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No.1	1951	Yuji, SHIBATA	Outline of the association of scientific research of antiques in Japan	1-3				
No.1	1951	Ichiro, OHGA	"Taima Mandara" is in tapestry weave	4-11				
No.1	1951	Yasuhiko, ASAHINA	Studies on the old Chinese drugs preserved in "Sho-so-in" in Nara.	11-18				
No.1	1951	Torao, OHTSUKI	On the destructive damage of the temple "Yakushi-ji" caused by a mould	18-21				
No.1	1951	Torao, OHTSUKI; Tomokichi, IWASAKI; Yoshimichi, EMOTO; Heizoh, SAITOH	Studies on dust-particles scattering in the air of the museum, I.	21-24				
No.1	1951	Takakage, SAKURAI	Application of synthetic resins to the preservation of antiques and art crafts.	25-26				
No.1	1951	Kazuo, YAMASAKI	Chemical studies on ancient painting materials	27-30				
No.1	1951	Hachiro, MORI	Studies on the control of insects noxious to antique art-materials, I. On the insecticidal methods with reduced air pressure	30-32				
No.1	1951	Kôzô, HAYASHI; Tachiko, ISAKA; Gen, SUZUSHINO	Chemical identification of vegetable dyestuffs printed in ancient Japanese silk-wares	33-42	Early in ancient an excellent development had been performed in coloring mode of various textiles, and today we find many of them in vivid coloration together with other precious antiques preserved in Hôryûji, Shôsôin, etc. According to our present knowledge various dyestuffs commonly used in those days were almost of vegetable origin ; but until now we have not exact knowledge as regards the discrimination and further the identification of each coloring material in detail. According to the suggestion of the late Prof. Keita Shibata, we have recently carried out experiments in order to establish anyhow a reliable method of identification chiefly on chemical basis. This communication includes in the first place a brief survey of chemical characteristics of ancient vegetable dyestuffs, and next more or less systematized description of our experimental results, so as to make available for the determination of unknown color-specimens.			
No.1	1951	Toru, MORI; Ikuo, ASANO	Prevention of decay and insect damage in wood, I. Study on the velocity of decay of wood (1)	43-49				
No.1	1951	Heizoh, SAITOH	On architectures and moisture; especially on the moisture of the store-houses of national treasures	49-54				
No.1	1951	Tomokichi, IWASAKI	Studies on clayey materials	54-56				
No.1	1951	Yoshimichi, EMOTO	Materials for the repair and preservation of Japanese antiques	56-58				
No.2	1951	Yuji, SHIBATA	Glimpse of the Scientific Research Institutions for the Restoration of Antique Art in France and Italy	1-3				
No.2	1951	Kotondo, HASEBE	On the Fragments of a Calcinated Human Skull embedded under the Northwestern Corner Pile of the Horyuji Tower	4-8				
No.2	1951	Kazuo, YAMASAKI	Chemical Studies on the Pigments of Ancient Ornamented Tombs in Japan	8-14	Colored ornaments of about 40 ancient tombs distributed in northern Kyushu, mainly in Fukuoka and Kumamoto prefecture, were chemically studied. The ornaments and figures painted in the inner walls of stone chambers are concentric circles, triangles, magical geometrical figures, bird, ship, swords, bow, arrows, quiver, horse and man. The pigments used are red ochre, yellow ochre, china clay, charcoal, a black mineral containing manganese which is probably pyrolusite, and powders of green rocks containing chlorite. Malachite, azurite and cinnabar were not found. The most numerous figure is red concentric circles. The ages of these ornamented tombs are supposed to be of about 500-700 A.D.			
No.2	1951	Torao, OHTSUKI	Inoculation Experiments of Moulds on the Surface of Various Synthetic Resin Plates	14-16				
No.2	1951	Torao, OHTSUKI; Yoshimichi, EMOTO; Heizoh, SAITOH; Tomokichi, IWASAKI	Studies on Dust-particles in the Air of the Museum, II.	16-23				

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No.2	1951	Tohru, MORI; Ikuo, ASANO	Prevention of Decay and Insect Damage in Wood. II.	23-29	1)By "Shoyu"* Petri-dish method Poria vaporaria, was determined as 0.008% by weight.(*Japanese soy) 2)By the flask test of toxicity using the wood blocks (1.5 × 1.5 × 3.0cm, heart wood of Cryptomeria japonica), with were completely infused with sodium pentachlorophenate, the minimum amount of showing toxicity against Poria vaporaria was about 7 mg. per cubic cm. of wood, if the first infused amount of agent were maintained in the block. But even in the wood blocks treated with denser agent, considerable amount of sodium pentachlorophenate was lost according as its dissolution into water, therefore the said agent cannot be applied so effectively in damp places.			
No.2	1951	Takakage, SAKURAI	Some Problems on the Preservation of Wall-paintings using Synthetic Resins	29-31	On the preservation of the wall-paintings using synthetic resins, the change of colours and durability of the resins used as binder of pigments are at issue, The first preservation treatment of the wall-paintings with acrylic resin solution was carried out in 1942 at temple Ryozen-ji in Nara prefecture and the second was that of castle Nijyo-jyo in Kyoto. Today, nine years have elapsed, since the preservation had been accomplished at the temple Ryozenji, and also eight years in the case of castle Nijyo-jyo. We have reexamined in detail the wall-paintings in temple Ryozen-ji and castle Nijyo-jyo a few monthes ago, and found that any color change and even the fall of pigments could not be perceptible, except the slightest rise of the pigments from the surface only in some small portions of the wall.			
No.2	1951	Yuji, SHIBATA	Correction to my Previous Note concerning the "Outline of the Association of Scientific Research of Antiques in Japan"	32				
No.2	1951		Proceedings of the Association (Jan.-June)	33				
No.3	1952	Ichiro, OHGA	Memories of Late Dr. Sei-ichi Taki. A Story of Our Study on Taima-Mandara	1-8				

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No.3	1952	Tei-ichi, ASAHINA	On the Bell of the Old Japanese Clock	8-15	<p>Though the old Japanese clock is the object of interest among the clock and watch collectors, little attention has been paid to the tone of its bell. Recently the writer found that the bell of the clock was not made in random tone but was pitched to tunes of Japanese music. The tunes of the classical Japanese music and some of the present popular ones are said to have their origin in Chinese music brought here more than one thousand years ago. It seems that the original Chinese tuning was modified in the course of time to adapt it to Japanese tunes and the present authoritative Japanese music has the twelve keys shown in the table 1 in the text.</p> <p>The pitch of each key shown in the table was determined by Mr. Alex. I. Ellis (1840-1890) in England in 1886 with a set of tuning forks specially made and attuned to Japanese classical musical instruments (Fig. 1). It is interesting that each key has a pitch very near to that of Western music as can be seen in the table. By comparing the fundamental tones of the bells of 106 clocks from the Takabayashi Collection, Kamiguchi Collection, Hirai Collection etc., with the aid of the tuning forks and the bamboo tuning pipes with reeds (called Zutaké Fig. 2) the writer could identify exactly or approximately that 11 had Ichikotsu, 2 Dankin, 2 Hyōjō, 8 Shosetsu, 13 Shimomu, 13 Sojo, 16 Fusho, 17 Oshiki (or Waushiki), 5 Rankei, 11 Banshiki, 6 Shinsen and 2 Kamimu (Table 2). In making this summary, higher and lower octaves of each key were brought together into one. Beside the above, the writer found in the Kamiguchi Collection only one clock whose bell was different from any key in the table (higher than Rankei and lower than Oshiki). According to Mr. Kamiguchi, the original bell was broken and a newly cast copper-rich bronze one was replaced about fifteen years ago.</p> <p>The identification was made merely by listening to the keys with the writer's ears. As the tone quality of a bell is not so simple as that of a tuning fork, a little difficulty was experienced in making exact comparisons. The writer is now * This set of tuning forks is still kept in the Library of the College of Music, Tokyo Art University, Uyeno Park, Tokyo. It is said that they were displayed at the Fair in 1875 in London, checking the identification with the aid of an acoustic instrument, "König's resonator", and has found that among several simple tones comprising the tone of a bell there is one, identical with one of the twelve keys of Japanese music. Some of the results so far obtained are shown in the Table 3. This study with the König's resonator is now on and more accurate study with the aid of an oscillograph is intended.</p> <p>It is said that the agreeable tone quality of the bell of the old Japanese clock is due to the trace of gold added to the bronze when the bell was cast. By qualitative spectrochemical analysis of pieces from broken bells of two old Japanese clocks, following constituents were found beside the major constituents of copper and tin; minor constituents: iron and lead. Constituents in trace: zinc, silver, bismuth, magnesium, calcium, titanium, arsenic, antimony and silicon.</p> <p>(The National Science Museum, Tokyo)</p>			
No.3	1952	Ichiro, OHGA; (Miss) Yoshiko, OHGA	On the Cloth Impression on the Surface of Ancient Tiles of Musashi-Kokubunji Temple near Tokyo	15-20				
No.3	1952	Noboru, MORI	Experiments on the Preservation of Ancient Fabrics	21-26				
No.3	1952	Rokuro, UEMURA	Studies on the Litharge Paintings (Mitsuda-e) in Shoso-in, I	26-28	<p>1. The present investigation has been carried out concerning the Litharge Paintings (Mitsuda-e) in Shōsō-in.</p> <p>2. Despite of various opinions concerning the mode of painting in those remote days, no reliable conclusion seems to have been hitherto drawn. This study is probably the first one, which relates to the scientific treatment of the following problem: What kind of color change of the pigments might occur after long standing when mixed with such painting materials as oil, lac or Japanese lacquer?</p> <p>3. The experiments reveal that only 4 out of 14 pigments tested kept more or less their original coloration in the case of Japanese lacquer; on the other hand, 11 pigments preserved their original color tones as well as lustre, when admixed with oil and lac.</p> <p>Accordingly it follows that oil and lac are more preferable than Japanese lacquer for the maintenance of the pigment coloration.</p>			

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No.3	1952	Kazuo, YAMASAKI; (Miss) Fusako, MIWA; (Miss) Naoko, OHASHI	Chemical Composition of Glass Beads found in an Ancient Tomb in Aichi Prefecture, Japan	28-30	Two kinds of glass bead, <i>A</i> and <i>B</i> , found in the Hakusan-yabu tomb near Nagoya city (Aichi prefecture), were analysed. <i>A</i> is palegreen and opaque, while <i>B</i> is blue and transparent. The density d_{25}^{25} , refractive index n and chemical composition of both beads were given in Table 1. They are composed of soda-lime glass coloured mainly with copper. The high content of alumina in <i>A</i> indicates the probable use of clay or feldspar as raw materials. The age of the Hakusan-yabu tomb is supposed to be of 4th century. (Nagoya University and Catholic University of Nagoya)			
No.3	1952	Hachiro, MORI	Studies on the Control of Insects noxious to Antique Art-materials (II). The Insecticidal Mechanism of Reduced Air Pressure. 1. On the Insecticidal Action owing to the Decrease of Humidity.	30-35				
No.3	1952	Kôzô, HAYASHI; Gen, SUZUSHINO	Identification of Vegetable Dyestuffs printed in Ancient Japanese Silk-Wares. (Supplement). Observations on Fluorescence of Vegetable Dyestuffs by Ultraviolet Illumination	36-39	1. Fluorescence of silk cloths colored with various vegetable dyestuffs has been carefully examined by illuminating with mercury lamp. 2. Yellow dyes containing berberin are found to be easily discernible by their intense greenish yellow fluorescence, and the safflower rouge shows sometimes a weak pinkish fluorescence, while almost all of the other dyes give no positive reaction as such. 3. The illumination test by means of ultraviolet light is, at any rate, highly desirable as a preliminary one, owing to its harmless applicability for the precious antique arts. (Research Institute for Natural Resources, Tokyo)			
No.3	1952	Kôzô, HAYASHI; Gen, SUZUSHINO	Chemical Studies on the Nature of Vegetable Dyestuffs of Several Silk Fragments found in the Fujiwara's Coffins at Temple "Chûson-ji"	40-44	1. Among numerous relics, which were found in the coffins together with Fujiwara's mummies at Temple Chûson-ji last year, some of the silk fragments have been chemically examined, aiming at the elucidation of their coloring principles. 2. Vegetable dyestuffs, which have been identified on some ten fragmental specimens obtained, are summarized as follows: Akane= <i>Rubia Akane</i> (red dye), Kihada= <i>Phellodendron amurense</i> , Ôren= <i>Coptis Japonica</i> (?) and Kariyasu= <i>Miscanthus tinctorius</i> (?) (yellow dyes), Ai= <i>Polygonum tinctorium</i> (blue dye), and Murasaki= <i>Lithospermum erythrorhizon</i> (violet dye). (Research Institute for Natural Resources, Tokyo)			
No.3			Proceedings of the Association (July-Dec.)	45				
No.4	1952	Takakage, SAKURAI	Repair of the Burned Wall of Temple Hôryû-ji	1-7	The walls in the Kondô of temple Hôryû-ji were damaged by the fire broken out on 26th January, 1949. Preservation of remained pigments on the burned walls was performed using acrylic resin, immediately after the fire. All the walls were imposed between wooden frame and removed from pillars. Repair of the wall was commenced from the wall No. 3, on which portrait of Bodhi-Sattva is painted. We laid the wall on the working stand, the surface being upward, and planed away the wall from reverse side with rotary cutter in the depth of 8.5 cm from the surface. Then urea resin varnish was injected from reverse side by 3cm pitch to reinforce the wall body and to glue together the upper layer of wall to the next, because upper layer is separated from next layer. Stainless steel bolts were put in the wall from inversed side by 7cm pitch and fixed with urea resin rigidly; steel plates having twenty seven holes were inserted to the bolts and fixed by nuts. Eight steel bars were fixed to the plates, and six steel bars were fixed to the former bars at right angle. Margins of the wall were framed with stainless steel plate, then we welded all the bolts, nuts, and steel bars electrically at the part where they intersect each other.			
No.4	1952	Ichiro, OHGA; (Miss) Yoshiko, OHGA	On the Cloth Impression on the Surface of the Ehara-group of Ancient Roof Tiles (so called E-gawara) excavated from the Ruins of Musashi-Kokubunji Temple, near Tokyo	8-19				

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No.4	1952	Kazuo, YAMASAKI	The Black Substances coated on the Floor of the Pagoda and on the Panel Stones of the Platforms of the Pagoda and the Golden Hall of the Hōryūji Temple	20-22	The layer of the black substance was found between the mortar layer and the clay which form the floor of the interior of the Pagoda of the Hōryūji Temple. This was found to contain 55.50% MnO ₂ and is supposed to be manganese wad. The panel stones of the upper platforms of the Pagoda and the Golden Hall were also coated with black substances which were found to be manganese wad. Their MnO ₂ contents were 38.12 and 50.52% respectively. The reason of the presence of these black substances are quite unknown. (Faculty of Science, Nagoya University.)			
No.4	1952	Tohru, MORI; Ikuo, ASANO; Yoshimichi, EMOTO	Prevention of Decay and Insect Damage in Wood, III. Study on the Preservative Treatment against Fungi for the Lower End or the Columns in Buildings, (1).	23-26				
No.4			Proceedings of the Association (Jan.-June)	27				
No.5	1952	Tei-ichi, ASAHINA; Gundayu, AIDA; (Miss) Sachiko, ODA	Antique Glass from Chūson-ji Temple and a General Consideration on Ancient Japanese Glass	1-6	When a scientific investigation, in which two of the writers (T.A. and S.O.) took part, was carried out in March, 1950, on mummies of the Fujiwara family (1090-1189) kept in golden coffins in Konjikidō—a golden mausoleum—of Chūsonji Temple, many articles of historical value were found in the coffins, among which there were a small fragment of glass plate and many glass beads, which drew attention of one of the writers (T.A.). In Japan, glass objects are found in remains such as ancient mounds etc. of prehistoric age, and a documentary record of glass bead making in the 8th century is still kept, together with more than 65,000 pieces of glass objects, in the treasure house called Shōsōin in the city of Nara. After that the amount of ancient glass articles seems to have diminished with the passage of time, and the technique of glass making seems to have been lost in the country. Then, towards the beginning of the Tokugawa Shogunate (1615-1867), glass articles and the technique of their manufacture were again introduced from Europe. Three chemical analyses of old Japanese glass beads from ancient remains were made by the late Dr. M. Nakawo in 1931 and two by Dr. K. Yamasaki in 1951. For the sake of comparison and for enriching the analytical data of ancient glass in Japan, two kinds of the Chūsonji glass beads, blue and light brown, that could be dispensed with, were completely analysed. See the table in the text. Of the others, found in insufficient quantities for chemical analysis, densities and refractive indices were measured without destroying them (See Fig. 3). While those analysed by Nakawo and Yamasaki are soda-lime glass, most of the Chūsonji glass objects are of crystal or flint glass. The PbO content can be computed from the density or refractive index according to Wright. So far as the writers' analyses are concerned, the Chūsonji glass contains none or trace of alumina, lime and magnesia, indicating that each ingredient of its raw material was quite pure. Shōsōin document shows that glass beads of high PbO content, about 60%, were made at that time. Thus it can be provisionally concluded that in Japan the oldest glass was mainly soda-lime glass, and then the lead glass followed, before the arrival of European glass.(The National Science Museum, Tokyo)			
No.5	1952	Kazuo, YAMASAKI; (Miss) Naoko, OHASHI	The Color and Chemical, Composition of Red Pigments painted on Wooden Parts of Golden Hall of Hōryū-ji Temple	7-10	The color and chemical composition of 9 kinds of red pigments painted on the wooden parts of Pagoda (6 kinds) and Golden Hall (3 kinds) of Hōryū-ji temple were studied. Their ages range from 7th to 17th century. They are all iron oxide red. Their chemical compositions are given in Table 2. The sample No. 4 of 17th century contained red lead. This means that the red lead was used as the under coating of the iron oxide red. The spectral reflectance curves and colors expressed in CIE and Munsell systems are shown in Fig. 1 and Table 3. No definite relations were found between color and chemical compositions.			
No.5	1952	Hachiro, MORI; (Miss) Yuri, MACHIDA	Some Considerations as to the Mummification of Fujiwara's Remains in Chūson-ji Temple	11-14				
No.5	1952	Tomoyuki, YAMANOBE	Mosses found in the Dusty Scrap of Ancient Textiles	15-17				
No.5	1952	Tomokichi, IWASAKI	Urgent Need for the Protection of the Old Documents from Insect Damage	17-19				
No.5	1952		Proceedings of the Association (July-Dec., 1952)	20				

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No.6	1953	Ichiro, OHGA; (Miss) Yoshiko, OHGA	On the Nature of Thread constituting the Cloth Impression on the Surface of the Ancient Roof-tiles excavated from the Ruins of Musashi-Kokubunji and Kokubunji Temple, near Tokyo. (A Test of the Hemp Cloth performed by Ohga's Imprinting Method (OIM).)	1-9	1. A chinese paper called To-gasen (0.7 ~ 0.8 mm in thickness) seems to be profitable for our wet imprinting method (OIM). 2. The thread used for cloth impression of the ancient roof tile of Musashi-Kokubunji temple twists almost to the right direction, i.e. S type twist. 3. The ancient cloth remained in the impression is woven with ramie.			
No.6	1953	Yukichika, MAEDA	An Opinion on Ancient Methods of Dyeing	10-13				
No.6	1953	Tei-ichi, ASAHINA; Fumio, YAMAZAKI; Iwao, OTSUKA; Tatsuji, HAMADA; Kiyohiro, SAITO; (Miss) Sachiko, ODA	On the Ancient Glass of Śarira Colourless Glass Bottle from Toshōdaiji Temple and Śarira Blue Glass Bowl from Denkōji Temple-Determination of Lead Content in Glass by Means of β -Ray Back Scattering	14-18	While ancient Japanese glass beads had hitherto been chemically studied by M. Nakawo, K. Yamazaki, T. Asahina and others, no scientific study was ever made on ancient Japanese glass vessels. ²⁾ In January 1953, a Special Exhibition of Treasures kept at Tōshōdaiji Temple of Nara City was held in Tokyo to commemorate the arrival in Japan, from China one thousand two hundred years ago, in Tang Dynasty, of Priest Ganjin who founded the temple. Among the precious exhibits there was a colourless glass bottle containing many pieces of "Śarira" brought here by Ganjin. The bottle was sealed by the Emperor Gokomatsu about five hundred and fifty years ago and has never been opened since. Two of the writers (T.A. and S.O.), who had been making scientific study of ancient Japanese glass, tried to determine the PbO contents of this glass in collaboration with other writers of Yamazaki Laboratory of the Scientific Research Institute whose research was directed mainly to the study of nuclear physics and radioisotopes. To determine the PbO contents without opening the emperor's seal, the writers resorted to the measurement of back scattering of β rays emitted from a radioactive isotope P ³² with the maximum energy of 1.71 Mev, as it was already known that the coefficient of β -ray back scattering increases with atomic number of the element exposed to β -ray. For the sake of reference, preliminary measurement was made on various kinds of Pb-glass of known composition and a curve was drawn to indicate the relation between PbO contents and the coefficients of β -ray back scattering (Fig.2). The coefficient of β -ray back scattering was found to be $\beta = 1.16$ or $\beta = 1.22$ when the correction for curvature of the bottle was taken into consideration. The result showed that the glass did not contain PbO. Among the exhibits there was another glass vessel of unknown origin, a "Śarira" containing blue glass bowl from Denkōji, a temple in close relation to Tōshōdaiji. The Śarira in it was taken out and its specific gravity was measured by the ordinary method. From its specific gravity $d=3.8$, its PbO content was computed according to Wright's curve and found to be ca. 50%. At the same time, the coefficient of β -ray back scattering was measured and found to be $\beta = 1.56$. From this value its PbO contents were computed from the curve (Fig. 2) and found to be ca. 50%. The correspondence of the two values of PbO content was quite evident. The writers could confirm that the measurement of β -ray back scattering is applicable to the investigation of antique treasures of this kind. There are several glass vessels, some of them colourless and others coloured, in the Treasure House of Shōsōin established in the 8th century in Nara City. They have been supposed to have come from China in Tang Dynasty. The result of the present study seems to confirm this supposition, and it may well be inferred that the colourless glass vessels of Shōsōin do not contain lead.			
No.6	1953	Fujio, KOYAMA; Kazuo, YAMASAKI	Studies on "Yohen Temmoku"	19-28	"Yohen Temmoku" is a special kind of temmoku bowl. Only 3 genuine Yohen Temmoku bowls are present in Japan. In this report Yohen Temmoku bowl owned by Ryūkō-In, Daitokujii temple, Kyoto was studied. It has many crystalline spots on the black glaze and there are also many blue iridescent patterns on the glaze. This blue color is the interference color due to the thin film on the surface of the glaze. Enlarged photograph of the spot is shown in Fig. 3. The spot consists of very fine crystalline particles whose chemical nature could not be made clear by the microscopic examination. The microscopic examination and chemical analysis of black glaze of the fragments of Temmoku bowl excavated by Prof. J.M. Plumer in 1935 at the kiln site in southern China were carried out. The results are given in Table 1. The glaze consists of pale brown glass and dark coloured fibrous crystals which are shown in Fig. 1. The refractive indices of the glassy part of the glaze and the fibrous crystals are 1.538 and 1548 respectively.			

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No.6	1953		Correction to No. 4.	29				
No.6	1953		Proceedings of the Association (Jan.-June, 1953)	30				
No.7	1954	Toshiichi, NOGAMI	A Study on "Koto-ware" made by "Ii", the Lord of Hikone, for an Official Kiln close to his Castle on the Shore of Lake Biwa, Province of Ōmi	1-9	<p>Toward the end of the "Edo" period (the Tokugawa Shogunate) in the 19th Century, there were over ten official kiln sites in Japan. Among these were Hikone, one of the famous sites. The "Koto-ware" was made at a factory on the shore of Lake Biwa (Koto means "east of the lake") which was active from 1830 to 1860. In general the Koto-porcelain has a peculiarly hard, translucent lustrous glaze which is Chinese style in appearance, and it is decorated in blue and white, or in fine enamels—sometimes iron-red (or rouge-de-fer) and gold over glaze in the Ming style (Akei-kinrande-red sometimes iron-red with gold brocade pattern style).</p> <p>Of Kinrande-style there are two kinds, one has a good white body with translucent lustrous glaze of fine texture, decorated in Kakiemon style in enamels with or without blue under-glaze: the other with characteristic slightly "bluish" body based on the raw material (Mushiyama clay or stone), sometimes decorated in the same under-glaze. The former was made by Lord Ii Naosuke, the latter by Lord Ii Naoaki.</p> <p>The decoration as a rule is finely brushed and consists mainly of landscapes, figures, trees and flowers—the favourite design representing chinese boys or immortals at play under the trees.</p> <p>Generally speaking, the glaze is so closely fused with the body that it is difficult to find the dividing line between body and glaze (shown on the microscopic photo.).</p>			
No.7	1954	Tei-ichi, ASAHINA; (Miss) Sachiko, ODA	Shaping of Ancient Japanese Glass Beads	10-13	<p>Compared with the shaping of the ancient Western glass beads, the old Japanese glass beads have been inferred by historians of this country to have been made in one of the two ways. The first was to draw a glass tube, cut it into short pieces and finish each piece into a perfect bead by a slight heating. The second was to draw a molten glass mass to a fine thread, wind it around a metal rod coated with paste clay and finish each wound mass to a bead of smooth surface by a slight heating.</p> <p>The writers could find, in their study of ancient Japanese glass, material proof supporting this inference.</p> <p>When fragments of a cobalt-coloured glass bead from an ancient mound at Deshōgōyama, Tsushima Island, Nagasaki Prefecture, found broken in two along a longitudinal plane across its hole, were observed with a microscope, bubbles in glass were found elongated longitudinally showing that the glass had been drawn in the direction of the elongation of the bubbles. The shape of the bead was made in the first way mentioned above (Figs.1 and 2).</p> <p>Among glass beads from Chusonji Temple, there were a few showing traces of glass thread wound around a metal rod. Perhaps they had not yet been completely finished (Fig. 3). Pale reddish brown clay was found adhered to the wall of their holes. On precise observation, some of the bubbles in glass were found elongated tangentially (Fig. 4). Hence, the bead was made in the second way mentioned above.</p>			

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No.7	1954	Kazuo, YAMASAKI	Keifun or Calomel manufactured in Ise Province	14-17	Keifun which means literally "light powder" is the name given to mercurous chloride or calomel prepared by a special process in Izawa, Ise province, Japan. The apparatus for making Keifun consists of a table furnace supporting 45 cast iron pots lined and surmounted with red clay on which rest, as covers, condensers or receivers of Keifun, unglazed earthenware cups with their bottoms upwards. A mixture of red clay with common salt and bittern is made up into lumps. Iron pots each containing a lump of this clay and a small amount of mercury are heated from underneath by a fire. Keifun or calomel formed by the reaction between mercury and clay impregnated with bittern adheres to the interior of the cups in the form of sparkling crystals. The purity of Keifun thus obtained is very high, for example, 99.55%. This method of preparing calomel had been in use for more than 500 years, when in 1952 it was discontinued owing to economic difficulties.			
No.7	1954	Kenzo, TOISHI	Radiography of Small Bronze Buddha Images by Means of γ -Ray from Co 60	18-26	γ ray radiography tests were made for the "48 Buddhas", which are thought to be the oldest bronze images in Japan made in the 6 or 7th century. In this paper explanation of γ ray radiography proper and its technics are mainly discussed. Archaeological and artistic interpretation including all the results shall be made in another paper. Only 3 examples are taken up in this paper with their photographic interpretation.			
No.7	1954	(Miss) Fusako, MIWA	A New Method of preserving Shell-mounds by Means of Acrylic Resin	27-29	This method of exposing a part of the layer of shell-mounds and preserving its natural state has been newly devised with the dual purpose that it should be open to the observation of the general public as educational material and that the buried cultural properties should be preserved from damage. The main process is to fix the section of the layer of a shell-mound by means of colourless, transparent, humidity-proof, chemical-proof acrylic resin. We made an experiment, using a tin can 9 cm wide, 21.5 cm long, and about 10 cm deep, into which we put shells, pieces of earthen-ware, pieces of animal bones and so on taken from an actual shell-mound, making it a suppositional layer of a shell-mound. For resin we used methyl methacrylate, and heated it to 90° - 100°C, adding benzol peroxide as a polymerization accelerator. In time, the viscosity increased till a high heat was evolved and the layer hardened. Several times we applied the fluid resin under the process of polymerization hardening, and then placed a plate of methyl methacrylate 10mm thick in front of the layer and poured the syrupy resin between the plate and the layer, leaving it to harden. It was necessary to keep the temperature of the test-piece 30°C during this process so that no air-bladder could form and the resin could successfully harden. When this method is applied to a real shell-mound, it is most important to take it into consideration that the section of the layer of the shell-mound that is to be hardened should be kept 30°C warm for at least 24 hours (especially at night).			
No.7	1954		Proceedings of the Association (July-December, 1953)	30				

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No.8	1954	Masayoshi, IMAICHI	Studies on "Reel Flags" of the Heike Family	1-12	In Iya village, Tokushima prefecture, Shikoku Island, there live descendants of the Heike Family, who have held up to now two "Red Flags" of their ancestors, as hanging scrolls, mounted on base sheets. The author has examined these flags scientifically and reached the conclusions that, 1) both of the preserved flags are not entireties, but some parts are lost, 2) the fibers are of silk, though that taken from lotus was expected, according to information given, 3) the dyes used are botanical ones, "akane" and "shikon". Moreover he ascertained the structures of the textiles by microscopical investigation, and also gave much consideration to the characters and patterns written on the flags. The above results are not in accordance with those of previous investigators, which seem to be less scientific as compared with this study. Many documents are cited as references of historical considerations.			
No.8	1954	Kazuo, YAMASAKI	Chemical Studies on the Ancient Glass Beads found in Tsushima Island and at the Toro Site	13-16	Glass beads excavated from three ancient tombs in Tsushima Island and from the Toro site, Shizuoka prefecture, were studied by spectrographic analysis. (1). Red bead from a tomb at Takahama, Kechi, Tsushima. Red, opaque bead with black stripes (Fig.1). It is made of alkali lime glass colored red by copper. Red beads are rarely found in tombs. (2). Pale violet, pale green and blue beads found in Shitaru, Tsushima. (4). A blue faeadfound at the Toro site which is the dwelling site in the middle age of Yayoi culture, .i.e. 1st-3rd century. These six beads are all made of alkali lime glass. The pale blue and green colors are mainly due to copper, while dark blue and violet colors are due to cobalt and copper contained in the glasses.			
No.8	1954	Hachiro, MORI; Momozo, KUMAGAI	On the Damage to Antiques and Art Crafts by Several Fumigants. I. Effects of Fumigants on Some Kinds of Metals	17-21	This is an account of experiments relating to effects on metals by several fumigants used for the purpose of controlling pest insects and fungi noxious to antiques and art crafts. So far as some series of experiments conducted regarding effects of fumigants, such as carbon disulphate (CS ₂), carbon tetrachloride (CCl ₄), chloropicrine (CCl ₃ NO ₂), methyl bromide (CH ₃ Br), hydrogen cyanide (HCN) and formaldehyde (HCHO), on metal surfaces which have been ground the results obtained are as follows:- Metals Fumigants having no or little effect Au Carbon tetrachloride, Methyl bromide, Hydrogen cyanide, Formaldehyde, (Carbon disulphate). Ag Carbon tetrachloride, Methyl bromide, Formaldehyde. Cu Methyl bromid. Fe Carbon disulphate. Zn Carbon disulphate, (Carbon tetrachloride). Sn Carbon disulphate, · Carbon tetrachloride, Formaldehyde, (Methyl bromide). Pb Carbon tetrachloride,(Carbon disulphate, Methyl bromide, Formaldehyde). Al Carbon disulphate, Carbon tetrachloride, (Chloropicrine). Sb Carbon disulphate, Carbon tetrachloride, Methyl bromide, Formaldehyde. Fumigants in parentheses may have a slight effect.			

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No.8	1954	(Contribution)						
No.8	1954	Suekichi, KAWATA; Yoshiro, ŌMORI; Hideo, TOGAWA; Yō nosuke, OKAMOTO	Observations on Ventilation in the New Treasury of the "Shō-sō-in" in Nara	22-26	<p>The structure of the new treasury is illustrated in Figure 1, by a sectional diagram. The space between the roof and the triple ceiling, and the space under the floor are open to outside wind. By this structure there occurs natural ventilation in the space F_i between the concrete cell and the double wooden walls, through the venti-lating devices at the top of the ceiling of the concrete cell (J) and at the lower corners of it (H).</p> <p>For velocity measurements the authors used thermocouple anemometers of their own device, but to know the directions of ventilating winds they relied on gum balloons and small pieces of silk wool, for any inflammable or, chemically active substances could not be used.</p> <p>The ventilation is affected mainly by suction of winds under the floor, the wind velocities being always greater under the floor than in the space between the roof and the ceiling. But as the opening of the various H's incline from the horizontal plane the relation is somewhat complicated; for instance, an east wind makes at the west side an upward ventilation and at the east side a downward ventilation. As to ventilation through the crevices between the boards of the wooden walls, wind of about 15 cm/sec was found at some points very near the crevices, but effect at points distant from the crevices was too small to be measured by, the anemometer.</p>			
No.8	1954		Proceedings of the Association (January-June, 1954)	27				
No.8	1954		Receipt of Subsidies, and Research and Publication Projects made possible thereby	27				
No.8	1954		Fiscal Report of the Year 1953	28				
No.9	1954	Tei-ichi, ASAHINA; (Miss) Sachiko, ODA	Studies on some Fragments of Beads among the Glass Antiques kept at the Shōsōin Treasury and on Glass Beads excavated from Ancient Tombs and kept at the Archives and Mausolea Division, Imperial Household Agency	1-10	<p>Tei-ichi Asahina and (Miss) Sachiko Oda: Studies on some Fragments of Beads among the Glass Antiques kept at the Shōsōin Treasury and on Glass Beads excavated from Ancient Tombs and kept at the Archives and Mausolea Division, Imperial Household Agency.¹⁾</p> <p>In one of their reports on ancient Japanese glass²⁾, the writers gave as a provisional conclusion that in more ancient times alkali lime glass beads are more abundant while in less ancient times lead glass beads are more frequently met with. In order to affirm the conclusion by using more research material, about ten broken pieces of the glass bead specimen kept at the Shōsōin Treasury and twenty two kinds of glass beads (amounting to two thousand one hundred thirty seven) excavated from old tombs and kept at the Archives and Mausolea Division, Imperial Household Agency, were investigated by measuring their specific gravity. Most of the former are extremely lead-rich, while among the latter only four kinds (six beads) out of twenty two are of lead glass. The result is in support of the writers' conclusion.</p> <p>The glass Magatama (chaplet) E-1-1-3 is internally devitrified and needle crystals were observed in it which were identified as diopside by the crystal habit, extinction angle (35~7°) and refractive index (1.66).</p>			

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No.9	1954	Toshiichi, NOGAMI	On "Abumi" Roofing-tile (Convex Tile with its End for Use at the Roof's Eaves) of Tōfukuji Temple, Kyoto	11-14	<p>At the beginning of the Kamakura period the "Zen" sect was introduced by Priest Eisai, and with it a new building style was imported from the Sung Dynasty of China. It is called "Kara-yō" ("Kara" means foreign and "yō" means style); the architectural and decorative technique of this period shows a great change when compared with Kara-yō. In general, the effect is sombre and heavy. A sample of this style which exists nowadays is the Shari-den of the Engakuji Temple, Kamakura. Naturally, in this period the "Tenjikuyo" style was developed and its remarkable features are fo be observed in the details of "Masu-gumi".</p> <p>Meanwhile many Buddhist temples were built—the Kenninji Temple by Eisai (1202), the Tōfukuji Temple by Kujo Michiie (1236), and the Nanzenji Temple by the Ex-emperor Kameyama (1291). But in this period the tile-making technique made no more progress and the highly characteristic technique of hard "bluish-grey" colored and "cloth patterned" tile introduced by Corean tile-makers began to decline.</p> <p>The "Abumi-gawara" of Tōfukuji Temple, so to speak, lies in such a category as mentioned above.</p>			
No.9	1954	Rokurō, UEMURA; Tsutomu, KAMEDA; Koichi, KIMURA; Daitsu, KITAMURA; Kazuo, YAMASAKI	Studies on the Mitsuda-e, a Kind of Oil Painting	15-21	<p>Mitsuda-e is a kind of oil painting which makes use of pigments mixed with oil. Among the art objects of the 8th century preserved in the Shosoin repository there are many paintings which are said to be Mitsuda-e. Ultra-violet light was used to decide whether they really are Mitsuda-e or not, since oil fluoresces strongly under ultra-violet light, while Japanese lacquer, Urushi, does not. The examination revealed that they were Mitsuda-e and two techniques were used: one is true oil painting in which a mixture of pigments with oil is used, and the other is the application of the oil on the painting in which glue is used as the medium for the pigments.</p> <p>The painting of the side panels of the Tamamushi Zushi of the Hōryūji temple which is supposed to be a painting of the 7th century was also found to be Mitsuda-e. The spectrochemical analysis of the oil film taken from the scroll axle of a sutra from the 8th century proved the presence of lead in the oil and consequently the use of lead compounds, probably Htharge, as the drier of the oil. The oil used in the 7~8th century was found to be the perilla oil according to the documents of that period.</p>			
No.9	1954	Tomoyuki, YAMANOBE; Kōzō, HAYASHI; Gen, SUZUSHINO; (Miss) Kyoko, SUZUSHINO	Chemical Studies on the Nature of Red Dyes in Several Ancient Textiles preserved in Hōryū-ji Temple	22-28	<p>In an old Japanese temple, Hōryū-ji, one of the national treasures near Nara, a great number of textiles reminiscent of the culture in the remote 'Asuka' and 'Nara' periods are preserved. These precious samples remind us of the exquisiteness of the ancient dyeing techniques which were developed by our forerunners about twelve centuries ago. Nowadays, most of these textile relics are exceedingly fragile owing to the process of disintegration, to which they have been subjected during the course of preservation. Some of the colors, especially the reds, have, however, been maintained up to the present in full brilliancy.</p> <p>These attractive reds have tempted us to study their chemical nature, because the raw materials of the ancient red dyes have often called forth serious arguments among Japanese artists. The discussions about these matters have been based merely upon naked eye observations of the old textiles. Meanwhile, R. Uemura¹⁾, an expert investigator in the archaeological field of dyes, tried for the first time to distinguish the red vegetable dyes from each other by means of their reactions with acids and alkalis. Careful observations led him to the conclusion, that the red dyes commonly used in the old days might belong, for the most part, to the so-called 'Suwō'-dye, i. e. the heart wood dust of Caesalpinia Sappan, which was brought over from tropical Asia, probably by way of China and Korea.</p> <p>The chemical method of identification as devised by R. Uemura appears to be too simple to allow a conclusive discrimination of the individual dyestuffs. Therefore, we have proposed an improved and more reliable method of chemical analysis²⁾, which has now been supplemented by the modern technique of paper chromatography. The present paper comprises these two procedures, by means of which the red dyestuffs occurring in several Hōryū-ji textile fragments were carefully studied.</p>			

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No.9	1954		Proceedings of the Association (July-December, 1954)	29				
No.9	1954		Corrections to No. 8	29				
No.10	1955	Kazuo, YAMASAKI	Studies on the Yohen Temmoku Bowls. II	1-3	The Yohen Temmoku bowls owned by Seikado and Fujita Museum are nearly the same as that owned by Ryukoin Temple. They all have both many crystalline spots and iridescent patterns on the inner surface of the bowls. The Temmoku bowl of the Fujita Museum also has faint spots on the outer surface. The Temmoku bowl owned by Mr. Osaragi has many iridescent crystalline spots on both inner and outer surfaces of the bowl. It is a variety of the Yohen Temmoku bowl.			
No.10	1955	Ichiro, OHGA	On the Cloth Impressions on the Bottom of the Earthenware of Yayoi Style. (A Study of the Cloth impressed Tiles. IV.)	4-8	In the previous three papers, the cloth impressed tiles at the ruin of Musashi-kokubunji Temple, built about a thousand years ago, were studied. It was reported that the ancient ancient cloth was woven with yarn made of ramie fiber. The numbers of warp and weft of the cloth were always about the same (6-12 per cm) and both were S-twisted. In this paper, the cloth impressions on the bottom of the earthenware of Yayoi Style were studied. The earthenware was made about two thousand years ago and the cloth used for it is thought to be the first cloth woven by the prehistoric people living on the Japanese island. The writer could not determine the nature of yarn but he thinks that it was woven with yarn made of wild ramie fiber. The numbers of warp of the cloth were 6-8 per cm and of weft varied from 13-24 per cm and both were S-twisted.			
No.10	1955	Hachiro, MORI; Momozo, KUMAGAI	Damaging Effects of Several Repellents on Antiques and Art Crafts. I. Effects of Repellents on Some Kinds of Metals.	9-12	Hachiro Mori and Momozo Kumagai : Damaging Effects of Several Repellents on Antiques and Art Crafts I. Effects of Repellents on Some Kinds of Metals. The authors experimented with the effects of some repellents on the surface of some metals which had been ground : paradichlorobenzene (C ₂ H ₄ Cl ₂), camphor C ₁₀ H ₁₆ O), naphthalene (C ₁₀ H ₈), and paraformaldehyde (HOCH ₂ · O [CH ₂ · O] _n CH ₂ OH), which are used to repel pest insects and fungi detrimental to antiques and art crafts. Upon examining the surfaces of the following eight metals exposed to the saturated vapor of the above repellents for more than six months, the authors obtained the following results:- Metals Repellents having no or little effect Au Paradichlorobenzene, Camphor, Naphthalene, Paraformaldehyde. Ag The same as the above. Cu Paradichlorobenzene, Camphor, (Naphthalene). Fe Paradichlorobenzene, Camphor, (Naphthalene). Zn Paradichlorobenzene, (Camphor), (Naphthalene). Sn Paradichlorobenzene, Camphor, Naphthalene, Paraformaldehyde. Pb (Paradichlorobenzene), (Camphor), (Naphthalene). Al Paradichlorobenzene, Camphor, Naphthalene. Repellents in parentheses may have a slight effect.			

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No.10	1955	(Review)						
No.10	1955	Tomokichi, IWASAKI	Report from the Laboratory of Louvre Museum	13-18				
No.10	1955	Kenzo, TOISHI	Recent Arguments about Effects of Artificial Lighting on Art Crafts	19-22				
No.10	1955		Proceedings of the Association (January-March, 1955)	23				
No.10	1955		Correction to No. 9	23				
No.10	1955		Index for No. 1-10	24				
No.11	1955	Toshiichi, NOGAMI	On some Ancient Potteries of Recent Excavations in Peru, S. A	1-7	<p>Recent investigations have shown; that, within [fai]lts., an the main stone cultures of Europe also occur in Africa, though no strict chronological equation between them can be demonstrated.</p> <p>The Neolithic was mainly confined in the old world to Eurasia, but rarely reached South Africa. It extended to the new world and eventually polished tools spread all over Oceania and potteries survive as well; it is said that Mongoloid peoples inhabited China prior to Neolithic times and then it was that they entered America by the Behring strait.</p> <p>Now, in the Neolithic times (new stone ages), on pottery there develop in similar bands the zig-zag, the chevron and the spiral, i. e. geometrical, symbolic and abstract ornaments.</p> <p>On having studied the ancient potteries of recent excavations at Cerro Culebra and Playa Grande sites of Pre-Tiahuanacoid Periods on the Peruvian Coast, such designs on pottery-bodies were found (shown in the photos.).</p>			
No.11	1955	Jiro, KOHARA; Hajime, OKAMOTO	Studies of Old Wood	8-20	<p>This paper presents a survey of our studies on the permanence of wood, outlining the changes in the physical, mechanical, and chemical properties of timber used as building material for many centuries.</p> <p>Emphasis is placed on the resemblance between the processes at room temperature and those at high temperatures of about 100°C, and on the difference between the two kinds of wood, HINOKI (Chamaeyopsis obtusa ENDL.), a soft wood, and KEYAKI (Zelkova serrata MAKINO), a hard wood.</p> <p>The obtained conclusions and suggestions are as follows :</p> <ol style="list-style-type: none"> 1) With the lapse of time, the content of the cellulosic materials in the timbers decreases, and the crystalline region content of them reaches a higher value than that of the new timbers. This trend is found also through heating, with a greater rate than the corresponding rate at room temperature. The viscosity of the cellulose in cuprammonium first increases and then decreases with the age of the timbers. These investigations indicate that there is not only the variation in the quantity but also a variation in the quality of the cellulosic materials with time. 2) These variations may be the main factors in the changes of the properties of the timbers, such as shrinkage, hygroscopicity, strength properties, and contents of the soluble constituents, through the various conditions. 3) The content of the cellulosic materials in KEYAKI decreases faster than that of HINOKI, and the initially superior strength of the former drops down below that of the latter within several centuries. 4) This difference between the permanence of HINOKI and that of KEYAKI is expected to represent the general difference between soft woods and hard woods. 			

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No.11	1955	Hachiro, MORI; Momozo, KUMAGAI	On the Damage to Antiques and Art Crafts by several Fumigants, II Effects of Fumigants upon some Kinds of Pigments	21-28	<p>The authors conducted the following three experiments regarding the damaging effects upon pigments of such fumigants as carbon disulphide (CS₂), carbon tetrachloride (CCl₄), chloropicrine (CCl₃NO₂), methyl bromide (CH₃Br), hydrogen cyanide (HCN) and formaldehyde (HCHO).</p> <p>Experiment 1. Upon pigments themselves (powder-materials). The damaging effects of fumigants upon powder-materials were by no means slight in chloropicrine, hydrogen cyanide and carbon disulphide. Methyl bromide was found to be the best among them, having little or no effect on pigments, and carbon tetrachloride to be next. Formaldehyde was considered as a safe fungicide, except for a little effect upon cochineal.</p> <p>Experiment 2. Upon paintings in which glue was used as the medium for the pigments. Paintings in which glue is used as the medium seem to be unaffected by the gasses of all these fumigants so far as the granules of these pigments remain covered with a thin layer of the glue. In case the glue film has come off from the painting after passage of time, each type of gas will probably show damaging effects such as described in as the experiment I which directly affect the pigments themselves.</p> <p>Experiment 3. Upon paintings in which oil is used as the medium for the pigments. No effect was seen with carbon disulphide, carbon tetrachloride, methyl bromide, and formaldehyde upon oil paintings on canvases. Chloropicrine and hydrogen cyanide have considerable effect upon some oil paintings, especially upon yellow and green pigments and also the former tends to have bad effects upon pigments containing chrome compounds such as chrome yellow, chrome yellow light, chrome yellow orange and chrome green. Finally the most adequate fumigant to control pest insects of old antiques and art crafts was revealed to be methyl bromide.</p>			
No.11	1955	Kazuo, YAMASAKI	Refiring of the Haikatsugi Temmoku Bowl	29-31	<p>The Haikatsugi Temmoku bowl, a kind of Temmoku, has a grey glaze with cracks and fissures and is believed to be a bowl caused by incomplete firing. A fragment of this Haikatsugi bowl which had been made in Chienyao kiln at Sung dynasty was refired in an kiln at cone 9 (1280°C). The glaze fused completely and the cracks disappeared. The color of the glaze changed into a deep black with fine brown particles in it. The original black body became brown. Another fragment was fired at 1000° in an oxidizing atmosphere. The fusing of the glaze was incomplete, the cracks and fissures being remained. The color of the glaze turned a reddish brown and that of the body a red color of a brick. The blackness of the body of the Temmoku bowl was found to be due to the presence of magnetite crystals by chemical and microscopic examinations.</p>			
No.11	1955	Kenzo, TOISHI	Museum Research Laboratories in Europe	32-36				
No.11	1955		Proceedings of the Association (April-October, 1955)	37				
No.11	1955		Election of the President	37				
No.11	1955		Receipt of Subsidies, and Research and Publication Projects made Possible thereby	38				
No.11	1955		Fiscal Report of the Year 1954	38				

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No.12	1956	Hideo, NISHIMURA; Nobuyoshi, AOKI	The Metallurgical Investigation for the Ancient Nails used in the Pagoda and the Sanctuary in Horyu-ji	1-24	Horyu-ji is famous as the oldest wooden building in the world. The repair of the Sanctuary (Kondo) and the Pagoda (Goju-no-to) was completed last autumn. During the repair, the old nails used in the building were collected and subjected to metallurgical investigation. The results are reported in this paper. The nails are classified into four kinds according to the period in which they were manufactured, 1) the original construction era (-1000 A. D.), 2) middle era (1158-1458), 3) Keicho era (ca. 1604) and 4) the Genroku era (ca. 1696). From the results of the investigation, it has been concluded that the nails, in general, contain more manganese than is found in other ancient Japanese wrought iron objects. It was also determined that the nails manufactured in the Keicho and Genroku periods differ slightly from those of the previous periods regarding their manufacture and macro and micro structures.			
No.12	1956	Kôzô, HAYASHI; Gen, SUZUSHINO; Noboru, MORI	Vegetable Dyes in a plaited Corel of the Muromachi Period	25-27				
No.12	1956	Kenzo, TOISHI; Toshiko, KENJO	An Attempt to control Relative Humidity of a sealed Package	28-36	In recent years we have begun to have opportunities to send out our art objects, which are generally very susceptible to rapid humidity changes, by ships across the tropical zone for expositions held in foreign countries. In such cases the objects are packed in a hermetically sealed room, and the layman usually considers that the enclosed humidity is thus kept constant until the packages are opened. On the contrary the fact is that the change in relative humidity caused by temperature change is still surprisingly great. In our experiments, an attempt was made to control this change of relative humidity in a closed package by putting in some absorbing material that had already been brought into equilibrium with the air when the package was closed. Of course the materials must be in a condition that is easy to treat. Liquids or deliquescent solids can not be used, and chemically active substances must also be rejected. The possibility of this method and some promising kinds of absorbers are found. For example one gramme of "Kaken" gel, bentonite, or silica gel appears to satisfactorily control one liter of air. But the data are not yet sufficient to decide which is the best material, or to assure the durability effects of each absorbing material.			
No.12	1956	Kazuo, YAMASAKI	Glass Decorations attached to a Kasaboko presented at the Festival of Suwa Shrine, Nagasaki	37-41	The festival of Suwa Shrine, Nagasaki which is called Okun-chi is held on Oct. 7, 8, and 9th every year. At that time several kasabokos are exhibited by the people of Nagasaki. The Imauo-cho exhibits its kasaboko every 8th year. It has decorations of fish and fish baskets made of glass as shown in Fig. 1. Two yellow baskets are made of glass. Four fishes made of paper have eyes, teeth, scales and rays of their fins made of colorless glass. The trunk and the legs of the lobster shown in fig. 5 are made of dark blue glass. A bamboo and about ten reeds are made of green glass. These glasses are all lead glass. The chemical composition is given in Table 1. These glass decorations are believed to have been made in the first half of the 19th century.			

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No.12	1956	Kenzo, TOISHI	Museum Research Laboratories in Europe	42-47				
No.12	1956		Proceedings of the Association (Nov. 1955-Jan. 1956)	48				
No.13	1956	Hachiro, MORI; Momozo, KUMAGAI; Kazue, MACHIDA	Diagnosis of Insect Damage to Wooden and Bamboo Materials through Roentgenography	1-21	<p>1) This is the first report of studies in Japan on the possibility of using Roentgenography to diagnose the conditions of insect damages to the wooden and bamboo materials. As the noxious insects to these things are chiefly the larvae of some kinds of beetles, commonly called wood-borers, only the examination of the outside of materials cannot tell us the real conditions of damages done by these insects. So the authors have tried the application of Roentgenography to this purpose.</p> <p>2) It has been revealed that a fairly correct diagnosis through Roentgenographs can be obtained by regulating the waves of X-rays, the voltage and the time of exposure according to the thickness of materials and the locations of insect bores. Because of the fact that the clairvoyance of X-rays is in proportion to the voltage, rather long waves as well as low voltage are adequate for a good diagnosis of the damaged conditions, not only when materials are thin like the wooden board or the bamboo, but when damages are near the surface of materials.</p> <p>3) The diagnosis of insect damages through Roentgenographs is almost in accordance with that of the lung-disease of human bodies. Namely the straight grained structure of it can clearly be seen without any shadow in the Roentgenograph, when the material is free from insect damages. If it is deranged by dark shadow in the negative, the damages may well be said to be considerably bad as in case of consumptive lungs.</p> <p>4) Each species of insects has its own habit and leaves characteristic traces of biting. So the type of bores seen through Roentgenographs enables us to identify the species of invading insects except when the bores are too multifold.</p>			

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No.13	1956	Torao, OHTSUKI	Studies on the Preservation Method, by which Art Objects are to be protected against Attacks of Fungi	22-33	<p>In Japan fungal growth causes such widespread damage to art objects, that special preservation methods, by which they are to be effectively protected against the attacks of fungi, should be taken. In this paper various experiments necessary for carrying out such methods with chemicals that are effective in killing fungi are reported.</p> <p>1. Fungal spores were steeped in liquid solutions of toxic compounds, such as HgCl₂, CuSO₄, KCN, NaAsO₂, of which HgCl₂ proved the most effective. The steeping time that was required to reduce the spores was at least twenty-four hours, for the toxic compounds penetrate much less rapidly into the spore cells with such a treatment.</p> <p>2. Fumigation of the fungal spores by volatile toxic compounds under normal air pressure showed that ammonia, acetaldehyde, formaldehyde and chloroform produced the best germicidal results, while acetic acid, methanol, and ethanol produced a somewhat weaker effect and camphor, p-dichlorobenzene, naphthalene had only a faint effect on the spores. Carbonic acid, which is regarded as a bactericide, surprisingly enough has very little effect on fungi.</p> <p>3. To make a comparative study of both methods, the steep method and the fumigation method, either the formaldehyde solution namely formalin or formaldehyde gas was used as a test chemical. To fumigate fungal spores, the formalin was vaporised under reduced pressure. Fumigation resulted in a much stronger germicidal effect than when the steep method was employed. The steep treatment was then followed by centrifugal washing of the spores with water 7 times. This was carried out at a rate of 7000/min. during a 10 minute period in order to remove the formalin that adhered to the spores. Preliminary experiments showed that such an operation with centrifugal force had no effect upon the germination ability of the spores. A 24 hour fumigation carried out under 10mm of atmospheric pressure, also had no effect.</p> <p>4. The author has isolated a fungus strain the so-called tonophilous fungus namely <i>Asp. glaucus</i> var. <i>tonophilus</i> from various dried solids, especially from glass surfaces, polished metals etc. These fungus strains probably involve main organisms which grow on and damage various art objects. The fumigation method was, therefore, applied to these tonophilous fungi strains. They resisted formaldehyde more vigorously than ordinary fungi e.g. <i>Asp. niger</i>, <i>Asp. oryzae</i>. The former perished by the dosis 13 mg/l formaldehyde, while the latter perished by 4 mg/l. Some strains of tonophilous fungi, which are viable in higher desiccation, are more resistant to formaldehyde. This fact seems to show that the resistance to the fumigant runs parallel to the water content of the spore.</p>			
No.13	1956	Kazuo, YAMASAKI; Kiyohiro, SAITO; Fumio, YAMAZAKI	Identification of Pigments by Means of Back Scattering of β -ray	34-36	<p>The scattering of β-ray emitted from S³⁵ by various pigments was studied. The values of back scattering determined are clay 118, calcium carbonate 106, white lead 372, yellow ochre 99, litharge 394, orpiment 205, iron oxide red 120, cinnabar 387, rei lead 403, azurite 158, and malachite 167 counts per minute. This method can therefore be used for the identification of these pigments.</p>			
No.13	1956	Yoshimichi, EMOTO	Application of Radioactivation Analysis to Antiques and Art Objects	37	<p>While the remarkable progress has been made in radiochemistry of late, we recently decided that it might be possible to apply radioactivation analysis to the study of antiques and art objects. For example, a satisfactory attempt was made to apply it to the detection of silver in the lead tiles of Ishikawa Gate of Kanazawa Castle and in the covered gold plate found at Changnyong in Korea. In carrying out this experiment, the cyclotron of the Scientific Research Institute was used, a sample was irradiated in the beams of neutrons of about 107m/cm²/sec. and radioactivity of 108Ag (T=2.3 min.) was measured with a Geiger-Müller counter.</p> <p>Since nondestructive methods are the most desirable for the study of the materials of cultural properties, radioactivation analysis seems to be one of the best methods to be employed in this study.</p>			
No.13	1956	Kenzo, TOISHI	Museum Research Laboratories in Europe	42-45				
No.13	1956		Proceedings of the Association	46				

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No.14	1957	Hachiro, MORI; Momozo, KUMAGAI	Application of the Reduced Air Pressure Method in Controlling Dangerous Insects in the Shōsōin Treasury	1-7	This paper reports on the practical application of the reduced air pressure equipment in the Shōsōin, which was first installed in Japan for the purpose of controlling insects which damage old art objects. This equipment can accommodate a life size carved wooden statue and reduce its pressure to 40-80 mm (Hg height) within a period of a few tens of minutes. This pressure has been found most suitable for exterminating the insects. It can also be heated or cooled in addition to the simple fumigation of objects. Both operations are necessary because the authors feel that reduced air pressure with heat but without fumigation should be employed, if the fumigant is likely to directly damage art objects. Moreover, the heat must be carefully controlled to eliminate the dangers of overheating. They advocate that, according to their experimental results, this method seems to be the best to apply on art objects. They also cite the kinds of insects found in the Shōsōin treasury.			
No.14	1957	Ichiro, OHGA; Yoshiyasu, ONOUYE; Tsuguo, SATO	On the Cloth Impressions Found on the Bottom of Yayoi Style Earthenware Vessels Excavated from the Valley of the Nakagawa River, Ibaraki Prefecture	8-16	Ichiro Ohga, Yoshiyasu Inouye and Tsuguo Sato: On the Cloth Impressions Found on the Bottom of Yayoi Style Earthenware Vessels Excavated from the Valley of the Nakagawa River, Ibaraki Prefecture. In the previous paper, the cloth impressions found on the bottom of Yayoi Style earthenware vessels were discussed, particular attention was given to the first cloth woven by prehistoric people living in Japan. Here, the study of Yayoi vessels of the same type excavated at Nakagawa Valley in Ibaraki Prefecture is continued. Of the 96 examples uncovered, those with cloth impressions on the bottom number 61. The number of warp threads was 3-15 per cm. and the number of weft threads was 7-30 per cm. Both were S- or Z-twisted.			
No.14	1957	Toraō, OHTSUKI	Mikrobiologische Aspekten von den Mumien, welche in dem Temple Chuzonji bewahrt wurden	17-26	Vor ungefähr acht hundert Jahren, hatte Kiyohira Fujiwara, ein Häutling einer vielvermögenden Familie in den nordöstlichen Provinzen von Japan, einen buddhistischen Tempel, nämlich Chuzonji, gebildet. Es war mündlich überliefert, dass drei ganze Menschen-Leiche und ein Kopf in einem Separathause des Tempels, nämlich Hikarido (Goldglänzenden Hause) konserviert worden sind. Um das Wesen dieser Traditionellen wissenschaftlich zu erklären, wurde eine Forschungsexpedition in März, 1950 ausgeführt. Der Verfasser hat sich dabei beteiligt und hat die mikroskopische Beobachtungen sowie Versuche gemacht. Hier werden die Resultaten berichtet. 1. Sie sind nicht die Leichenfette aber alle die Mumien. Der Umriss sowohl das Bau betreffender Körper wurden unerwarteterweise gut gegen Zerstörung geschützt; der Muskel und die Haut bleiben ohne tiefgreifenden Formänderungen. 2. Jede Leiche wurde in einen von Blattgold bekleideten Holzkasten bewahrt, der sich hier und da abschälte, verfäulte. Mit den japanischen Federn, die durch Sterilisierung zum voraus bereitet wurden, hat man die Mikroben von den Leichen sowohl wie von den Kasten isoliert, gezüchtet und weiter der Kolonienzählung unterworfen. 3. Die Frequenz der drei Mikroben-Gruppen, Aktinomyzeten, Pilzen und Bakterien wurde in der Tabelle 1 (Kiyohiras Leib), in der Tabelle 2 (Motohiras Leib), in der Tabelle 3 (Hidehiras Leib), in der Tabelle 4 (Tadahiras Kopf) gegeben. 4. Wie in der Tabelle 5 gezeigt wird, gibt es keine bedeutsame Unterschiede in den Mikrobenverunreinigungen von vier Leichen.			

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No.14	1957	Kenzo, TOISHI	Museum Research Laboratories in Europe	27-31				
No.14	1957		Proceedings of the Association	32				
No.14	1957		Corrections	32				
No.15	1958	Ichiro, OHGA; Mitsuharu, TERAMURA	On the Cloth Impression on the Surface of the Earthen Ware of Jomon Period excavated from Kamikataikai of Ojiya, Niigata Prefecture	1-11	<p>(A Study on the Cloth Impression VI)</p> <p>Since 1951, we have written 6 papers on the cloth impression which the ancient earthen ware bears. Of these, the first three are concerned with the roofiles used at the Buddhist temple Musashi-Kokubunji, having been unearthed from the ruined site located on the western border of Tokyo. The temple flourished around the 8th century.</p> <p>The subsequent two relate to a study on the impression of the Yayoi period (approximately 1st century A.D. or earlier) excavated on the river valley of Nakagawa, Ibaraki prefecture, in the Kanto area.</p> <p>The third, or the present paper, gives an account of researches made on a fragment of earthen pottery of the Jomon period (approximately 10 to 20th century B.C.) dug out at a district along the Shinano-river known as Kami-Kataikai of Ojiya, Niigata prefecture. It reveals a cloth impression on its innersurface with a Jomon pattern on the obverse. That its age has been so fixed stands out on the evidences that: (1) other earthen ware dug out at the same place proved to be of the middle Jomon period, and (2) the fragment itself also carries the type pattern characteristic of that period. Thus, it confirms the conclusion that the cloth pattern is of the contemporary origin.</p> <p>In summary, the original fabric, the impression of which appears on its innersurface, is manifested to be of a plain weave having 15 yarns per cm² and is a fabric of the finest density we have experienced in ancient cloth. Further investigation as to the type of fiber, whether it be silk, linen or hemp yarn, is not possible because of the sample being a soft-baked ware which cannot withstand any hard examination.</p> <p>Mention may be made in this connection that mingled among the relics was a ware-spindle-whirl which suggests a weaving frame existing in this neighborhood. A question then arose as to whether it was a vertical or horizontal type. However, the question as to whether the fabric demonstrated in this study is of ancient local origin or was imported from China or Near East remains a continuing theme.</p>			
No.15	1958	Jiro, KOHARA	Dendrochronological Study on a Central Column of the Horyuji Five-Storeyed Pagoda	12-17	<p>From the viewpoint of dendrochronology, an attempt was made to determine when the Horyuji temple, the oldest building in Japan, had been built. It is an important problem in relation to the study of histories of fine arts and of buildings in Japan, and it is still uncertain whether or not the present building of the Horyuji temple was burnt down by fire and rebuilt in the past.</p> <p>Dendrochronological study was made with the timber used for a central column of the Horyuji five-storeyed pagoda. The determination of the year of erection, however, was impossible from the result of the present study, while the growth progress of the old timber used for a central column was revealed. Such a determination by dendrochronology is difficult to make in the humid surroundings of Japan.</p>			
No.15	1958	Kenzo, TOISHI; Rikuo, ISHIKAWA	An Example of Japanese Magic Mirror	18-25	<p>A metal mirror was brought from the Kyushu district to be judged. Its surface appeared to be even and uniform, but when it was illuminated by a small source of light, an image of Buddha was yielded in the reflected bright zone. Such a mirror is called, "magic mirror."</p> <p>Although the backside of the mirror was covered with another bronze plate, the structure of the relief figure of the Buddha image in the backside of the mirror plate was revealed by γ-ray radiography. The mirror's surface was also investigated by stria method, and a concave figure corresponding with the relief image was found to have been formed on the surface in the course of polishing.</p>			
No.15	1958	Kazuo, YAMASAKI	A Brief Survey of the Laboratories attached to Museums in Europe and the United States	26-30				
No.15	1958		Proceedings of the Association	31				
No.15	1958		Corrections	31				

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No.16	1959	Yoshikadzu, EMOTO	On the Prevention of Fungus Injuries at the Toshogu Shrine, Nikko	1-10	<p>The Toshogu Shrine, one of the most famous ancient structures in Japan, and adjacent buildings in Nikko were completed in 1616 and repaired in 1640-1642, gorgeous buildings greatly appreciated ever since by architectural, as well as artistic circles, for their exceptional beauty and splendour. They were designated as national treasures and important cultural properties by the Japanese Government in 1944 and 1951.</p> <p>Visiting the Toshogu Shrine in November, 1955, the writer noticed some small black spots, suggesting mischief by fungi, on coloured plates hung on the upper part of the Horse House. By September of the next year the injuries on the plates had grown worse, and the writer clearly discerned small black fungus colonies. Following this inspection, a basic investigation into fungus injuries was started.</p> <p>Of the eight affected places, three had undergone particularly severe damage. These were situated near the "Kami-Shamusho" (the Upper Office of the Shrine), very often subjected to dense fogs which condense into drops on the surface of the coloured plates. Such moisture constitutes a favourable condition for the propagation of fungi. Recently technicians have grown much concerned about fungus injuries and have started to use a special glue - "rokko" - which is mixed into colours to be painted on plates.</p> <p>In the present study the writer points out that the antiseptic contained in "rokko" is soluble in water, so that in the afore-mentioned condition it is dissolved and washed away by the water condensed from fog. On the coloured plates, then, would remain only the gelatine to provide good nourishment for the fungus growth.</p> <p>Isolating several kinds of fungi from the plates, the writer has ascertained <i>Cladosporium herbarum</i> to have been the cause of the principal injury.</p> <p>The antiseptics to serve our present purpose of protecting those coloured plates from fungus injuries under the afore described condition must be : first, insoluble in water; secondly, harmless to the painted pigments; and thirdly, innocuous to technicians applying them. Among many antiseptics used against fungi, dehydroacetic acid, sorbic acid, pentachlorophenol, and salicylic anilide have been tried in the form of alcoholic solutions.</p> <p>Of these, the best result has been obtained with the alcoholic solution of dehydroacetic acid, and the second-best with salicylic anilide, while pentachlorophenol, commonly used by technicians as a disinfectant, has been found inappropriate for our purpose as it causes some changes in the colours.</p> <p>We are now ready to embark on the next stage of our prospect, the application of an alcoholic solution of dehydroacetic acid as an antiseptic for the protection of the Toshogu Shrine and other buildings, concerning which results will be reported in the future.</p>			

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No.16	1959	Mitsuyoshi, KUREYA	An Experiment on the Influence of Strong Illumination on some Mineral Pigments	11-18	<p>In taking a photograph of an art object at present, injuries and various effects (physical changes due to increase in temperature and other chemical phenomena) on the art object are apt to be neglected. I have, therefore, undertaken investigation on injuries occasioned by the increase of temperature through illumination with spotlights. This time I have directed my attention only to cracks in the surface layer of an art object.</p> <p>I. The object chosen was "Ema", a kind of votive picture painted with mineral pigments, usually on Japanese cypress wood; increases in temperature on its surface illuminated with a spotlight were measured.</p> <p>II. The relation between the intensity of illumination and the occurrence of cracks in the pigment layer was made clear, using mineral pigments obtained at the Nikko Toshogu Shrine.</p> <p>III. The panel painting of this sort being one of the objects most susceptible to heat, this experiment may be considered to have provided us with the standard of the safe limit of illumination for photograph or motion picture taking.</p>			
No.16	1959	Kenzo, TOISHI; Toshiko, KENJO; Rikuo, ISHIKAWA	Fading of dyed Cloth and some Attempts at its Prevention	19-26	<p>Silk cloth dyed with reddish vegetable dyes, such as were widely in use in old times, has been brought into fading tests under a fluorescent lamp. The range of wave length responsible for the fading of some reddish dyes has been determined to be the shorter wave length side of 5800 Å approximately. Several ultraviolet light cut filters in the form of paints, which can be applied to the glass tube surfaces of fluorescent lamps or to window panes, are under tests for the ascertainment of their specific absorption curves, as well as their durability. Besides, the most appropriate relative humidity for the conservation of dyed cloths has been found to be around 40 %. As for temperature, it is expected that lower temperature is preferable, as in the case of chemical dyes, provided that freezing is in any case prevented. Fading tests under different temperatures, however, will have to wait till the coming winter, because the testing equipment provides only heating devices.</p>			

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No.16	1959	Ichiro, OHGA	On the Old Cloth contained in the Dry-Lacquered Wall of a Coffin buried at Koshi-no-Ono, Nara Prefecture	27-31	<p>Aged some 1500 years in the vicinity of our ancient capital Nara, there lies this tomb of a nobility, generally identified as some direct descendants of the Emperor Tenchi and Emperor Temmu. The dry-lacquer-walled coffin unearthed therefrom reminds one of a type already in existence in China as far back as in the Hun Dynasty, 1500 B. C. So far as Japan is concerned, however, it is considered the earliest of its kind found to date. It may be significant as being monumental of the last of our Tumuli age.</p> <p>My study of old woven fabrics has now come to extend over many periods. Starting with the Nara Period, that is, 740 A. D., I next approached the Yayoi Period around the first century, and then a period even remoter by another thousand years and known as the Jomon Age, though this last has yet supplied me with but one specimen. In all these instances, I had to follow the same method of study-conducting researches on the basis of fabric impressions left on the surfaces of roof-tiles or earthenware as excavated. In the meantime, however, I happened to come across a raw specimen in the form of dry-lacquer, and at once set about to study it. Chronologically, this specimen belonged to a period intermediate between the first two of the aforementioned three periods.</p> <p>The "dry-lacquer" referred to above may be explained as a ply composed of alternate layers of lacquer and woven fabrics, so formed by spreading sheetings of ramie one above another, with lacquer applied on every layer, until a required thickness was attained. In the present instance, it proved to contain thirty-five layers of ramie cloth, with the overall thickness of 2.3 cm. Each layer had to be peeled off and, with a needle point, cleared of the lacquer filling the mesh before it was ready to be photographed. Photographs so taken were then enlarged for the convenience of thread counting as well as for some other purposes. In total, one hundred and ten pictures were obtained.</p> <p>The number of thread for the warp per square centimetre varied from 7 to 13, with cases of 9 to 10 both for the warp and the woof predominating. This testified to the fineness of the texture of the cloth under examination, which quality must have enabled it to be used for such a purpose at the time.</p> <p>We may now recall the results of our previous studies. For the Nara Peirod, the warp count per square centimetre ranged from 3 to 13 threads, of which 6 to 7 threads equally for the warp and the woof constituted the majority of cases. As for the Yayoi Period the said count ranged from 3 to 14 threads, with 7 to 8 equally for the warp and the woof predominating. This is illustrative of the fact that the ramie cloth taken from the dry-lacquer excelled any of such and serves again to remind us of its truly fine and superior quality. From the foregoing the following conclusion may be drawn :</p> <p>1) that the thread count per square centimetre (i. e. fineness of tecture) has nothing to do with the chronological sequence of periods ; but 2) that it may serve as an index in the ascertainment of the purpose for which the cloth was intended.</p>			

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No.16	1959		Proceedings of the Association	32				
No.16	1959		Election of the New President	cover				
No.16	1959		Fiscal Report of the Last Two Years	cover				
No.17	1963	Yoshikadzu, EMOTO	Relapse of Fungal Damage of Kondo in Yakushiji Temple, Nara	1-5	<p>The Yakushiji temple was established some 1300 years ago and has suffered many disasters. Present Kondo was erected in the year 1600 and has been repaired many times since then. The Kondo is a building which keeps the national properties in store and the statues of Yakushi, Nikko and Gakko budhisattva are also stored there.</p> <p>The columns of the Kondo were repaired in 1950 and also in 1958. In the former case, four columns of adytum had been severely attacked by <i>Merulius lacrymans</i> and were renewed. Ohtsuki observed the fungous damage in 1948 and reported about it in 1951. In 1958 all columns (10) of the adytum were splinted in order to reinforce them (Figs. 1, 2).</p> <p>In June, last year, the writer found again a severe damage caused by the above mentioned fungus in the third column from the right (east side). Even the splint itself suffered some damage (Figs. 3, 4, 5). It is only three years since the last repair. It was also observed that the fruit bodies had been grown more on the north east and the north west sides than the other sides of the column.</p> <p>Microscopical sections represent the tissue of the damaged wood filled with hyphae (Figs. 6, 7, 8).</p>			
No.17	1963	Kenzo, TOISHI; Toshiko, KENJO	Colour Fading of Mineral Pigments	6-22	<p>Although mineral pigments are thought to be rather stable in general, their deterioration under illumination or in polluted air is unexpectedly great, when they are used in painting with the Oriental style painting technique.</p> <p>Several redish pigments have been experimented on their colour changes under the influences of illumination, vacuum, air, moist air as well as other gases which are usually contained in the air and the spectral reflection curves before and after the changes are given. The changes in these reflection curves enable us to suspect some chemical changes which were brought about in the course of colour changes to some extent, but it is still in the stage of mere supposition.</p>			
No.17	1963	Yoshimichi, EMOTO	Effect of Air Pollution upon Cultural Property	23-31	<p>Nowadays, air pollution extends its bad effect not only upon the human body but also upon utensils. Consequently we are in an urgent need of establishing the investigating measures on the actual damaged conditions caused by the air pollution and to make a study on the means of how to avoid the polluted air is absolutely necessary not only from the point of view of the public health but also of the preservation of the cultural property.</p> <p>The writer gives here an outline of the air pollution including;</p> <p>1) types of air pollutant; 2) its effect upon materials; 3) mechanism of corrosion; 4) difference of the effect depending on surroundings; 5) actual damage condition of cultural property—the damages by sulphur compound observed, a typical example indicated here is the transformation of metal ornaments of a buddhist temple bell into dark-coloured sulphide by the effect of hydrogen sulphide generated from sewage of river and 6) the methods of prevention and avoidance of air pollutant.</p>			

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No.17	1963	Takeo, KADOKURA	Air Pollution in the Surrounding Area of the Ueno Park	32-44	<p>With the purpose of protecting the museum objects displayed or stored in there, and also the art galleries located in the same area as well the bronze statues exposed in the open air in the park from the effect of air pollution, the writer has been watching closely measuring the concentration of air pollutant in the surrounding area of the Ueno Park.</p> <p>The writer gives here an explanation on various measuring methods of air pollutant and tells about the survey he made considering the measurement results of the concentration of sulphur dioxide; on sources of air pollution (the industrial area and railroads) taking the direction of the wind into account.</p>			
No.17	1963	Kazuo, YAMASAKI	Chemie im Dienst der Archæologie Bautechnik Denkmalpflege — Book Review	45-46				
No.17	1963		Proceedings of the Association	47				
No.17	1963		Fiscal Reports of the Last Three Years	48				
No.18	1965	Kenzo, TOISHI; Rikuo, ISHIKAWA	Photography of Inscriptions in a Buddha Sculpture	1-5	<p>For photographing the inscription recorded on the inside surface of the hollow sculpture or any other art objects, several existing instruments such as gastro-camera or tube-examiner are generally thought to be available. However, there are many cases which require remodelling of those instruments in order to get the photographs, in accordance with the condition suited to the object.</p> <p>An entirely hand made camera, which can easily be modified so as to fit individual condition of the cave, is shown here. It consists of a surface mirror, a concave lens of a small diameter, a convex lens, and a cassette; a pipe to be inserted into the cave that is less than 10mm in diameter. A wooden Buddha sculpture was surveyed with this camera, and from the inscription photographed the date of it's construction was made clear.</p>			

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No.18	1965	Shimbei, DŌMYŌ	The Development of the plaited Braid in Relation with the Art of "Plaiting", "Weaving", and "Knitting"	6-30	<p>The braids or the cords used for practical purposes are regarded to originate in a considerably far distant age in the history of human culture. Along with the development of human intelligence, the sense of ornamentation for things had deepened which finally brought forth the complicated manual art of the braid plaiting of the present time.</p> <p>And the pre-historic archaeological relics which prove the fact that such plaited braids had already been existing then, are getting discovered in every place of the world where the study of the ancient human culture goes on. However, in most other countries, this art of braid plaiting ceased to exist between times of 300 to 600 A.D., while only in Japan it got more and more highly graded throughout the past centuries until it came to be such an exquisite manual art craft of the present age.</p> <p>Here, I am presenting, after having been engaged in the research in this field so long, the special method of study from where I have reasoned the early stage in the development of the art, by examining the technique, studying the theories, and also by investigating the pre-historic archaeological relics. Thus I prove, at the same time that the plaited and knitted braids preceded the woven material and also discuss the difference in the developmental process of the above two and then try to make the vague notion clear, irrespective of the Eastern or the Western world, of the basic interpretation of the fibrous structure in the art of "plaiting", "knitting", and "weaving".</p>			
No.18	1965	Torao, OHTSUKI	Mikrobiologische Aspekten von den Mumien, welche in den Temple Chuzonji bewahrt wurden, II.	31-45	<p>Erstens wurden Bakterien, Aktinomyzeten und Pilze von den Kasten der Mumien kultiviert, um die Verteilung zu erklären. Ein Teil derselben wurden rein kultiviert und eingehend studiert.</p> <ol style="list-style-type: none"> 1) Bakterien bestanden aus beinahe alle aus sporenbildenden Stäbchen. 2) Chromogene sowie Achromogene Stämme der Aktinomyzeten wurden gefunden, von denen zwei Stämme fähig waren Streptomycin zu produzieren. 3) Unter den Fadenpilzgruppen befanden sich <i>Penicillium</i>-Arten am häufigsten, darauf folgte <i>Aspergillus</i>-Arten, <i>Fungi Imperfecti</i> usw. Beinahe 50% erprobter <i>Penicillium</i>-Arten waren fähig Penicillin zu schaffen. Einige davon wirkten kräftiger als <i>P. chrysogenum</i> Q 176 bei den Oberflächen Kulturen. Wenn es gewesen wäre, die Leiche möchten unter dem Schutz der Antibiotik von der Vermoderung gestanden haben. 4) Was für eine Operation dem Leiche bestand? Man konnte keine Anhaltspunkt dafür gesichert haben. Meines Erachtens, aber, ist es höchst wahrscheinlich dass die Eingeweide von dem Körper bald nach dem Tode entfernt wurden. <p>Zweitens wurden Vorsichtsmassregeln gegen Verfaulen für die Zukunft ergriffen.</p> <ol style="list-style-type: none"> 1) In Herbste, 1950, wurden alles zerbrochene Häute und Muskeln sowie auch Knöchel der Mumien mit Klebmitteln, Silberdrahten wieder zusammengefügt. Danach wurde Metaakryl-Harz-Lösung, mit P.C.P. vermischt, in feiner Nebelform an ganzen Oberflächen der Leichen hervorgespritzt. 2) In einem Fumigationskasten wurde jede Leiche zusammen mit Polstern, Oberkleiden in einem Sarg gesetzt, indem Chlorpikrin und Formaldehyd als die Fumigationsmittel gegen Insekten und Pilzen dienten. 3) Drei Säрге und ein Kopfkasten wurden neu dargestellt, Innenflächen deren sich mit Zinnplatten überzogen. 4) Nach Räucherung, wurden p-Formaldehyd-Pulver, p-Dichlorbenzol in einem Beutel der synthetischen Seidentuch dem Leiche nebenbei eingeschlossen. 5) Jeder Sarg mit Leiche wurde weiter in einem anderen grösseren Holzkasten eingefasst und unter dem Stand von Shumidan (eine Alterstelle mit den Buddha-Statuen) stehen gelassen. <p>Drittens, in April, 1955, besuchten wir den Tempel darüber zu untersuchen, ob die Mumien recht konserviert wurden. Dabei konnte man nichts verändertes erkennen binnen fünfjährigen Zeitverlaufes. Wir galangen zu dem Schluss dass die Vorsichtsmassregeln waren ganz geeignet. Daher wurden nur die Beutel von p-Formaldehyd und p-Dichlorbenzol für weitere Erhaltung der Mumien gewechselt.</p>			

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No.18	1965		Proceedings of the Association	46				
No.18	1965		Election of the New President	表紙2				
No.18	1965		Fiscal Report	47				
No.19	1975	Torao, OHTSUKI	Reissuing of Japanese Antiques and Art Crafts	1				
No.19	1975	Kenzo, TOISHI	Capillary Effect in Cultural Objects	2-8	<p>If we consider a balanced system consisting of a capillary water column sucked up from a static free water surface and a vapor phase surrounding it, we get an equilibrium equation concerning pressures. The curvature of the capillary water surface is given as a function of the column height. Likely, when there are a number of capillary water surfaces at different heights among piled fine grains and water under the surfaces makes a static continuity as a whole, water pressures at different places also balance and the water shows no movement. If, for some reason, a surface retreats to give a smaller radius of curvature, the equilibrium is broken and water is supplied to this position from other parts through gas and liquid phases. From the fact that the height of the capillary water sucked up from the underground free water is at most 30m even in the case of the finest clay, it is expected theoretically that the relative humidity of a closed space in wet soil is more than 99% in the absence of temperature gradient.</p> <p>In the pigment layer painted with a vehicle of aqueous solution, the binder tends to move to the surface for the reason mentioned above. The glue shows this tendency before gelatinization. The resin impregnated in the form of solution behaves likewise. The blooming over the surface of excavated earthen wares may also be explained by the same mechanism.</p>			
No.19	1975	Tsurumatsu, DŌNO	Discovery of Metal and Development of its Culture	9-14	<p>Since prehistoric days, when metals were discovered and their remarkably useful properties were understood, their uses must have spread in various ways. They not only have played an important part as an indispensable for our every-day life, but also have greatly influenced the progress of civilization both directly and indirectly.</p> <p>The civilizations, as is well known, are divided into various stages such as the ages of stone, copper, bronze, and iron, from the archaeological stand point, associating the ages with edged tools (weapons) made of such metals.</p> <p>The author describes some problems concerned.</p>			
No.19	1975	Tatsuo, UTAGAWA	Domestic Pigeon as a Source of Damage to Cultural Properties	15-23	<p>The environmental problems caused by the domestic pigeon (<i>Columba livia</i>) are becoming more and more serious not only in agriculture and industries but in other aspects of human life. The author describes a brief history of Japanese domestic pigeons and their damage to cultural properties, and proposes several countermeasures.</p>			
No.19	1975	Hachiro, MORI	List of Damaging Insects to Cultural Properties and Conservation Science Against Insect Pests in Japan	24-60	<p>The author presents a list of damaging insects belonging to nine orders: Isoptera, Coleoptera, Dictyoptera, Thysanura, Lepidoptera, Hymenoptera, Psocoptera, Diptera, and Orthoptera. Of old wooden buildings which are registered as national treasures or as important cultural properties, about 50% are attacked by Japanese termites and Formosan subterranean termites. The damage is sometimes considerable. Wood-bores, especially larvae of deathwatch beetles such as the pubescent anobiid, <i>Nico-bium castaneum</i> OLIVIER, are most noxious to Japanese cultural properties. They do severe damage not only to large wooden buildings but also to wooden material of Buddhist images, folding screens, hanging pictures, etc. Next to these insects come cockroaches, silverfish and firebrats, carpenter ants, bees, and wasps, and clothes moths. The damage by booklice, psocids and others seems to be of little consequence.</p> <p>The best way to exterminate the damaging insects not merely in large scale wooden structures but in smaller properties is the fumigation by the sealed or the tarpaulin-covered method. Among various fumigants being adopted in libraries, museums, and storehouses in Japan, methyl bromide and sulfur fluoride are the most suited for cultural properties.</p> <p>An effective protection method against insect pests in hermetically closed sheet metal cases, drawers, or showshelves with sealed glass windows is to set several small gauze bags containing paradichlorobenzene. The dose of 40g of this chemical in total is necessary per m³ of a case or a shelf. It is advisable to check all cases and shelves monthly, since the chemical evaporates so rapidly that it should be supplied in accordance with its evaporation rate.</p>			

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No.19	1975	Hideo, ARAI; Hachiro, MORI	Fumigation under Reduced Air Pressures	61-65	<p>We examined several conditions for sterilizing fungi by fumigation with methyl bromide-ethylene oxide mixture (87: 13 by weight) under reduced air pressures. The results are as follows.</p> <p>1) Fungi are perfectly sterilized, when the fumigation is carried out for 24 hrs. under the condition of 260 mm Hg, 30°C and at the dosage of 100g fumigant per 1 m³.</p> <p>2) Insect pests are exterminated by fumigating for 18-24 hrs. under the condition of 260 mm Hg, 20-30°C, and at the dosage of 20-25 g/m³. If the control of the insect pests is required to be done in a short time, i. e. 4-5 hrs., the pressure must be reduced down to 20-40 mm Hg at the same dosage of the fumigant.</p> <p>3) The possibility of explosion was tested as functions of the concentration of the fumigant, pressure, and temperature. The conditions mentioned in 1) and 2) are out of the range of explosion, not only from the viewpoint of the concentration but also from that of pressure.</p>			
No.19	1975	Takeo, KADOKURA	Activated Carbon Treatment for Residual Fumigants	66-72	<p>For the purpose of harmless abolishment of residual fumigants, fundamental experiments concerning the adsorptive power of activated carbon were carried out. The results are as follows.</p> <p>1) Flow-speed of residual fumigants and adsorptive power: At flow-speeds lower than 21cm/sec, the amounts of adsorped CH₃Br and (CH₂)₂O+CO₂ per 100g of activated carbon were 35-37g and 27.5g, respectively.</p> <p>2) Adsorptive powers of different kinds of activated carbon: The adsorptive power differs considerably from one kind to another.</p> <p>Based on these results, an adsorption apparatus containing 10kg of activated carbon was prepared. The result of four successive runs of experiments with the use of this apparatus for abolishing residual fumigants in a reduced air pressure chamber (2.5m³ in volume) was satisfactory, no fumigants being detected in the exhausted gases of the apparatus. In the case of a larger scale tarps-covered fumigation (100m³ in volume), the abolishment was complete by using 70kg instead of 10kg of activated carbon.</p>			
No.19	1975	Toshiko, KENJO	Infrared Analysis of a Shade Play	73-78	<p>The author analyzed, through infrared absorption spectroscopy, the lacquer used in a shade play kept in the Sweden Ethnographical Museum. It was found that the lacquer consists mainly of a kind of "Urushi" lacquer with a small portion of glue-like protein containig some carbohydrates and also a small portion of partially saponified polyvinyl acetate (or a mixture of polyvinyl acetate and polyvinyl alcohol).</p> <p>The glue-like protein seems to have played a rôle of adhesive from the origin for sticking the "Urushi" lacquer on the substratum (presumably paper), whereas the polyvinyl compounds seem to have been used for the repairs of the shade play sometime in the past.</p>			
No.19	1975	Kôchô, NISHIMURA	On the Structural Weakness of Buddhist Sculptures and Their Repair	79-85	<p>Principal materials used for Japanese Buddhist Sculptures are wood, metal, clay, dry lacquer, stone, and so on. Though the surfaces of Japanese Buddhist Sculptures are lacquered or coloured, they still become damaged not only due to the deterioration of their materials but also due to their structural and technical weakness.</p> <p>The author presents different aspects of their damages and proposes his view concerning suitable ways of their repair.</p>			
No.19	1975	Torao, OHTSUKI	From my Memories of Those Days, When the Society was Founded	86-89				
No.19	1975	Kôzô, HAYASHI	From my Memories before and after the First Issue of This Journal	90-93				

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No.20-21	1977	Torao, OHTSUKI	Formation of Rust as a Result of Fungal Growth on Japanese Swords	1-17	<p>There are three kinds of rust on the surface of iron: a) rust of amorphous type, b) that of lumbical type, and c) that of fungal type. Almost all of the rusts on Japanese swords belong to the third type.</p> <p>At later stage of growth, the rust of the fungal type gradually loses its characteristic shape, and is transformed into a large amorphous mass.</p> <p>Fungal cells excrete some waste products in a liquid state forming canal-like streaks around the hyphae. At an initial stage of hyphal growth, the exudates act as a growth promoting factor in such a way that the liquid absorbs aerial moisture to bring about the conditions favorable for fungal growth.</p> <p>At later stages, however, the liquid makes etching upon the surface of iron to form water-soluble iron compounds, which necessarily diffuse into cell interior. Thus, iron-toxication of cells begins to occur. Because of the toxication as such, mycelia are deprived of the capacity of spore formation. This makes it exceedingly difficult to isolate the fungal inocula from the rust formed on a sword.</p> <p>However, the author has succeeded at last to identify the fungus, which was growing on the surface of Japanese sword. This was <i>Aspergillus vitricolae</i> Ohtsuki.</p> <p>Furthermore, inoculation experiments were carried out, using various kinds of iron test pieces. As a rule, fungal growth has occurred within a week after inoculation. Effects of the polishing of iron surface upon fungal growth have also been investigated.</p>			
No.20-21	1977	Ei-ichi, TAGUCHI; Mamiko, TAGUCHI	Spectrophotometric Identification of Color Materials, Especially of Organic Pigments and Their Combined Colors - With Reference to the Pigments Used in the Scroll, "Genji-monogatari 54-jo Emaki" of Edo-period-	18-37	<p>The color materials used in the "Genji-monogatari 54-jo Emaki", i. e. the scroll painting of the Edo-period (the 17th century) which has been assumed to be the work of a painter of Kanoh-school, were studied in detail. In this investigation, the method was newly developed to identify organic pigments by measuring their absorption spectra of visible region using a self-recording spectrophotometer with special attachment, in parallel with an ordinary X-ray radiography. By comparison of the X-ray radiography and absorption spectra of the scroll pigments with those of the standard pigments, almost all the color materials used in the scroll, both organic and inorganic, could be identified. In the case of combined colors, the composition of the pigments was clarified by the analysis of their absorption spectra.</p> <p>The relationship between the color names used in the Edo-period and the "actual colors" painted on the scroll was also been investigated, because there were plenty of annotations of coloring written by the painter of this scroll. The pigments, the technique of application and the name of colors were also discussed in reference to the text books for painters, "Honcho-Gashi" and "Gaho-Taiden", which were published in the same year as this scroll.</p>			
No.20-21	1977	Hachiro, OGUCHI	Studies on Chinese Ink Stick	38-66	<p>Chinese black-ink widely used in the Far East since a long time ago for writing, painting, drawing and so on, is prepared by rubbing an ink stick, called "sumi" with water on the surface of stone vessel called "suzuri". Black ink sticks are manufactured from soots kneaded with glue, and the soots are produced by burning a chopped pine-wood and several kinds of vegetable oil.</p> <p>In this paper, a short history of chinese ink stick is described taking into account of its manufacturing process from scientific and technical view points. Some physical properties of chinese black ink are studied by means of ordinary and electron microscopy. Reflection spectra of the black inks drawn on a Japanese paper (Gasenshi) are measured by the use of a self-recording spectrophotometer. The size and the shape of soot particles are studied electron-microscopically, and the relation between the dimension of individual particle and the color tone of black ink is also discussed.</p>			
No.20-21	1977	Shigemoto, TOKUNAGA	Evaluation of Pollen Analysis	67-69	<p>Pollen analysis, as a means of restoration of the original situations in archaeological research, especially in case of excavation study, should neither be overestimated nor underestimated.</p> <p>It is desirable to analyze the pollen content accurately and to evaluate the results exactly, not to be particular about the presence of pollens of the rice plant.</p>			
No.20-21	1977	<Review>						

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No.20-21	1977	Rikuo, ISHIKAWA	Notes on the Illumination of Exhibits and Their Deterioration	70-82	<p>1) In Japan, most exhibition buildings are constructed to keep away from outward environments in their structure, for protecting exhibits from air pollution and daylight damage, and also for keeping an appropriate air conditioning. Various light sources, i. e., visible, ultraviolet and infrared rays used in these buildings are described in detail.</p> <p>2) Deterioration due to light irradiation: As a rule, deterioration is brought about by photon energy absorbed by materials under illumination. Assuming that under a given light source, the illuminance and absorbance of light are constant, the deterioration of materials occurs in proportion to the time of irradiation.</p> <p>3) Minimum perceptible fading: With a given amount of light energy, the rate of deterioration depends on the sort of materials illuminated. The minimal value, at which the fading of material begins to occur, is called "minimum perceptible fading". The values for several materials are shown in Table 3.</p> <p>4) Relationship between the fading and amount of light irradiated: T. Honma has discussed on the anti-fading capacity, in terms of the intensity of artificial illumination corresponding to the fading of various dyed materials. Based on the value of 100 for sun light, the values of relative intensity obtained by him are shown in Table 4.</p> <p>5) Effect of ultraviolet rays: Among other light sources tested, the ultraviolet is most effective for the deterioration of exhibits. In museums, therefore, one can obtain an illumination having less deterioration effect by careful elimination of deleterious ultraviolet rays from ordinary light source of visible rays.</p> <p>6) Effect of infrared rays: Among a variety of light sources used in museums and galleries, incandescent lamp is problematic on account of its infrared rays. Since this lamp has a radiation energy greater than fluorescent lamps in the region of infrared rays, incandescent lamp gives rise to a greater total calorie than fluorescent lamp at the same illuminance. Accordingly, one should be most careful not to raise the temperature on the surface of exhibits and also to decrease a relative humidity around them. For this purpose, it may be desirable to use heat absorbing filters and / or cool beam lamps for the present.</p> <p>7) Criteria for the illumination of exhibits in Japan: The followings come into agreement in general: Concerning fluorescent lamps, they must be "ultraviolet-free" ones. Incandescent lamps should be used only for exposed exhibits, and not for exhibits in the case. When this lamp is not avoidable, heat absorbing filters must be used in parallel. As to the illuminance, it should be below 300 luxes for oil paintings, below 150 luxes for the paintings of Japanese style and of water-colors, below 100 luxes for dyed products and woodcut prints. And it is desired to be below 200 luxes for ordinary materials in general</p>			

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No.20-21	1977	<Short Communication>						
No.20-21	1977	Toshiko, KENJO	Effects of Insecticidal and Fungicidal Agents on Materials of Cultural Properties	83-87	<p>(I) Effects of Phostoxin on Materials As Phostoxin (hydrogen phosphide PH_3) is a fumigant manufactured as tablets, it is fairly different from those fumigants, methyl bromide CH_3Br, sulfuryl fluoride SO_2F_2, and ethylene oxide ($\text{C}_2\text{H}_4\text{O}$), which immediately increase in vapor pressure at the time of their application, and therefore it can be utilized under more simple conditions. Because Phostoxin requires moisture from its surrounding atmosphere for its evolving phosphine, after 24 hours of fumigation in relative humidities (RH) of 45% and 60%, tablets did not completely decompose, and materials of cultural properties kept in such atmosphere were hardly affected. After its fumigation in RH 80%, insects were completely killed but lustrous black tarry matter deposited on the entire surface of ultramarine, a copper compound. Other materials were not found to be significantly affected. Under the conditions of RH 80% and 1 to 2 tablets/m^3, Phostoxin is considerably effective as a fumigant for Japanese paper and wood buildings, but it is advisable that it should not be employed for those Japanese paper designated as National Treasure or Important Cultural Properties which are requested to be protected from being kept in higher humidities.</p> <p>(II) Effects of Panaplate on Materials Panaplate, being a plate of synthetic resin containing the active ingredient, insecticide (dimethyl dichloro vinyl phosphate, D. D. V. P.), is proved to be effective, gradually volatilizing during several months in natural conditions. With an exception of litharge which changed in color from yellow to greyish yellow, other materials did not show any appreciable change. Thus, although it may be employed for ordinary art objects, it should be avoided for such art objects as designated as Important Cultural Properties for fear of harmful effects, change of color, fading, tarnish, rust, and other else, on them, due to keeping them close by the resin.</p>			
No.20-21	1977	Hideo, ARAI; Hachiro, MORI	Fumigation of Old Cultural Properties to be Sent to Paris for the Toshodajji Temple Exhibition	88-92	<p>The Toshodajji Temple Exhibition was held at the Petite Palais in Paris from the 5th of April to the 22nd of May, 1977. The old cultural properties sent there were the followings: the sculpture of Ganjin (National Treasure), some wooden sculptures and picture scrolls (Important Cultural Properties), and sliding screens painted by the artist Mr. Kaii HIGASHIYAMA. Before sending out the exhibit for overseas exhibitions, the authors make it a rule to check up strictly any sign of insect and/or fungus pests on the objects. In suspicious cases, they should be fumigated thoroughly with appropriate fumigants to them, such as methyl bromide, sulfuryl fluoride, and a mixture of ethylene oxide-methyl bromide (13 : 87 by weight). Although the authors had found not a suspicious mark on the objects of the Toshodajji Temple Exhibition, it was needed to make a careful fumigation before transportation for fear of the presence of eggs, larvae, and pupae of harmful insects inside the objects. For this purpose, a closed space of about 32 m^3 was set out by nylon tarps (0.3 mm in thick) coated with polyvinyl chloride in a room. In this compartment, the objects were fumigated with methyl bromide at a rate of 70 g/m^3 for 24 hours at 20°C and 60 % in relative humidity. As test insects, 80 individuals of rice weevils (<i>Sitophilus zeamais</i>) and 40 of rust-red flour beetles (<i>Tribolium castaneum</i>) prepared in glass bottles according to the method prescribed by the Termite Control Corporation of Japan, were kept at each corner. After 24 hours, the gas concentration was measured as 45 g/m^3 of the fumigant, and 100 % mortality of the test insects was obtained. After treatment, the remaining fumigant gas was quickly removed by adsorption, using a harmless abolishing apparatus containing 90 kg of activated carbon.</p>			

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No.20-21	1977	Hachiro, MORI; Takeo, KADOKURA	Tarpaulin-covered Fumigation of the Tea-arbor "Joan" (National Treasure) and the Old Study "Seidenin" (Important Cultural Property)	93-100	<p>As the tea-arbor "Joan" and the old study "Seidenin" were found to be fairly damaged by cockroaches and wood-boring insects such as termites, deathwatches, bees and wasps, a tarpaulin-covered fumigation with methyl bromide (CH₃Br) was projected from the 21st to the 23rd of July in 1976.</p> <p>The authors took the spot direction on the fumigating treatment and members of the Sankyo Co, Ltd. carried out actual operations.</p> <p>Several contrived measures were adopted on trial in order to promote the fumi-gant evaporation. For instance, a copper spiral tube was set in a hot-water bucket (more than 70°C) and connected with a plastic tube fastened to the methyl bromide bomb. The fumigant was released into tarps after its temperature had been raised up. Seven electric fans were set indoors and switched on immediately after releasing the fumigant for the purpose of making the gas concentration quickly uni-form. At first a 24-hrs fumigation with methyl bromide applied, at a dosage of 50 g/m³ (40 kg to the volume of 819 m³ in total) was tried. The gas concentration was measured during the first 30 minutes and then every an hour by the gas meter "Type 18" of the interference wave system made in the Rikenkeiki Co. Ltd. As it was found to be worse than the authors' expectation after the lapse of 16 hrs, the fumigant of 6 kg was added and then the fumigating time was pro-longed to 36 hrs. The data are shown in the Fig. 11 and 12 with those of the atmospheric temperature on the spot. The effect of fumigation was judged to be successful from the method prescribed by the Termite Control Corporation of Japan, as it resulted in 100 % mortality of the rice weevils, Sitophilus zeamais Motschulsky in the bottles set as test samples.</p>			
No.20-21	1977		Information from the Association	101				
No.22	1978	Sadatoshi, MIURA	Estimating the Effects of a Foyer Used to Conserve a Tumulus Stone Chamber by a Correlation Coefficient Method	1-8	<p>To conserve the stone chamber of a tumulus, a foyer is generally constructed before the entrance. In order to know whether or not the foyer has achieved its desired effect, the temperature inside the stone chamber should be examined, assuming that the humidity in the tumulus maintains almost 100% (RH) through capillary action.</p> <p>The sine curve is usually approximated to the annual temperature changes registered inside the tumulus and outdoors. Since the amplitude and the phase of the approximated sine function represent the heat conductivity of the surroundings of the tumulus, they can be used to estimate the effect of the foyer. In some cases, however, incomplete or scattering data should be used. The sine curve method is not applicable for checking such data.</p> <p>By regarding the measured data as a stochastic variable, the problem can then be treated systematically by the use of probability and statistics. In this report, the author introduced a correlation coefficient to estimate the effect of the foyer. This method was very useful not only for checking annual temperature changes but also for checking daily temperature changes in the tumulus which seemed independent of outdoor changes. Furthermore, the convection current caused by the thermal flow through the foyer doors was recorded by taking simultaneous measurements at several points in the tumulus.</p>			

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No.22	1978	Sadao, KOMEMUSHI; Yoshiharu, MIURA	Problems Concerning Fumigation in Museums and the Quantitative Analysis of Fumigation Effects on Microbial Levels -Control of Microorganisms in Institutional Environments (3)-	9-19	<p>The authors studied the proper way of fumigating cultural properties in museum and examined the results of such fumigation especially in sterilizing fungal conidia.</p> <p>It was found that the following problems were particularly important.</p> <ol style="list-style-type: none"> 1. Selecting the proper fumigant is very important since it is necessary to confirm not only its effectiveness, but also its chemical effect on cultural properties themselves. 2. Liquid fumigants often stain the sur-face of cultural properties and the surrounding area because of their chemical solution. Nevertheless, this can be avoided by using an evaporator which evaporates the liquid fumigant to prevent such stain-ing. When using an explosion type fumigant, however, a special evaporator must be used. 3. When deciding the dosage of a fumigant, the important point is not the total amount, but keeping an effective density for fixed hours. Therefore, it is necessary to check gas density periodically and sometimes make adjustments. 4. The authors examined fumigation effects by using biological indicators and by checking the difference in biological contamination levels before and after fumigation. It was then concluded that if the proper gas density was kept, the effective sterilization of fungal conidia was possible. 			
No.22	1978	Hisao, MABUCHI; Seiji, YAMAGUCHI; Hitoshi, KANNO; Toshio, NAKAI	Chemical Analysis of Ancient Oriental Coins by Atomic Absortion Spectrometry	20-23	<p>The amounts of Cu, Pb and Zn contained in fourteen Chinese coins(7th-19th C.), one Korean coin (15th C.) and eight Japanese coins (15th-18th C.) were determined by atomic absorption spectrometry. The results were interpreted in terms of the composition change of the alloys, combined with the Sn content determined by neutron activation analysis. The following points were noted.</p> <ol style="list-style-type: none"> 1. All the Chinese coins from the 7th to the 15th century consisted of Cu-Sn-Pb alloys, while coins from the 18th century show the appearance of Cu-Zn alloys. Furthermore, no systematic tendencies in the composition change of the Cu-Sn-Pb alloys as a function of historical age were found. 2. The chemical composition of the Japanese coins seems to reflect that of Chinese ones with some time lag. 3. The 15th century Korean coin and some Japanese coins from the 15th and 16th centuries are made of copper with a small percent of Sn and Pb impurities. 			
No.22	1978	Hisao, MABUCHI; Yoshimichi, EMOTO; Yoshimitsu, HIRAO; Hiromi, YAMAHATA	Lead Isotopes and the Study of Ancient Oriental Coins	24-28	<p>Isotopic abundances of lead found in ancient Chinese and Japanese coins as well as in some galena samples taken from Japanese ores were measured with a surface ionization type mass spectrometer newly installed in the Tokyo National Research Institute of Cultural Properties. The precision of measurement obtained was below 0. 2% (C. V.) for $^{207}\text{Pb}/^{206}\text{Pb}$ and $^{208}\text{Pb}/^{206}\text{Pb}$ isotopes using 1 μg Pb on the filament. From the results it was found that the isotopic abundances of the Japanese galena fall on a narrow range of the $^{208}\text{Pb}/^{206}\text{Pb}$ vs. $^{207}\text{Pb}/^{206}\text{Pb}$ diagram ; that is 2. 05-2. 10 for $^{208}\text{Pb}/^{206}\text{Pb}$ and 0. 844-0. 858 for $^{207}\text{Pb}/^{206}\text{Pb}$. The three Japanese coins analyzed also fall on this range, while the Chinese coins are spread outside the range. This suggests the possibility of using lead isotopic abundances to characterize ancient bronze objects.</p>			
No.22	1978	<Short Communication>						

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No.22	1978	Hideo; ARAI, Hachiro; MORI	Fumigating the Kyō-zō and Other Building of the Zōjōji Temple	29-35	<p>The Zōjōji Temple has a specialized building known as the Kyō-zō in which Buddhist scriptures are stored. The Daizō-Kyō (the complete collection of Buddhist Sutras, Laws and Treaties) kept in the Zōjōji Temple are divided into three collections : 5, 336 scriptures were published in the 11th century China, 5, 340 originate from the 13th century China and 1, 368 come from the 13th century Korea. All these Buddhist scriptures have been kept in the Kyō-zō. Paintings, archives, letters, printing blocks and other records written between 1750 and 1800 have been stored in another building built godown style set aside for the storage of cultural property. Since both buildings have comparatively high levels of humidity, fungous growth and insect damage were found on cultural properties.</p> <p>The following organisms were isolated from the damaged properties and identified the authors : (1)fungi growing on the bindings of scrolls belonged to <i>Penicillium</i> sp. and <i>Aspergillus</i> sp., (2) fungi isolated from the front and back covers of Buddhist scriptures published in the 13th century Korea belonged to <i>Chrysosporium</i> sp., and (3) insect pests which had damaged Buddhist scriptures from the 13th century Korea were identified as <i>Gastrallus immarginatus</i> Müller.</p> <p>To control these fungus and insect pests, the authors planned and carried out the fumigation of the Kyō-zō(1, 35lm³). The process chosen was sealed fumigation, the fumigant used was a mixture of ethylene oxide and methyl bromide(13:87 w /w, trade mark EKIBON) and the dosage selected was 100 g/m³ (135. 1kg). A period of 24 hours was determined as sufficient exposure to the fumigant which was kept at 22±2°C in 82% R. H .. After 20 hours, however, the fumigant was not yet diffused uniformly in the Kyō-zō, so 8 more kilograms of fumigant were added and the fumigation time was extended to 49 hours.</p> <p>Fumigation effects were detected using test samples, which included the conidia of <i>Aspergillus niger</i> for fungi, and 20 adult <i>Sitophilus zeamais</i> M. with damaged rice grains and adult <i>Stegobium paniceum</i> L. for insects. The authors found that 100% of the adults had been killed and that 80% of the conidia had been sterilized.</p>			

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No.22	1978	Hachiro, MORI; Hideo, ARAI	Investigation Countermeasures and Extermination of Insect Pests Found in the Meiji Shrine Treasury	36-42	<p>When insect pests damaging cultural properties housed in the treasury of the Meiji Shrine were discovered, the authors were requested to make an investigation, formulate countermeasures and exterminate the said insect pests.</p> <p>I. Investigation :</p> <p>Insect pests collected in the treasury were as follows.</p> <p>1) Varied carpet beetle, <i>Anthrenus verbasci</i> L. Living larva and exuviae were collected from the woolen cloth of. a private desk formerly used by the Emperor Meiji and exuviae were found in some showcases. Dead adult beetles were also collected in the drawers of a bureau (mentioned below) located near the desk.</p> <p>2) Powder-post beetle, <i>Lyctus brunneus</i> Stephens. Dead adults were found in a glass window showcase made of lauan. Quite a few round holes with a diameter of 1-2mm were discovered on a bureau made of deal (fir) and an inkstone case made of bamboo also used by the Emperor. These insect holes were probably bored by the same species.</p> <p>3) Wood louse, <i>Porcellio scaber</i> Latreille. Dead adults were collected in other showcases.</p> <p>II. Countermeasures :</p> <p>The best countermeasure against insect pests damaging cultural properties is to stop immediately the progression of damage from the time of discovery. In principle, therefore, fumigants which are immediately effective and moreover cause little or no harm to the cultural properties should be used. Among the fumigants on the market in Japan, methyl bromide, sulfuryl fluoride, and ethylene oxide-methyl bromide mixtures are the most effective and cause the least harm. The authors chose methyl bromide after due consideration of the strong and weak points of each fumigant, and planned a sealed fumigation using a dosage of 60 g/m³ for 24-48 hours. To check the fumigation effects, the authors also decided to use rice weevils, <i>Sitophilus zeamais</i> Motschulsky, which were placed in stoppered glass bottles each having a capillary tube (Ø 1mm), as a test sample. Each bottle was filled with 20 weevils and damaged rice containing eggs, larvae, and pupae, and then placed at a different height in the room ; i. e. at 0, 40, 70, 100, and 170-180 cm above the ground level. Afterwards, the manager of the treasury was advised by the authors to set DDVP resin strips having a 16% DDVP content in the showcases (one strip per 5m³), or use paradichlorobenzene (40g/m³) for the purpose of ordinary insect pest control.</p> <p>III Extermination :</p> <p>According to plan, sealed fumigation using methyl bromide was carried out for 42 hours from 4 p.m. on the 6th to 10 a.m. on the 8th of December 1977. Just before 8 a.m. on the 7th, the gas concentration was found to have fallen a little, and so 15kg of methyl bromide were added. The gas concentrations on the site are shown on Table 1. After 42 hours the test samples were examined and all the weevils were found 100% dead. Since the results of the fumigation were successful, the fumigation operation was brought to a safe end.</p>			

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No.22	1978	Shinobu, ŌSAWA	Studies on the Remaking of Papyrus	43-47	<p>In 1975, during a visit to the Institute of Papyrus in Cairo, which had announced that it had succeeded in reproducing ancient papyrus, the author speculated that the effects achieved during maceration in the final stage of making paper from dried papyrus pith were due to the growth of bacteria contained in the maceration water.</p> <p>While testing this idea, the author isolated 3 strains of bacteria belonging to the genus <i>Escherichia</i> and <i>Aerobacter</i> from the maceration water. Using these bacteria in various experiments, he then discovered that he could make paper not only from thin strips of papyrus but also from dried gourd shavings. The author concluded that autolysates produced in the papyrus pith during maceration and bacteria metabolites together produce the adhesive substance responsible for holding the papyrus together. When sterilized water or water without these bacteria was used, maceration and the resulting adhesion of the papyrus failed to take place effectively.</p> <p>The expression "turbidus liquor", which the Roman historian Gaius Plinius Secundus (A. D. 23 or 24-79) used to describe the water of the Nile, water which he thought was helpful in making papyrus, was later translated as "muddy water". This misled many people into believing that the soil, rotten plants, etc. in the Nile were what created the adhesive substance needed to make papyrus paper. The author has concluded, however, that the real explanation lies in the bacteria contained in the waters of the Nile River.</p>			
No.22	1978	Etsuzō, MATSUI	On the Subject of the Raw Material Plants Used to Make Koshiabura and Ōshitsu	48-52	<p>According to old documents, there is a theory that Koshiabura and Ōshitsu are probably the same thing, but there is another point of view which claims that the Koshiabura comes from the sap of the Koshiabura tree <i>Acanthopanax sciadophyl-loides</i> FRANK. et SAV. and that Ōshitsu comes from the Kakuremino tree <i>Gilibertia trifida</i> MAKINO. Both plants have in common the fact that they belong to the Alaliacea family and contain essential oil. However, they have rather different distributions.</p> <p>The Koshiabura tree is usually found in regions where apple trees are common (northern Japan), while the Kakuremino tree usually grows wild in the warmer regions of Japan west of the Kanto Plain. According to the Enkishiki, the region of central Japan known as Mino is regarded as the main source of Koshiabura, but doubts remain as to whether the Koshiabura tree used to make it actually grows there in great numbers.</p> <p>The author at present regards Koshiabura and Ōshitsu as being different and is now investigating the sap of both of the above mentioned trees. So far, he has succeeded in examining the sap of the Kakuremino tree and has decided that it produces Ōshitsu. However, he has not yet been able to obtain the sap from the Koshi-abura tree and therefore has not been able to ascertain the true nature of Koshi-abura. Henceforth, finding this tree and testing its sap will be the main focus of his efforts.</p>			

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No.22	1978		Proceedings of the Association (December, 1977 and February, 1978)	53				
No.22	1978		Fiscal Report of the Year 1977	54				
No.23	1978	Tadashi, ARAKI; Hisayoshi, SATO	Exhibition Lighting and Lacquered Ware Discoloration	1-24	<p>It is well known that lacquered ware placed on exhibit in museums and stores lose their luster or become discolored. However, since no reports have been made on the relationship between discoloration and environmental conditions in actual exhibitions, the authors conducted tests whereby lacquered ware samples were exposed to continuous lighting from various kinds of light sources in order to determine the effects of exhibition lighting on lacquered objects. The conclusions reached may be outlined as follows :</p> <p>1) Main factors of discoloration caused by lighting. Discoloration is caused by ultraviolet rays (especially by fluorescent lamp radiation of 365 nm) and heat.</p> <p>2) Discoloration characteristics of various pigmented lacquer. Black lacquer(pigment : FeO)resists ultraviolet rays, heat and humidity. Red lacquer (pigment : HgS)-susceptible to ultraviolet rays and heat. Red lacquer (pigment : CdS)susceptible to ultraviolet rays and heat . "Tamenuiri" (red, CdS, lacquer base coat with a transparent lacquer top coat)--- :susceptible to heat.</p> <p>3) Light sources. Test results show that it is desirable to use fluorescent lamps with radiations less than 365 nm filtered out or incandescent lamps so arranged as to avoid heat effects. Moreover, direct exposure to sunlight should be avoided in all cases.</p> <p>4) Illumination intensity and period of exposure. The following illumination intensities and periods of exposure for various pigmented lacquer were calculated as being safe based on the test results, provided that fluorescent lamps with ultraviolet rays filtered out were used and that the period of illumination per day was set at 11 hours. Black lacquer :900 luxes, for 3 years and 6 months. Red (HgS) lacquer : 900 luxes, for 8 months. Red (CdS) lacquer : 900 luxes, for 1 year. "Tamenuiri" : 900- luxes, for 1 year and 4 months.</p>			

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No.23	1978	Hisao, MABUCHI; Kenji, NOTSU; Hideo, MAKISHIMA; Keiichiro, FUWA	Measuring Trace Elements in the Manufacturing Process of Traditional Japanese Paper	25-31	<p>The amounts of eighteen trace elements were measured by instrumental neutron activation analysis in various samples taken from 3 different stages in the manufacturing process of traditional Japanese paper. The materials examined came from the barks of three trees : the black and white barks of the Kôzo tree (paper mulberry), the black and white barks of the Mitsumata tree(paper birch), and the black bark of the Campi tree. In measuring the amounts of trace elements, we took samples from the following three paper manufacturing stages : I) the raw material (bark of the tree), II) the material after beating, and III) the final product (paper). The measurement results are summarized as follows.</p> <p>(1) There was little difference in the amounts of the trace elements found in each of the tree bark raw materials with the exception of Mn and Cl.</p> <p>(2) Most of the trace elements are largely eliminated in the process of beating and boiling the barks.</p> <p>(3) Boiling in a NaOH solution is more efficient for eliminating trace elements than boiling in a Na₂CO₃ solution.</p> <p>(4) The amounts of Co, Cu and Zn are higher in the final product than in the material after beating. This may be due to contamination incurred in the process of moulding and air drying.</p> <p>These results may be useful in the study of the characterization of Japanese paper by the use of trace element concentrations.</p>			
No.23	1978	Toshiko, KENJO	Studies on the Analysis of Lacquer (Part 2) Infrared Spectrometry of Lacquer Films	32-39	<p>The author investigated a method of lacquer identification based on infrared Spectrometry. The following results were obtained.</p> <p>1. Hardened lacquer films exhibit characteristic infrared spectra at 1,070cm⁻¹, 1,215cm⁻¹, 1,275cm⁻¹, 1,430⁻¹, 465cm⁻¹, 2,850cm⁻¹, 2,925cm⁻¹ and 3,400cm⁻¹ regardless of their place of origin, their age or their history. The author therefore believes that these spectra can be considered as a means of identifying different lacquers.</p> <p>2. Japanese and Formosan lacquer films exhibit a characteristic absorption spectrum at 730cm⁻¹ and can be distinguished from Thai and Burmese lacquer films which exhibit absorption at 700cm⁻¹, 728cm⁻¹ and 730cm⁻¹.</p> <p>3. Japanese lacquer films can be distinguished from Formosan lacquer films by the depth of the absorption at 993cm⁻¹ and by the shape of the spectra in the ranges from 1,595cm⁻¹ to 1,720cm⁻¹ and from 1,040cm⁻¹ to 1,070cm⁻¹.</p> <p>4. Hardened Cashew films exhibit almost all the IR spectra characteristic to lacquer films, but they can be distinguished from the lacquers investigated in that they exhibit absorption at 980cm⁻¹ instead of at 993cm⁻¹.</p>			

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No.23	1978	Hachiro, MORI	On the Termite Distribution and the Termite Damage to Cultural Properties in Hokkaido	40-51	<p>The Architecture Division of the Agency for Cultural Affairs carried out a series of urgent investigations on the termite damage to wooden buildings registered as national treasures and important cultural properties all over Japan excluding Hokkaido during the three years from 1971 to 1973. However, despite the fact that Hokkaido records the lowest temperatures in Japan during most of the winter, termite damage has in recent years been spreading towards the northern parts of the island. Thus, since termite damage in Hokkaido can no longer be neglected nowadays, the author undertook an investigation of termite distribution in order to determine the location of its northernmost boundary line, with the aid of an investigation group including Messrs. Y. MAEDA, M. KODAMA, K. SHIMIZU and H. YAMANE, all of whom are members of the Japan Termite Control Association.</p> <p>According to the results of this investigation, the northernmost boundary line of termite distribution fell in the town of Kamisunagawa, the annual average temperature of which is about 7°C. It is widely said that termites are distributed in the tropical and temperate zones of the world within an average annual isotherm of 10°C. Therefore, Kamisunagawa may be the area inhabited by termites with lowest temperature in the world. The investigation group also came to the conclusion that termites are not yet established in Asahigawa, where the annual average temperature is 6°C or so.</p> <p>The only species of termites collected in Hokkaido is the Japanese termite, <i>Reticulitermes speratus</i>(Kolbe) and the rate of damage by this species in Sapporo is the same as the rates in the Kanto and Tohoku districts of Honshu. Since the most serious termite damage occurring in Sapporo is in Nakajima Park, it is to be intensely desired that further investigation of the termite damage to the Park's hermitage "Hassoan", which is registered as an important cultural property, be formally conducted as soon as possible.</p>			
No.23	1978		General Contents of "Scientific Papers on Japanese Antiques and Art Crafts" (No. 1~23)	52-66				

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No.24	1979	Katsuji, YAMANO	Experimental Studies on the Effectiveness of Termite Shields	1-30	<p>A series of experiments to examine the termite-proof effectiveness of termite shields were made using termite nests both in the laboratory and in the field. The experimental results obtained were as follows:</p> <ol style="list-style-type: none"> 1) A smooth termite shield surface prevented termites from walking about freely, but it was not effective in preventing a termite invasion because termites built runways on the surface. 2) The sharper the edge of the termite shield, the greater its termite-proof effectiveness became. However, this effectiveness was not always absolute. 3) Termites did not show any sign of particular aversion for copper plates. Accordingly, it is meaningless to favour copper plates as a material for termite shields. 4) The termite-proof effectiveness of a flat termite shield increased with the shield's length of horizontal projection from the face of the foundation. 5) Flat termite shields in general do not seem to offer real effectiveness in preventing termite invasions. 6) Both flat and extended termite shields had little effectiveness unless their length of projection from the face of the foundation was more than 30mm. 7) The effectiveness of a termite shield decreased as the angle between the projected shield and the top surface of the foundation increased from 0° to 90°. 8) When the angle of the extended termite shield was varied from 0° to 90°, it was found that a termite shield bent downward at a right angle was the most effective. However, the length of the bent part should also be more than 15mm. 9) A termite shield bent downward vertically became more effective as the length of its bent part increased. 10) Termites showed a tendency to build their runways at the joints and corner parts of termite shields when invading a building. <p>From the above mentioned results, the conclusion was reached that termite shields should be formed of strips of metal which have an edge extending horizontally as far as possible and which project at least 30mm from the face of the foundation. The front of the extended edge was also found to be most effective when it is bent downward vertically at a right angle as far as possible. Although termite shields do not always provide absolute protection, they are still fairly effective when employed in houses, and can be useful as a means of ascertaining whether termites have intruded or not.</p>			
No.24	1979	Masamitsu, NAGANO	Discrimination Method of Ancient Fibers and Its Application	31-43	<p>The purpose of this report was not only to discriminate the ancient fibers by the methods of the microscopic, IR absorption, the specific gravity, and the X-ray method, but also to apply these methods for the ancient fibers and to make a study of: the internal structural change of the fibers during the long time elapse. The experiments were carried out by these methods for few examples and found interesting results.</p>			

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No.24	1979	You, Sun, KIM	Analysis of Major Chemical Components of Cultural Samples Excavated at HWANG RYONG-SA Temple Site	44-50	皇竜寺遺跡より発掘された古文化財の標本について、主要な化学組成を分光分析法によって分析した。青銅標本中には亜鉛の含有量が痕跡に止まり、これに近い王の墓所より発掘された同時代の韓国青銅標本中に含まれるかなりの量の亜鉛と異なっている。ガラス玉(勾玉形)は50~60%のシリカと13~14%の酸化ナトリウムを含有しており、日本の奈良時代に発掘された古墳のガラス玉に匹敵する。それに対し23~60%のシリカと42~76%の鉛を含む鉛ガラス型の標本も遺跡で見出されている。木片もその起原が同定された。土壌標本は同一と認められる花粉含有物を取り扱い、顕微鏡で花粉であることを観察したが、現在のところ予備的な同定がやとなされたに止まる。			
No.24	1979	Hachiro, MORI; Hideo, ARAI	Screening Tests in Residually Effective Pyrethroids -Insecticidal Activity Tests on Permethrin Against the Formosan Subterranean Termite, <i>Coptotermes formosanus</i> Shiraki-	51-63	In order to compare and evaluate the insecticidal effectiveness of two permethrin solutions (0. 4% and 0. 8% respectively) and one 2% chlordane solution, contact tests were conducted using wood and bamboo test pieces exposed to Formosan subterranean worker and soldier termites. The results of those tests, which have been listed in tables 1-6, may be summarized as follows. First, when the test pieces were not exposed to weathering : 1) Tests with 0. 4% and 0. 8% permethrin solutions and involving contact periods of 30 min., 60 min. and 120 minutes all resulted in a termite knock down ratio (KD%) of over 90% when measured immediately after the contact period was ended; i.e. no large differences in insecticidal effectiveness were observed. 2) With respect to termite resistance to the effects of permethrin, it was observed that worker termites showed slightly more resistance than the soldier termites. 3) In tests using the weaker solution of permethrin and in tests involving a short contact period a small number of termites did exhibit "recovery". 4) Immediately after the 30 min., 60 min. and 120 minute contact periods, the 2% chlordane solution showed a termite KD% of 0%, 25. 6% and 73. 9% respectively, but 24 hours later the KD% was up to 66. 7%, 100% and 96. 7% respectively, with the number of surviving termites at about 2/3, 1/3 and 1/3 for each test period; i.e. in comparison to the permethrin solutions, the chlordane solution exhibited a very noticeable delayed reaction characteristic. Next, when weathering was conducted and the contact period was set at 60 minutes: 5) Although the 2% chlordane solution showed a big decrease in insecticidal effectiveness, the 0. 4 and 0. 8% permethrin solutions had KD% of 89. 5% and 95. 9% respectively immediately after the contact period was ended. 24 hours later these KD% went up to 95. 9% and 99. 5% ; ratios which are slightly lower than the results achieved with unweathered test pieces, but which still prove that permethrin remains effective for a long time. 6) A small number of termites also "recovered" in the case of weathered test pieces. 7) When using weathered test pieces, the 2% chlordane solution did not take effect unless the contact period was made quite long, thus indicating an even greater delayed reaction tendency. 8) Throughout this series of tests, the wood and bamboo test pieces showed no major difference in results.			

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No.24	1979	Sadao, KOMEMUSHI; Ichiro, INOUE; Makoto, SAITO	An Outline of a Systematic Approach to Protecting Clrltural Properties in Museums from Insects and Microorganisms -Control of Microorganisms in Institutional Environments(4)-	64-73	<p>It is generally recognized that fumigation is the most effective way to protect cultural properties from insects and microorganisms, but there are very few cases in which it is periodically performed as an advanced protection treatment. In most cases it is only after heavy damage is incurred that protective measures are taken. In this study of safe and effective fumigation methods, it was found that the following points are important.</p> <p>1) In planning a fumigation operation, all museum departments should discuss the purpose, target microorganisms, time and method as well as the process, in detail.</p> <p>2) The volume of the rooms and the kinds of organisms involved determine the total consumption of gas, while the sealability of the rooms and the room temperature determine the number of working hours needed.</p> <p>3) Changes in gas density in the concerned area should be checked and biological indicators for insects and microorganisms should be prepared.</p> <p>4) All the results and the operation process should be recorded for future reference.</p> <p>5) Every precaution possible should be taken to prevent accidents during the fumigation operations.</p>			
No.24	1979	Kiichi, TSUJIMURA	Concerning "Yama ai Some", a Lost Blue Dye Technique Appearing in Ancient Japanese Literatures and an Attempt at its Rediscovery	74-76	<p>The "Yama-ai ", Mercurial is leiocarpa Sieb. et Zucc., is assumed to have been an important blue dye, which had been used among the nobility in ancient times prior to the introduction of indigo plants to Japan. At present, however, we have neither exact records of its technical usage nor remnants of vivid-colored textile's dyed in those clays.</p> <p>This paper describes the results of investigations made into old documents, in pursuit of this evanescent dye, with the aim of elucidating and regenerating this wonderful technique of ancient dyers.</p>			
No.24	1979	Makoto, SHIMA; Hideo, YABUKI	Studies on the Rust of Ancient Iron Implements	77-82	<p>Iron oxides and iron hydroxides are main components of the rust formed on the surface of ancient iron implements. These iron compounds are generally classified by their mineral components such as magnetite (Fe_3O_4), goetite ($\alpha-FeOOH$) and Jepidocrocite ($\gamma-FeOOH$). In this paper we report our discovery of akaganeite ($\beta-FeOOH$) in rust samples taken from iron implements excavated at ancient tombs.</p> <p>The formation mechanism of this rare mineral is discussed. It will be a good indicator of burial conditions in archaeological studies.</p>			
No.24	1979	Sadatoshi, MIURA	About the Conference on Climate and Conservation in Museums	83-87	<p>The conference was held at ICCROM in Rome from November 7 to 10, 1978. There were 4 sessions ; Climate control and air conditioning, Climate control by simple methods, Climate control and architecture and Various. In particular climate control by simple methods (e.g. by silica gel) was discussed by many participants. They concluded it must be further developed in view of the operating costs and the energy shortage. Some rules were also given in the conference for the climate in museums.</p>			
No.24	1979	<Information from the Association>		88-95				

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No.25	1980	Sakae, NIYAMA; Terukazu, TANAKA; Takeakira, MOTOMURA	Ancient Methods of Making Glass MAGATAMA Bead	1-18	Various reports exist on the glass composition and techniques used to make glass MAGATAMA beads dating from the Yayoi Period. However, the explanations of how MAGATAMA were made have all been based on speculation. In order to shed some light on this subject, the authors prepared glass materials and attempted to make MAGATAMA, KUDATAMA and KODAMA beads by various ancient techniques. In this report they discuss some methods of making MAGATAMA beads.			
No.25	1980	Fumitake, MASUZAWA; Hajime, OKAMOTO; Yutaka, TAZAWA	A Non-destructive Approach to Examining the Deterioration of Waterlogged Woods	19-24	In order to estimate the degree of deterioration of waterlogged woods, several of their properties were measured. As a result, the authors were able to express the correlation between these properties and the hardness of the woods as follows: $u = -11.5H + 1390$ $\beta R = -0.64H + 70$ $\beta T = -1.25H + 143$ $\log \sigma L = 0.25H - 0.56$ Note : u : moisture content βR : radial shrinkage (%) βT : tangential shrinkage (%) σL : compressive stress parallel to grain (kg/cm ²) H : indentation hardness SRIS-0101 (The Society of Rubber Industry, Japan Standard-0101) These correlations are significant over a 1% level. This hardness test is proposed as a non-destructive and practical method of examining the deterioration of waterlogged woods.			
No.25	1980	Akira, TERADA; Ariobu, HIGASHI	GONZETSU, An Ancient Japanese Varnish Made from KOSHIABURA Sap	25-31	The authors went to Mt. Myoken in Kitakyushu city and obtained some sap from the tree, <i>Acanthopanax sciadophylloides</i> Fr. et Sav. (Japanese name, KOSHI-ABURA). Chemical analysis of the sap showed that it consists of a mixture of terpenes, a nitrogen-containing gum and water. The main components of the volatile terpene hydrocarbons were α -pinene, β -pinene and germacrene-D, and the empirical formula of the gum was C ₁₀ H ₁₀ O ₄ . Traces of metallic elements were also found. When spread thin and exposed to air the sap dried into a hard, colorless and transparent film within an hour. Further tests, however, showed that the film is sensitive to water. The authors concluded that the ancient Japanese varnish known as GONZETSU was made from this sap.			
No.25	1980	Makoto, SHIMA; Akihiko, OKADA; Hideo, YABUKI	Pithecanthropus and Tektite	32-39	The natural glass sample was obtained from the archeological remains at Sangiran, Java where the crania of <i>Pithecanthropus</i> had been found. In this paper, its petrographical and chemical natures are investigated in order to identify whether this material belongs to a tektite or other natural glasses, such as obsidian. The analogy between the sample and tektite is readily confirmed by their morphological, structural and compositional natures. It is also supported by the ⁵⁷ Fe Mössbauer, the infrared, and visible absorption spectral studies. From these results, it is identified to be a tektite. This sample would be the oldest stone implement made of tektite, possibly an extraterrestrial material.			
No.25	1980	Arata, MORI	On Facilities for the Preservation of Books	40-46	Libraries and book repositories are vital facilities for the preservation of cultural properties. Based on his own personal experience in preservation work and on observations made during visits to numerous such facilities, the author offers his opinion on what should be given special attention when building such facilities. In particular, the author notes that in the libraries he visited the airconditioning equipment did not achieve complete success. On the other hand, old facilities relying on natural airconditioning sometimes seemed to do a better job. By listing and commenting on examples of success and failure found in both airconditioned libraries and libraries with natural airconditioning, the author explores the possibilities for better methods of book preservation.			

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No.25	1980	Hisakazu, OGASAWARA	Present Conditions of An Oceanside Museum (Gamagori Folk Museum Study)	47-52	<p>The following report is a study of a small museum constructed on reclaimed land adjacent to the sea. It is hoped that this report will be useful to anyone planning to build and administer a new museum in the future.</p> <p>The site of the Gamagori Folk Museum, which faces the sea, is not a suitable one for a museum. Nevertheless, the museum has several structural features designed to protect it from the severe environmental effects of ocean salt, solar heat, ultraviolet radiation, and high tides. These protective features include an elevated floor double walls, a double roof, and insulation materials inside the wall slabs. With the help of all these features, the museum is not easily influenced by outside temperature and weather conditions. Moreover, the cost of airconditioning in the museum is low which is a desirable result in terms of energy savings.</p> <p>Although the Gamagori Folk Museum has been open for almost a year now, the air in the museum is still not stable. It shows a strong alkalinity and a rather high humidity. This is probably due to the fact that the building did not have a "drying period" before it was opened to the public. In an effort to solve this problem, the museum is now making some attempts to maintain a balanced air environment.</p>			
No.25	1980	Takeji, FUJIWARA	The Landscaping Techniques Employed on Archaeological Sites	53-59	<p>In my report I have stated in outline the landscaping techniques employed on important historic sites in Japan and the controversial problems they encounter.</p> <p>Three dimensional restoration is the best way to understand old structures, but at present the flat restoration and landscaping of sites are the techniques most often used. Various materials, both mineral and vegetable, are used for the display and landscaping of structural remains. Among the main materials used are bricks, tiles, asphalt, concrete, soil cement, ceramic wares, stones, gravel, Zoysia, Bryophyta, Pteridophyta, Sasa, flowering herbs, low trees, and wood.</p> <p>Without destroying the structural remains, landscaping must be carried out with reference to excavation results and the history of landscape gardening. Furthermore visitor services and maintenance facilities on the site should also be in harmony with the historical environment of the site.</p>			

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No.25	1980	Fumio, MATSUI	Restoring Daguerreotype Images	60-68	<p>Daguerreotype is a method of photography invented in 1839 by the French artist Louis Daguerre, and is generally considered the origin of modern photography. In daguerreotypy, iodine is applied to a silver-coated plate to make it sensitive to light. Then after exposure, mercury is used to develop the latent image produced, and sodium thiosulfate is used to fix it. The resulting amalgam image on the silver-coated plate is the finished photograph.</p> <p>Most daguerreotype images still preserved today are effected by a light violet discoloration of their shadow areas. By recreating the causes of this discoloration, it was shown that hydrogen sulfides were the main source of the problem. Experiments were then made with cyanic baths, thioharnstoff phosphoric acid baths and thioharnstoff citric acid baths to see which was the best method for removing the discoloration. The results showed that the cyanic bath removed the photo image as well as the discoloration, while the thioharnstoff phosphoric acid and citric acid baths not only removed the discoloration, but also left the test piece very clean. The once hidden images became very clear revealing the striking beauty of daguerreotype prints, which even after one hundred years of technical progress has never surpassed.</p> <p>(This report originally appeared in "FONS ES ORIGO" Vol. No. 1, Summer 1977, and is reprinted here with the permission of the Art Department of Nihon University.)</p>			
No.25	1980	Masako, KOYANO	Restoration of Canvas Painting -Lining-	69-83	<p>Oil paint has been a favorite medium of artists since Van Eyck in the 15th century. It is prepared by mixing ground pigments with a drying oil. For use, it is diluted with more drying oil or thinners such as turpentine, petroleum distillates, and sometimes varnishes. Oil paint is applied to a support such as fabric, wood, ivory, metal, paper or even silk. Oil paint dries by oxidation and polymerization, and as it ages, it becomes harder and less soluble. Traction cracks may appear in the paint film during the drying process. Later alteration and deterioration of the painting are caused chiefly by environmental agents. Canvas paintings which are structurally weak are usually lined to a new fabric support with an adhesive. Linen, glass fabric and other synthetic materials are used for this purpose. The most common adhesive is a wax-resin mixture which penetrates both the original fabric support and the lining fabric, and which consolidates the entire structure, preventing further paint loss. Since the wax-resin mixture darkens unprimed fabric, a non-penetrating adhesive, such as polyvinyl acetate, is chosen for lining when exposed canvas is seen in the painting. There are three methods for adhering a lining. The first is by using a hand iron, the second involves a vacuum hot table, and the third makes use of a vacuum envelope combined with a heat source.</p>			
No.25	1980	Bunsaku, KURATA	Report on ICCROM Activities	84-88	<ol style="list-style-type: none"> 1) A review of ICCROM's history and present day activities. 2) ICCROM and Japan. 3) ICCROM finances. 4) ICCROM's organization (General Assembly, Board of Governors, Financial Planning Committee). 5) A description of ICCROM's special study course and publishing activities. 6) Proposals for the construction of an Oriental Restorative Techniques Centre now being discussed in Japan. 			

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No.25	1980	Hideo, ARAI; Hachiro, MORI	Studies on the Long-term Conservation of Cultural Properties (Part 1), (1) Using Biaxially Oriented Polyvinylalcohol Film to Prevent the Biodeterioration of Cultural Properties	89-102	<p>The authors investigated the possibility of using Biaxially Oriented Polyvinylalcohol Film (BO-PVA Film) Bags, which have excellent gas-tight and moisture-proof characteristics, in the longterm conservation of cultural properties.</p> <p>BO-PVA Film is made from polyvinylalcohol, the most gas-tight synthetic resin known, which has been biaxially oriented in order to make it even more gas-tight. Polyvinylalcohol resins, however, have the defect of being very moisture absorbent. To correct this problem, both surfaces of the film are coated with polyvinylidene chloride, which is very moisture-proof.</p> <p>To test the usability of BO-PVA Film as a method of conserving fumigated cultural properties, they placed fungi and insects inside bags made of BO-PVA Film and observed fungi growth limits and insect mortalities under initial oxygen concentrations of 5.0%, 1.0-2.0% and 0.1-0.2%. These different oxygen concentrations were made by means of either nitrogen or argon gas injection excluding air.</p> <p>Proper humidity is an indispensable condition for the conservation of cultural properties, in this study they used an activated clay (commercial name: NIKKA-PELLET OK) as the humidity control agent, and conducted these experiments with 55, 70, and 86% RH.</p> <p>Microorganism Test Results</p> <p>(1) Effects of Oxygen Concentrations on Fungi Growth</p> <p>Seven days after inoculating the conidia of fungi, they compared the diameters of giant colonies on L 25% malt agar plates and found that at each level of initial oxygen concentration the growth curves showed increases similar to those of the control samples. Beyond seven days, however, the growth speed of giant colonies under oxygen concentrations of 5.0% or less slowed down and their growth curves entered a stationary phase. (2) Changes in Oxygen Concentration During Fungi Growth Test strains inoculated on 1. 25% malt agar plates under initial oxygen concentrations of 5.0% or less showed no remarkable changes during the first seven days; they consumed oxygen in the same manner as the control samples. After seven days, however, the oxygen concentrations dropped exponentially, and reached 0. 01-0. 05% between the tenth and fifteenth days. At this point the growth curves of the fungi were stationary, thus showing the relationship between the level of oxygen concentration and the inhibition of fungi growth.</p> <p>(3) Effects of Humidity and Oxygen Concentrations on the Growth of Fungi</p> <p>The conidia and ascospores of <i>Aspergillus niger</i> and <i>Eurotiun tonophilum</i> were incubated on gelatin films (Difeo Bact-gelatin) for thirty days under humidity levels of 55, 70 and 86% RH and initial oxygen concentrations of 5.0, 1.0-2.0 and 0.1-0.2%. Under a relative humidity of 55% the <i>A. niger</i> and <i>E. tono-philum</i> did not grow. At 70% RH the <i>A. niger</i> did not grow, but the <i>E. tono-philum</i> did show growth after fifteen days. In the case where the initial oxygen concentration was 0.1-0.2%, complete growth was seen after 26 days. At 86% RH the <i>A. niger</i> started to grow after four days, and was fully grown under each level of oxygen concentration by the tenth day. <i>E. tonophilum</i> on the other hand, started to grow after three days, and was fully grown under each level of oxygen concentration by the eighth day. These results show that fungi growth can be inhibited by combining the right level of oxygen concentration with relative humidity between 55% and 70%.</p> <p>Insect Test Results</p>			

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No.25	1980	Hideo, ARAI; Hachiro, MORI	Studies on the Long-term Conservation of Cultural Properties (Part 1), (1) Using Biaxially Oriented Polyvinylalcohol Film to Prevent the Biodeterioration of Cultural Properties	89-102	<p>(1) Test sample insects were placed in bags made of biaxially oriented polyvinylalcohol film, and instead of air the bags were filled with either nitrogen or argon gas containing three different test levels of oxygen concentration (Level I : approximately 5.0%, Level II: 1.0—2.0%, and Level III: 0.1—0.2%). Changes in the levels of oxygen concentration were then checked 3, 6, 14, 26, and 28 days after the start of the experiment. The results showed that while the test insects were still alive the concentration of oxygen gradually decreased due to consumption by the insects. However, once the insects died, the concentration of oxygen gradually in-creased. In the case of Oxygen Concentration Test Level III (0.1—0.2%) the con-centration of oxygen increased slightly during the first 1—2 days, despite the fact that the insects were alive, and then gradually decreased. The cause of this slight increase is still under investigation, though the authors speculate that it is attributed to the difference in oxygen pressure on the inside and the outside of the film.</p> <p>(2) In the tests where rice weevils were enclosed in nitrogen gas, it was observed that in Oxygen Concentration Test Level I very few insects were KD (Knock Down) after 9 days had passed ; i. e. most of them could still walk. In Test Level II the KD percentage was slightly higher, but the majority of insects could still walk. In Test Level III about half of the weevils were KD.</p> <p>(3) After 20 days had passed, the percentage of KD insects in Test Levels I and II had increased a little, but the majority of weevils could still walk. In Test Level III the percentage of KD reached 92. 0 and in fact most of them were dead or on the verge of death. This shows that even when the oxygen concentration is at the extremely low level of 0. 1—0. 2%, it still takes over 3 weeks for the insects to die.</p> <p>(4) This resistance to a lack of oxygen seemed a bit stronger in larvae than in adult weevils, but it is thought that this is because larvae need less oxygen than adults.</p> <p>(5) The conclusion was therefore reached that the best way to conserve cultural properties is to quickly exterminate insect pests through fumigation, thus preventing further insect damage, and then to store them in bags made of the above-mentioned film.</p>			

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No.25	1980	Toshiko, KENJO	Studies on the Long-term Conservation of Cultural Properties (Part 1), (2) The Effects of Different Concentration of Oxygen on Pigments Used for Cultural Properties	103-107	<p>Art objects are physically affected by prolonged exposure to moisture and various gases in the air and the radiation energy of sunlight and artificial light. Art objects can be preserved for long periods by enclosing them in nitrogen, but, when enclosed in a sealed case containing dry nitrogen, materials which have been in equilibrium while exposed to oxygen and atmospheric gases can become discolored before achieving a new equilibrium as a result of moisture evaporation. Therefore, when enclosing art objects in nitrogen, it is absolutely necessary to maintain the conditions similar to those found in the atmosphere. In the experiments made in this study, nitrogen adjusted to have the desired atmospheric humidity was fed into sealed cases. However, it was necessary to continually supply additional nitrogen because of the difficulty of achieving a perfectly sealed case. Unfortunately, this flow of gas disturbed the surface equilibrium of the test materials, and so was not desirable from the point of view of long-term conservation.</p> <p>To solve this problem, test samples and a humidity control agent were placed in bags made of the recently developed waterproof Biaxially Oriented Polyvinylalcohol (BO-PVA) Film. Different concentrations of nitrogen and argon were then introduced into the bags, and one month after the test samples were checked for possible biological and physical changes.</p> <p>The results showed that pigment surfaces become reduced when such oxides as cinnabar, litharge and sienna, which are stable in normal atmospheric surroundings, are placed in an inert gas. Consequently, when using inert gases for the long-term conservation of cultural properties, it is very important to add proper amounts of oxygen to the gases in order not to disturb the surface equilibrium of the art object materials.</p>			
No.25	1980	OBITUARY	In Memory of Dr. Yuji SHIBATA, The Ex-president of the Association	108-112				
No.25	1980	<Information from the Association>		113-119				