be terminated.

(4) Future problems

- (i) In the pass around the midslope of Mt. Shirao there are remains of giant stones (tentative name). In the mountain the remains are much better preserved in the original shape and structure. This will be the main object for our study next year (Trimming of trees in the peripheral area is essential.
- (ii) We are anxious to grasp the entire picture of the giant stones distributed in the Ashizuri Cape. For that radar photography from a satellite is supposed to be effective. (Proposed by Mr. Taizo Sakaki.) Some effective attempt is anticipated.
- (iii) A follow-up report (2) will be completed this year for complementation of this report.
- (iv) As to the present investigation, we heartily thank for valuable advice, cooperation and suggestion rendered by the following organization and cooperations

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 Ricoh Co., Ltd. / Sony Corp. / Muroto Kisen / Ashizuri Pacific Hotel / Kochi University's
 School of Education / THIS IS YOMIURI /Research Society of Hata-no-Kuni

(We also thank to Mr. Takeshi Inamura of THIS IS YOMIURI for pictures taken from a helicopter.)

SUMMARY OF PUBLISHED REPORTS (1) & (2)

(I) Since Feb. 28, 1993 observation and investigation were made repeatedly about the site in question (group of giant stones in the vicinity of the Ashizuri Cape). On the result thereof three places were selected (“Tojin”-stone, 3-row stones on one side of Ashizuri Pacific Hotel and “Nada-no-Ohiwa”) and experiment (November 3 : preliminary experiment on October 25) and surveys (December 20, 21) were made with regard to these groups of stones.

(II) The object of these experiments and surveys was verification of the working hypotheses that these groups of giant stones have a nature of mirror rocks with regard to the sun (or moon) faith and that they play a role of lighthouse. Key point will be Usubae where Japan steam strikes against these giant stones.

(III) These experimental results were both positive as expected or, true, more than expected with regard to both working hypotheses.

(IV) Especially the reflected light from “Tojin”stone north-east of Usubae and reflected light from “Nada-no-Ohiwa” were impressive, both being clearly filmed by an 8mm video-camera (provided by Sony Corp.) and annexed to this report. The three-row stones on one side of Ashizuri Pacific Hotel are vividly revealed as the object of faith for marine people confronted with Japan current (thanks to cooperation of the hotel in trimming the trees hiding the stones).

(V) Thus, the present preliminary investigation (1993) has been successfully completed thanks to cooperation by many institutions. To be remembered is, however, this is a preliminary investigation and real investigation is to be started this year (1994).

(VI) As to real investigation from next year, it is essential to confirm the current state and the distribution of the groups of giant stones in the vicinity of Ashizuri Cape as remains. For that many promising methods have been proposed such as infrared but especially in the future more fundamental archaeological study will be an important problem. This time, as reference data there are provided pictures of obsidian unearthed at “Tojin-daba” and “Katakasu”ruins, “Hakuyo-seki” of Himejima, whose reflective index test data (by Prof. Masao Suzuki of Rikkyo University included in the previous report) and of Jomon ware. We appreciate cooperation of local owners of remains (Mr. Yoshihisa Shintani, Mr. Seiji Nakagawa and Mr. Ikuo Tsugita).

(VII) As to most of such earthware, expert opinions were obtained that most of the earthware were of a bit later than the middle of the Jomon period and rest were of the later Jomon period. Of the stone arrowheads unearthed at “Tojin-daba” some were suggested to be of still earlier periods.

(Cone-shaped ornaments were judged to be of pasty nature, probably being of later periods.) The examiner was Prof. Tatsuo Kobayashi of Kokugakuin University's School of Archaeology (March 11, 1994). Scholastically, it is of course necessary to do through investigation by digging. As to Katakasu ruin, “Katakasu ruin of Kochi Prefecture (Kochi Prefecture Culture Property Survey Report 19th Series)” is already published by Kochi Prefecture's Committee of Education (February, 1975). Also published is “History of Kochi Prefecture”, both being highly valuable.

(VIII) Besides those mentioned in Report I, we thank to the following persons and institutions for their close cooperation

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Mr. Shuhei Yamamoto (Tosa-shimizu City, Yumaru, 2 tons, October 25, November 3)
 Mr. Kusuo Yoshioka (Tosa-shimizu City, No. 6 Kiyomaru, 1.9 ton, November 3)
 Mr. Hidetoshi Hatayama (Tosa-shimizu City, No. 2 Sakae-maru, 1.9 ton, November 3)
 --- Ships used in the experiments.

Mr. Nobuteru Sone et al. ---Muroto Kisen
 Mr. Makoto Izumi (Chief of City Planning Section, Tosa-shimizu City), Mr. Masahiko Izumi
 (Engineer of the same section), Mr. Toshiyuki Kadota (Shimizu N0.3 Land Plotting
 Association)--- for measurements on December 20 and 21

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(IX) Our thanks also go to the following persons who took early interest in these groups of giant
 stones and took initiative in the present investigation

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Mr. Bujio Tomita (Tosa-shimizu City, Service Water Section),Mr. Kojiro Tani (executive
 director of Ashizuri Pacific Hotel),Takashi Nishizawa (representative of Hatanokuni Research
 Society),Masahiro Hatayama (from superintendent of education, Tosa - shimizu City),Tomo-
 yoshi Hiraishi (president of Hatanokuni Research Society),Sadao Hirano (member of House
 of Councilors, hailing from Tosa-shimizu City)

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We also express our hearty thanks to the following persons who cooperated in preparation of this
 report.

Mr. Fujio Aoyama (Tokyo), Mr.Takeshi Inamura (THIS IS YOMIURI), Mr. Yutaka Kaneko
 (Rikoh), Mr. Taizo Sakaki (Rikoh), Mr. Masao Suzuki (Rikkyo University), Mr. Shigeru
 Tanimoto (YHP), Mr. Mitsuo Fuki (Kochi University)
 General editor : Takehiko Furuta (professor of Showa Pharmaceutical College)

Pictures :

1 “Tojin”-stone viewed from Usubae sea (through a recess) <P.3-1>



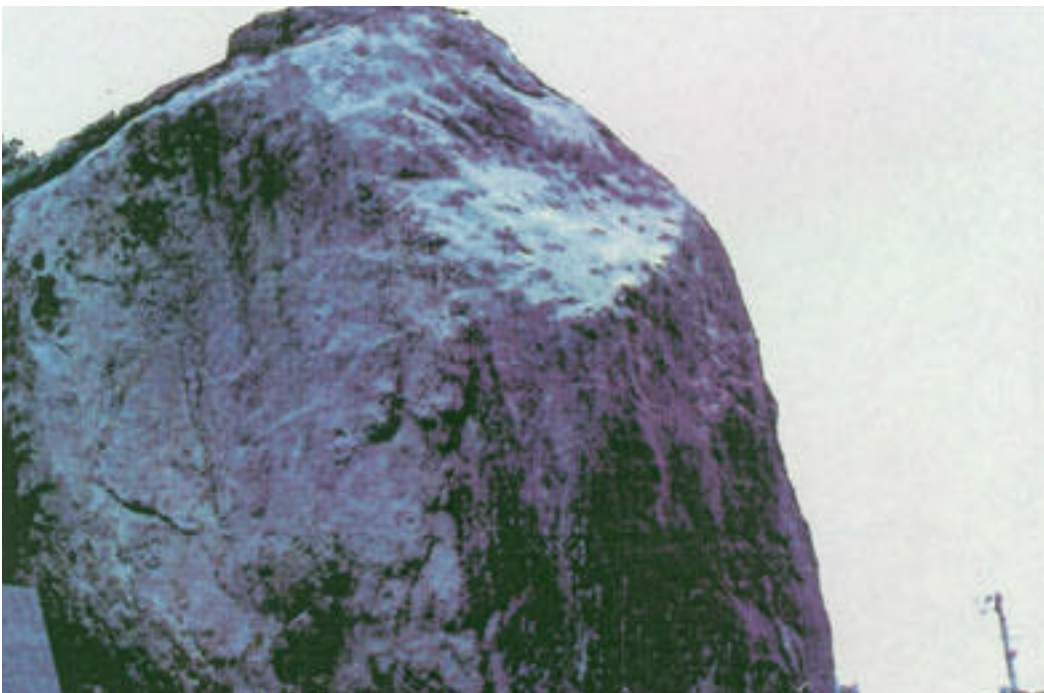
2 “Tojin”-stone viewed from “Tojin-daba” <P.3-2>



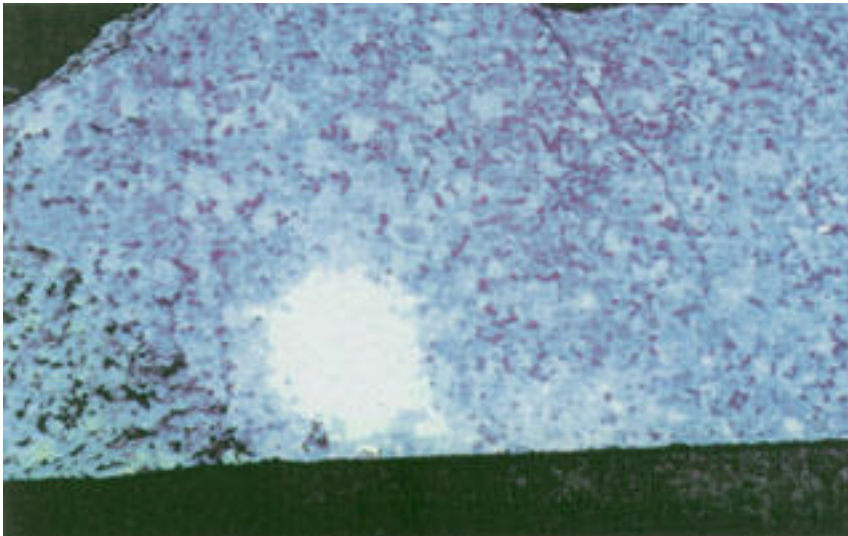
3 Mirror stone of “Dogamori” (side of Ashizuri Pacific Hotel) <P.4-1>



4 “Nada-no-Ohiwa”<P.4-2>



5 Fraction of “ Tojin”-stone (polished, reflecting sun-light <P.5-1>--Taken by Fujio Aoyama



6 Tin foil reflecting moon light (“ Tojin”-stone) <P.5-2>--Taken by Furuta



Pictures taken from helicopter :

7 “Tojin-daba” seen from above “Tojin”-stone<P.6-1>



8 “Tojin”-stone seen from above “Tojin-daba”<P.6-2>



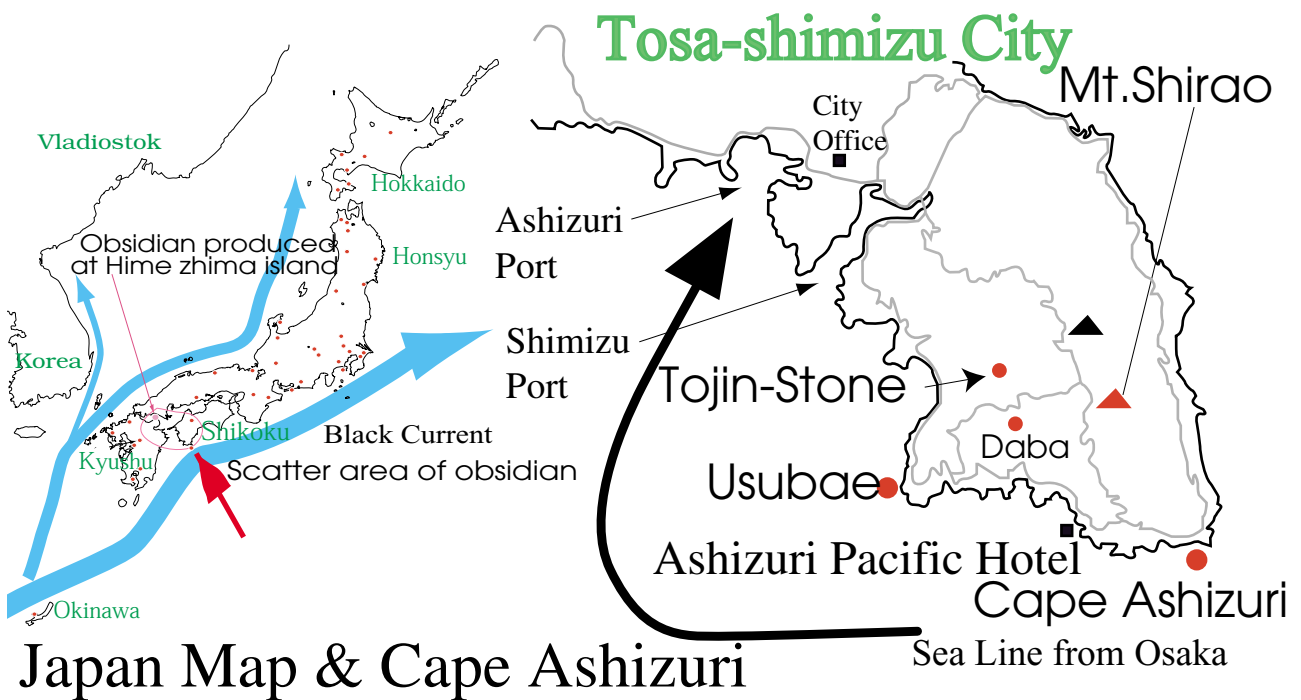
9 “Tojin”-stone with tin foil stuck thereon <P.7>



Annexed :

10 Map of Tosa-shimizu City

11 Map of Ashizuri Cape era (an addition Map, Created Yukio Yokota, 2000.3)



Pictures :

12 A Remains unearthed from Katakasu ruin No. 2, owned by Mr. Yoshihisa Niiya <P. 8-1>



B <Large one> <P.8-2>



Stone arrowhead unearthed from “ Tojin-daba” No. 9, owned by Mr. Seiji Nakagawa <Small one> <P.8-2>

Stone arrowhead unearthed from “ Tojin-daba” No. 10 , owned by Mr. Ikuo Tsugita A and B were taken by Fujio Aoyama and 1-124 by Furuta.(None all picture)

(reprinted by Yukio Yokota, graphic version, 2000.3)