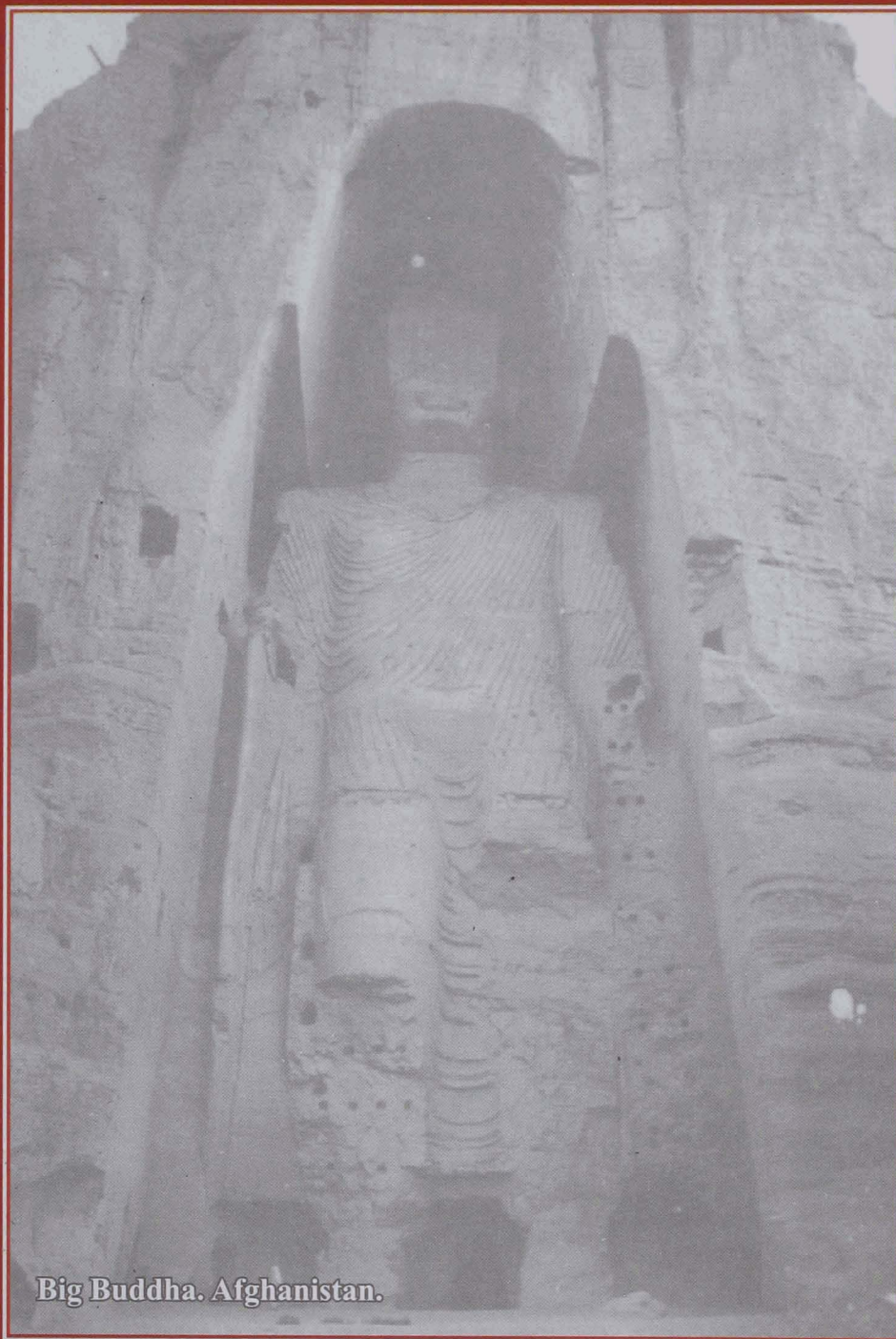


A Report on the Preservation of

BUDDHIST MONUMENTS

At Bamiyan in Afghanistan



Big Buddha. Afghanistan.

By: Dr. B.B.Lal and R.Sengupta

Edited by: S. P. Singh (Director Conservation) National Museum, New Delhi

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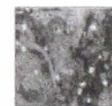
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Preface

Bihar where the dominance of Brahmins was not fully established, saw the birth of a number of ascetic movements. These rejected the authority of the Vedas, but their metaphysical doctrines show an affinity with those of the Upanishads. One of the earliest and most successful of these new religion was Buddhism.

The Buddha ("the Enlightened) founder of Buddhism lived in the sixth century BC in eastern India, and was said to be of princely birth. According to legend, at the Buddha's birth it was prophesied that he would be either a great ascetic or a universal emperor. His father, wishing him to follow in his footsteps, raised him in circumstances of ease and luxury to prevent him from developing any unworldly tendencies.

One day, however, as the son was driving about in his chariot, he saw a birth, a sick man, an old man, and a corpse. Filled with a sense of the sorrow inherent in life, he renounced his family and patrimony and stole away at night to discover the source of suffering.

Enlightment came while he meditated under the tree, and the disciples he acquired through his preaching became the Buddhist monkhood. Thus begun the long career of Buddhism, now extinguished in the land of its birth but with millions of adherent in all the countries of the Far East.

Buddhism propounds a middle way between the indulgence of the senses and the severe self-mortification of the ascetic. Suffering is universal. Its root is desire through the healing knowledge obtained in meditation. By leading an exemplary and disinterested life, and by diligent meditation, release from the cycle of rebirth and death, the final extinction of Nirvana, can be won.

Buddha stood opposed to the Vedic religion. What a man does is more important than what condition of life he is born into, in this they disturbed the pretensions of the Brahmin priest. Anyone could become a monk regardless of rank. But for the vast majority cast remained the organising principals of their social existence, and, whatever their higher loyalties, the Brahmin priest continued to serve

their ritual needs, at birth, at marriage and at death.

When Asoka acceded to the Mauryan throne in 208 BC, the empire he inherited comprised all but the extreme southern tip of the Indian diamond and some of the eastern seaboard. He completed it by the conquest of Kalinga (Orissa) on the eastern coast below the mouths of the Ganges.

Asoka had an inclination towards Buddhism, and the deaths suffering caused life. Henceforth he renounced aggressive war and made his whole aim the welfare of his subjects in this world and hereafter. His officials were to inculcate the virtues of respect for elders and the teachers of all sects, of non-violence and peacefulness. He sent envoys to the Hellenistic Kingdom to promote his views there. Such conquest by righteousness he held superior to conquest by arms.

He himself undertook tours to further this teaching and to visit the holy places of Buddhism. Above all, he had his words inscribed on rocks and pillars throughout the land ruled by him. Though mostly in the dialect of Magadha, Asokan edicts in Greek and Aramic have been found in Kandahar (Afghanistan). By virtue of these inscriptions we possess a record of the simple and direct words of the great figures of world history.

During Asoka's reign Buddhism prospered and spread to Afghanistan, China and Sri Lanka, where it flourished. The Mauryan Empire did not long survive the death of Asoka, and in 187 BC Pushyamitra raised on its ruins the more modest Shunga Empire.

Menander (Milinda) was one of the few Greeks to leave lasting impression on the Indian consciousness thanks, less to his considerable conquests than to his patronage of Buddhism. He figures in a dialogue with a Buddhist monk in the Question of Milinda, a piece of early Buddhist literature, and his legend has spread all over Buddhist Asia.

The Greeks minted portrait coins of superb artistry which set a pattern emulated by succeeding king of India. One of the last benefices of their presence in the northwest was the development of the Gandhara school of sculpture, with its image

of the Buddha rather startlingly given a Greek profile, his hair and drapery sculpted in the Greek manner. Buddhism found a foothold in Central Asia and thence spread to China-Chinese writing and other arts, together with Buddhism, made their way into Japan, because of absence of written language of Japan, until fifth century AD, there was no Japanese script.

The age of invasion saw the gradual emergence of two great religious movements. The Mahayana (Great Vehicle) form of Buddhism, with its worship of the Buddha of the past and its emphasis on the ability of laymen to achieve the highest goal, had a wider appeal than the more austere and monkish religion of the old schools, called Hinayana (Little Vehicle).

In the course of time Mahayana, Buddhism prevailed in Tibet, Afghanistan, China, Japan and several of the countries of south east Asia. The Hinayana remained strongest in Ceylon and Burma.

In AD 320 Chandra Gupta I under his son Samundra Gupta most of northern India was included within the Gupta domains. Although adherents of the Hindu sects, the Gupta emperors patronised Buddhism in addition, and the Buddhist university at Nalanda attracted monks from Sri Lanka and China.

It was from south India, probably the parts of the Pallava kingdom of Kanchi, that Sanskrit, the art of writing, Hinduism and Buddhism first reached the courts of south east Asia.

During the barbarian invasions of the third to the sixth centuries the religion expanded rapidly, largely because the nomads who set up the numerous kingdoms in north China were more inclined to support beliefs which were already familiar to them.

In time, Indian missionaries such as the monks Dharmaraksha and Kumarajiva travelled to China to explain the faith and to translate the scriptures. In return Chinese pilgrims, the most notable of whom was Fa-hsien, made their way along the perilous Old Silk road to study Buddhism at its source.

Buddhism offered the calm monastic life as an escape from uncertainty and the promise of salvation after death. By the sixth century, when the Sui reunited the country, Buddhism spread among all classes of the people.

Growing financial and economic difficulties led to wide spread unrest to an increasing extent the hard-pressed government began to convert the fabulous wealth of the Buddhist monasteries, which by this time had developed the original simple teaching into a number of complex philosophical sects. Between 841 and 845 violent persecutions occurred and thousands of monasteries were dispossessed.

The Sung genius expressed itself in painting with the decline of Buddhism, artists turned from religious themes and began to experiment in impressionistic landscape and nature paintings. This led to the development of wood-block painting, which was used extensively during the Buddhist centuries for the production of religious texts. A Buddhist sutra was printed in this way in 868. It occurred at a time when Buddhism was beginning to lose its hold and when there was a revival of interest in Confucianism and in early Chinese philosophical and political ideals.

Buddha temples were reduced. There was also considerable internal migration. Between the eighth and the twelfth centuries, the impact of Buddhism in particular transformed Japan. Initially, there had been some fear of offending the old gods and the religion was resisted. A violent struggle over this issue had taken place between two clans, the Soga and the Mononobe. After Soga's victory in 587 a Buddhist temple, the Asuka Monastery was erected at a Yamato court. The influence of Buddhism then spread rapidly and the period is sometimes called the Asuka age.

At the end of the century Prince Shotoku, who was renowned for his piety gave a further impulse to the spread of the religion. He wrote commentaries on the Lotus Sutra, built impressive temples and made it the official Creed. As a result, in Japan as elsewhere the seventh and eighth centuries were the golden age of Buddhist activity.

An extensive revival of Buddhism occurred during the early Kamakura period. This was partly a result of the disturbed political situation of the country. A general feeling of insecurity encouraged speculation on the transience of life. It also drew its support from the simple faith and religious fervour of the Samurai warriors. To an

increasing extent the faith was practised and taught by the common people.

A part of a Buddhism sutra was found inside one of the two giant Buddha's at Bamiyan. The fragment of the scripture was believed to be the original Sanskrit document, written with the letters often used in the sixth and seventh century AD. The researchers believed it was placed inside the eastern side of what used to be the world's tallest standing Buddha statues, which were destroyed by Taliban in 2001.

Although various scripts have been found inside Buddha statues in Japan, this was the first time a sutra was found inside an Afghan Buddha statue. The script was written in "Gilgity/kharoshtee type characters", which were used in a region that spread over what is known as northern India, Pakistan and Afghanistan. The document was the beginning section of a sutra that spelled out the basic belief of Buddhism and said all things were mortal.

It was written on pieces of birch bark and wrapped in a piece of cloth with mud balls, which could have been symbols of Buddha bones.

S. P. Singh

I. Short History of Bamiyan

P1. I, 1&2: One of the most important archaeological sites in Afghanistan, Bamiyan is situated about 245 km. From Kabul on the north-west between the Hindu Kush and Koh-i-baba ranges at an altitude of 2856 m. Being on the ancient trade-route that connected Central Asia with India, it naturally lent itself to be an ideal place for the Buddhists to carve out images and shrines as is the case with the Indian rock-cut monuments. With the tall images of the Buddha carved on the cliff and thousand of rock-cut shrines in the hills around which were duly embellished with carvings and painting, one can very well imagine the importance the site had and the popularity it enjoyed in its hey-days.

P1.II, 3&4: Although nothing definite is known about the history of the site, it would not be wrong to say that the activities towards converting the Valley into a vast group of monastic establishments were initiated by the Kushans who were largely responsible for the spread and development of Buddhism in these lands. The two large images of the Buddha; one 53 m. (Big Buddha) and the other 35 m. (Small Buddha) high were probably carved out in the 3rd-4th cent. AD Of the two the latter was carved earlier. From the early centuries of the Christian era the activities at the site lasted for well nigh seven hundred years during which period different art traditions brought by the various stocks of people left their lasting impression on Bamiyan.

Thus, as in some other Central Asian sites, though essentially Buddhist, being nearer its home, the art became hybrid with an admixture of Hellenistic, Scythian and Sassanian traits in different measures.

The sites was under the Kushans and then under the Sassanians for sometime. Hsuan-Tsang visiting Bamiyan in the late twenties of the 7th cent. AD found the land under a Turkish king and the inmates of the monastic establishments belonging to the Mahasanghika school. He

saw the Big Buddha to be 'of a brilliant golden colour and resplendent with ornamentation of precious substances'. Perhaps because of a better treatment and finish of the surface he mistook the Small Buddha to be of bronze (t'u-shine)' the piece of which had been cast separately and then welded together into one figure. The Korean monk Hue-Chao visiting in AD 727 described the country bring under an Iranian King.

The history of destruction of the shrines of Bamiyan by human vandalism started with the sack of the valley by the Arab invader Yaqub-i-Lais in AD 870 as mentioned in the Tarikh-i-Sistan, according to which an idol from a temple at Kabul and trophies from Bamiyan were sent to the Caliph at Baghdad. Next came the woeful massacre of Changhiz Khan in AD1221. Aurangzeb it appears, in AD 1646 passing that way ordered a few shots to be fired at the Big Buddha and nearly broke its legs. Nadir Shah is also credited with a few cannon shots fired at the images. The white patches repaired in plaster of Paris, in the paintings, reportely indicate the spots of gun shots of Bacheh Saqqo, the usurper and are obviously the latest instance of vandalism.

II. Previous work on the monuments at Bamiyan

The monuments at Bamiyan have been surveyed in great detail by several workers. A Godard carried out an exhaustive survey of the monuments in the Bamiyan valley and Madam Y Godard prepared a large number of sketches of the mural paintings inside some niches. Further work was done by G. Hackin who carried out an elementary conservation of some mural paintings with a view to averting their flaking of by using lime-gypsum mortar. Andrea Bruno also surveyed the monuments with the object of preparing a complete inventor of the historical relics and documenting their state of preservation and formulating proposals for their preservation and restoration.

Apart from the work described above, special mention should be made of a report of P. Lezine, UNESCO Consultant. He visited the monuments in the Bamiyan valley also during 1962 and 1963 and made recommendations for the restoration of the buttress well near the Small Buddha in his report published by UNESCO in 1964. His recommendations were not acceptable to us and based on our experience in preserving the rock-out monuments in India an alternate scheme has been recommended (pages 17 & 18) The only major work of structural conservation done so far is represented by the enormous brick buttres put up to the right of the Small Buddha, although some minor works of protection and preservation comprising construction of a few drains for draining off snow-water seem to have been carried out.

The above summary of the work done on the preservation and conservation of the monuments in the Bamiyan valley would show that apart from preparation of several reports of exploration and survey, the erection of the buttress wall, the filleting of some mural paintings and the construction of a few drainage channels, no serious effort has been made for proper conservation and preservation of the magnificent Buddha images and the surrounding grattoes and the extensive mural paintings inside some of the niches and sanctuaries.

III. Genesis of the present deputation

At the instance of the Director General of Archeology, Prof. Humayun Kabir, than Minister for Scientific Research and Cultural Affairs during his visit to Afghanistan in September, 1963, in connexion with the signing of Cultural Agreement between India and that country made an offer to send a team of Indian archaeologists to Bamiyan to help in the preservation of Buddhist monuments which were disintegrating. The proposal was welcomed by the Afghan Government and the Director General of Archaeology was deputed by our Government to Afghanistan in July-August 1964 for a preliminary survey of the problems in the fields of excavation and preservation at Bamiyan. In his report the Director General of Archaeology recommended broadly the measures required to be taken for the preservation works and suggested that the Archaeological Engineer and the Archaeological Chemist be deputed to Afghanistan to collect the necessary data and prepare estimates of cost of the works. Accordingly the Ministry of Education in its No. F.11/5/64-C.5 dated the 12th April, 1965 sanctioned our deputation and we left Delhi for Afghanistan on the 15th May, 1965.

IV. Itinerary of the tour

- 15.5.65 Dep. Delhi (Palam)
Arr. Kabul
Called on the Ambassador
- 16.5.65 Visit to Embassy for discussion of programme
Visit to Kabul Museum.
- 17.5.65 Visit to Kabul Museum for discussion of programme and for collection
of information about the works of conservation done in Afghanistan
- 18.5.65 Discussion with Dr. Motamedi, Director General of Kabul Museum.
Visit to Babur's mosque and tomb.
- 19.5.65 Dep. Kabul
Arr. Bamiyan
- 20.5.65 Halt at Bamiyan. Study of Problems of preservation and conservation
to of monuments and paintings at Bamiyan, collection of data and
25.5.65 measurements. Visit to caves and temples at Kakrak and Dera-i
Fauladi. Met the Governor of Bamiyan and Director of Education,
Bamiyan for discussion of proposals for works on Bamiyan
monuments.
- 25.5.65 Dep. Bamiyan
Arr. Pul-e-Khumri
- 26.5.65 Dep. Pul-e-Khumri
Arr. Kabul.
- 27.5.65 Halt at Kabul - Discussion with the Ambassador, Interview with
to Minister of Education, Afghanistan Govt., Director of Museum, Kabul
4.6.65 Museum.
Visit to Geological Survey of Afghanistan.
Visit to the office of DAFA.
Visit to Mosae-Logar.
Visit to Department of Climatology
Visit to monuments at Ghazni.
- 5.6.65 Dep. Kabul
Arr. Delhi (Palam).

V. The Broad Problems of Preservation

I. Structural

- P1.III,5&6:** Although in Afghanistan there is not much rainfall, the monuments suffer mostly from snowfall. The rock in which the
- P1.IV, 7:** Buddhist shrines are carved is Tertiary conglomerate being a mixture of heterogenous materials like gritty gravel of various sizes and clay
- P1.IV, 8:** with layers of sandstone blocks deposited alternately. The conglomerate not having the compactness of rock had undergone extensive weathering caused at an altitude of 2855 m. gets heavy snowfall, the maximum being 30 cm. recorded recently. Snow deposited in the crevices and fissures naturally widens them leading to dislodgement of chunks of rock. The widening of the major crack and
- P1. V, 9:** development of the fractures in the wall near the Small Buddha may be attributed to this process which is repeated every year. Again, when the accumulation of snow at the top starts melting, water runs on the facade of the rock causing deep scars and sometimes finds its way into the shrines. Thus, the measures to be taken for the preservation of these shrines must necessarily start with the regulation of the course of water and filling in the cracks and fissures so that no water can flow on the facade or seep in the cracks to cause further decay.

- P1. V, 10:** But, there are other typical problem. For example, the Big Buddha which reportedly had received cannon shots has developed several cracks and portions of its limbs are hanging which need supporting. In the case of the Small Buddha, replacing the incongruous brick-wall with one of concrete is of considerable importance as the question of supporting the severed portion at the top has also to be dealt with simultaneously.

II Chemical

Although physical weathering is very marked, the chemical weathering of the rock is quite pronounced. Where the conglomerate has undergone marked weathering, the cementing material of the rock has been eliminated and the rock has become porous, spongy and friable. There is marked evidence of flow of muddy and silty water

from the top to the lower portion on the facade of the niches and the surrounding rock. The surface has thus been eroded and the rock has been abraded a great deal.

The statues and the surrounding areas of the Wall of the Buddha are completely free from vegetation and hardly any algae, plants and trees are noticeable on the rock surface. There is hardly any evidence for the presence of soluble salts. But tarry and sooty deposits have rendered the rock surface quite dark in places. The darkened portion of the rock would therefore have to be subjected to elaborate chemical treatment. For the consolidation of the rock, suitable consolidants would have to be used and the entire rock surface would have to be carefully protected from the deleterious effects of physical and chemical disintegration.

The painted surface in the main niches and caves in the Wall of the Buddhas is in the grip of rapid decay. The pigment has become loose and has flaked away from over large areas. The plaster itself has become very weak and has come off the rock surface at various places. In addition the binding medium used in the colours has lost its cementing property. Deleterious accretions of sooty and tarry deposits, dust and dirt, cob-webs, insect nests etc. Have played havoc with the paintings which are in a highly deteriorated condition.

The preservation of paintings would call for elaborate measures of physical and chemical cleaning, consolidation of plaster, the paint layer and the general strengthening of the painted surface and its consolidation and brightening. In addition large scale repairs would have to be carried out for securing the loose plaster to be rock surfaces.

VI. Summary of recommendations

To preserve the monuments which are already in an advanced stage of decay, the following structural repairs are recommended:

1. Cutting of surface drains in the rock to divert water flowing on the facade;
2. Filling in the cracks and fissures in the rock and pinning the loose portions;
3. Repairing the damaged portions of the caves around the images;
4. Repairing the damaged portions of the images including securing the loose portions of the legs;
5. Reproduction of the missing portions of folds in limited areas and securing the stucco covering;
6. Retention of the severed portions of the rock near the Small Buddha in position and filling in the centre;
7. Replacement of the brick wall with one of R.C.C.;
8. Restoration and reconditioning the steps in the Western side of the Small Buddha;
9. Replacement of the tin shed with one R.C.C. at the entrance to the upper gallery of the Big Buddha.

Similarly for chemical preservation of the monuments and paintings the following measures are recommended:

1. The facades of the two niches and the surrounding surface should be chemically treated for freeing the rock from the accretions brought by wind, water and snow.
2. The darkened portion of the rock would have to be subjected to elaborate chemical treatment for the elimination of tarry and sooty deposits.
3. The entire rock surface would have to be carefully protected from the deleterious effects of physical and chemical disintegration and suitable consolidants would have to be used for rock consolidation.
4. The painted surface should be subjected to physical and chemical cleaning, and deleterious accretions of sooty and tarry deposits, dust and dirt, cobwebs, insect nests, insect wax and carcasses of insects should be removed by careful chemical and mechanical methods.
5. Wherever insects have caused damage or where depredation by insect pests noticeable, necessary insecticidal treatment should be carried out for their eradication.
6. The growth of mould fungus on the painted surface should be eradicated by employing suitable fungicides.
7. The loose friable painted plaster should be carefully fixed to the 'carrier' to prevent further loss of painted surface.
8. The paint layer in which the pigments have become loose due to the deterioration of the original adhesive should be carefully consolidated and fixed to prevent further flaking.
9. After cleaning, the painted surface should be impregnated with inert synthetic resing solutions emultions for imparting necessary strength to the paint layer and the plaster.
10. After cleaning, fixing and consolidating the painted surface, it should be chemically treated for brightening the colours with a view to bringing out clearly the details of designs.
11. Large scale repairs by way of filling and filleting should be carried out for securing the loose plaster to the rock surface.

VII. Report on structural preservation

As indicated in the Director General of Archaeology's report on the preservation of the monuments at Bamiyan, we are to concern ourselves about the two images i.e. the Big and Small Buddha with the caves in their immediate vicinity. Accordingly, the two images and the caves near them were examined. The observations on their present conditions and the recommendations for repairs are detailed below.

The Big Buddha

The Facade

P1. VI. 11

The rock on the facade has decayed most due to exposure; long scars have been formed due to flow of water from the top and pieces of stones have disappeared leaving the overlying masses hanging as will be seen in the photograph especially under the points 'D' and 'E'. The portion hanging under 'D' needs underpinning in cement concrete with pins inserted in the rock. The made-up surface should have an outward slope. Similarly, the cavity found under point 'E' should be filled up to support the pieces above which there are cracks around it. It will be necessary to fix this piece by inserting pins and grout the cracks to stop entry of water through them.

The long scars mentioned above will have to be filled in upto the level of the rock-surface with cement concrete. The tin-shed provided beyond the entrance, leading to the rock-out passage at the top, should be replaced with one of reinforced cement concrete with sufficient bearing on the walls to prevent any leakage. In the past water coming from the top used to find passage along the steps and reach the west well of the niches, through an opening, and did much damage to the paintings. The R.C.C. Roof slab should be given a covering of earth to work as insulation against the variable temperature and a steep slope for easy drainage away from the niche-front.

The outer face of east-wall at the bottom is damaged due to scouring of the soft material between the layers. Such cavities should be filled up with cement concrete and the surface given an outward slope.

A little higher up the portion mentioned in the preceding para there is an entrance leading to a cave with carvings in the interior. The rock in front of the entrance having been washed away a gangway of wooden logs had been provided. The cavity should be spanned by a R.C.C. slab. The depressions in the rock above the entrance should also be filled up with cement concrete with an outwards slope.

To stop further decay of the rock surface Dr. Lal suggests spraying of a colloidal suspension and that the prepared surface finally be covered with perspex solution. The work will be done by the Chemical Branch.

Drainage of water

P1, VI, 12

To divert the water from the top the Afghan Government have, in the recent past, constructed a drain in rubble masonry which runs along the periphery of the rock above the niches of the Buddha. A retaining wall has also been constructed to channel the water that come from the area further above the drain.

It was observed that the volume of water that is allowed to flow through the drain can easily be diverted on the eastern side thereby cutting down the quantity of water that flow on the top of the niche. For the proposed diversion of water the height of the existing retaining wall should be raised and the space behind it filled up by cutting the accumulation of earth nearby so that the filling produces a reverse slope. The drain then become superfluous, but yet it can be made useful in regulation the course of water by raising its outer wall by about two feet and diamantling the inner wall so that the water falling in that area is carried down to the centre of the land, instead of allowing it to overflow on the rock facade and drained in a straight course. These two steps should help considerably in minimizing the flow of water on the facade. Whatever quantity of water that would fall directly on the space between the masonry wall and the rock facade could still be diverted by providing shallow drains which can only be done after an examination of the spot with the help of a high scaffoldings.

The image

P1, VII, 13 The image, bigger than the other one and of a later date, is in worse condition. The ankles and feet have suffered most. The portion below the thigh of the left leg and that from the knee downwards of the right leg have disappeared leaving the upper portions overhanging. The result being that several cracks have developed in the region and the joints between the layers of conglomerate have widened. The horizontal crack below the waist spread across the body is of the latter type. After filling up the cracks and securing the cracked places with pins, supports will have to be provided from below in R.C.C. and the surface finished rough. The heels repaired in the recent past with kagol (mud plaster) should be dismantled and redone in cement concrete. The folds of the sanghati (garment) especially on the belly are disturbed and have been secured with the help of strings. These folds need partial restoration and resetting at their places with copper pins.

The caves around the image

There are altogether eight caves and three niches carved in the three walls at the bottom. Out of these caves those which have a lower floor need steps to be provided. The layer of the rock at the bottom being of comparatively soft conglomerate in most of the cases the lower portions of walls are in a damaged condition. These portions should be repaired in cement concrete simulating the rock.

The Forecourt.

Portions of the east wall show marks of abrasion due to blasting of sand carried by the northerly wind blowing most part of the year. The wind entrapped in the recess of the niche whirls up carrying with it particles of sand accumulated in the forecourt. It is not possible to erect a shield to hold the wind, but the accumulation of sand can be reduced by replacing the surface material with gravel.

The Small Buddha

The Facade

P1, IX, 17 Unlike the other case (i.e. in respect of the Big Buddha), the facade of the rock around the niche of the small Buddha is much undulated and permits flow of water on both the side walls. The cracks

on the east wall, also noticed in the interior as one climbs the steps to go up, perhaps developed along with that on the West wall, now receive water. To stop further widening of the cracks it is essential that the cracks are grouted and the pieces are pinned down to provide an anchorage with the rock.

After filling up the cavities and depressions on the facade including the deep scar on the left side, the edge of the niche should be made up in the manner that the ceiling projects by about 1½ ft. to 2 ft. from the present surface and the sides have a raised surface. When the western side of the niche at the top is thus made up water will be flowing on the brick buttress wall and it is possible that some amount of water may enter the three caves by its side. In that eventuality earthen bunds can be provided temporarily, in front of the caves, to prevent entry of water till the buttress wall is dealt with properly.

The bottom of the eastern wall shows cavities due to erosion by wind which should be filled up.

Since the buttress wall of tricks work is now supporting the crack piece of work which has completely detached itself from the parent body one have to be cautious in taking for dismantling it. The gap between the severed piece and the rock is about 1'-6" and extends to a length of about 40'-0" from the top passing through spiral rock-out stair case. At a lower point from a triangular opening it resolves into two cracks of about 2" width to be united at the bottom. To the left of this crack there is another one equal diamension while the crack to the right is still wider and originating from below the third opening near the right arm of the image it travels down to the bottom. These cracks are obviously the result of the jerk produced by the fall of work from the facade of the hill.

P1,IX, 18

P1, X, 19

To begin with these cracks will have to be filled up with cement mortar mixed coarse aggregate under pressure. In the case of the wider cracks at the top notches should be provided in the parent body and cramps of gun-metal embeded in the rock across the cracks so that if there is any movement, they may offer local resistance. Then for retaining the severed portion in position, belts of M.S. Rails should be provided at an inclination behind the buttress wall. The ends of the rails

will be embedded in the firm rock at the bank duly bent. The rails should then be covered with cement concrete and the surface made to match with the rock surface. It is only after the belt has been fixed properly the buttress wall is to be dismantled slowly from the top. All cracks and fissures appearing on the exposed surface of the rock, after removing the buttress wall, should be filled in with cement mortar.

To the west of the niche of the Buddha the verandah of the cave in the first floor which is separated along with the portion of the facade is also supported by the brick wall extending below it. The separated portion should be anchored to the back with the help of rock (tag) belts and the breach filled up with cement concrete. The operation of replacing the brick-wall with that of cement concrete should start from here. Thus after securing the top and bottom of the damaged portion the work of providing support in R.C.C. from the bottom, in places of the brick wall, can be taken up. The entire surface then should be treated properly to produce undulations of the rock in conformity with the adjoining surface.

Drainage

It appears that at the top on the rock above the niche of the Buddha there are two courses through which water is drained, the one to the left is obviously the principal one as is indicated by the deep and long scar due to actions of water. The other to the right, though not so prominent has nevertheless allowed water to travel to the painted surface of the ceiling of the niche. The rocks at the top are in two tiers. To drain out water from the first tier and divert its course a wall was constructed immediately above the scar to the left and the depression closed with wooden logs and earth. The filled up portion was found damaged. It will be advisable to have the surface concreted and a drain provided to discharge water at the western end. The drain will also receive water from the top which was otherwise flowing down along the facade to the right.

The image

But for the damaged bottom and of course the mutilated face, this image is in a better state of preservation. In the past the damaged feet were given each a masonry support and a wall was also erected behind the supports. These walls mostly in a collapsed state now present a very bad appearance. After cleaning the walls and the debris the damaged feet are to be repaired in cement concrete. The fractured portion of the right leg should be pinned with the rock behind.

- P1, XI, 21** Due to action of water settled on the image the plastered surface of the sanghati (garment), below the waist upto the knee of the right thigh and the zone below the neck with portion of the breast, were abraded and at places pits have formed. Such damages are to be repaired with clay and then the surface treated with water repellent solution. The triangular portion underside the broken right arm has developed a crack and is in danger of being disengaged. This portion should be secured by inserting copper rods from below. The broken edge of the plaster should then be filleted along with other portions requiring similar treatment.
- P1, XI, 22**
- P1, XII, 23** The damaged ears need repairs by way of reproducing the losses to support the overhanging portions.

The caves

There are altogether four caves excavated in the side and back walls of the niche at the bottom. The repairs needed to these caves will be mending the damages at the bottom of walls, door jambs and provision of steps in the case of the cave with a lower floor. The pillar to the left of the image needs strengthening by adding to the volume in mass concrete and finished rough.

Due to fall of rock the original steps, for the ascent to the top of the image, became unapproachable and fell into disuse. Now approach is provided through a different place on the eastern side and one has to cross several caves with openings in the floors provided for steps etc. These openings should be provided with R.C.C. Covers which can be easily removed when required. At places where the steps take a sharp turn within a narrow space, with nothing to hold for support, an upright of galvanized pipe with a horizontal bar fixed to it will be helpful. The wornout steps are to be reconditioned. While filling up the cracks in the wall on the western side the steps will have to be reconditioned. Steel clamps should be inserted in the steps at intervals to bind the severed parts.

At present there being no steps on the western side, after seeing the paintings at the top and the caves to west, one has to retrace the steps back to the eastern side incurring much inconvenience. Once the

P1, XI, 24

broken steps are repaired one can easily descend to the second opening in the brickwall on the west from where new steps are required to be provided to the bottom. Thence another set of steps, at present damaged and requiring repairs, leads one to the forecourt of the niche of the Buddha. The small cave though which one has to pass out is now partially filled up with debris and requires clearance for sufficient headway.

The Forecourt

As already mentioned above (page 15) the masonry walls and debris thereof should be cleared and the area levelled up with an outwards slope. The surface should then be spread with coarse gravel.

VIII. Report on the Chemical Preservation

The Big Buddha

The Big Buddha (53 metres) has been hewn out of a very heterogeneous and friable conglomerate rock of buff to pink colour. The surface of the colossus was originally covered with stucco for general decoration and for production of folds of the robe. Vestiges of colours on the stucco suggest that the entire colossus was originally decorated with paintings the stucco has, however, disappeared from the greater part of the statue. The surface of the statue seems to have been very carefully picked for forming small holes which, with wooden pegs driven into them, served to bind thick stucco to the rock surface.

The image

The statue is in a bad state of preservation and its stucco decoration has been damaged considerably. In fact, the Small Buddha is in a better state of preservation than the Big Buddha. Apart from extensive destruction of the stucco, the left leg from the knee to the foot shows extensive damage, and a considerable part of the original rock has fallen off from this portion of the statue. The greater part of the face has also been destroyed as in the case of the Small Buddha. There are numerous square and round holes at places where the arm and the leg were originally present. These square and round holes are quite different from the smaller round holes all over the surface, where stucco was used to cover the inequalities of the rock and to provide ground for painting the drapery.

The Caves

At the back of the feet of the statue are seen three caves, the facades of which are heavily coated with tarry and sooty deposits. Since the surface has become thick with smoke, tar and grease, it presents an ugly appearance and a marked contrast with the pleasing buffish pink colour of the rock all round. The darkened portion of the rock as seen from the front would therefore, have to be subjected to elaborate chemical treatment. This work would involve a lot of labour and time since the black accretions have become very hard and would call for very special methods of cleaning.

The work of chemical cleaning should be undertaken after measure of structural conservation and repairs have been carried out and the works of filling,

grouting, and modelling are over. To save time, while structural conservation is going on, chemical work may be carried out on the paintings in those caves where no elaborate measures of structural conservation are necessary. Extensive repairs would have to be carried out for the consolidation of the weak parts of the rock and for the restoration of the original stucco and stone carvings. Although large-scale restriction is not permissible, the restoration on a restricted scale would have to be undertaken at places not only for supplying the essential features to be image but for imparting necessary strength and durability to the statue.

The Paintings

**P1s, XIII
& XIV
25 To 28** In the niche of the Big Buddha, remnants of ancient paintings are noticeable on the under surface of the arched roof and on the side walls at the level of the head and on the shoulders of the statue. These paintings are very fragmentary and have done on a buffish coloured plaster.

Higher up, there are two large grottos or sanctuaries, the smaller one being at a lower level than the bigger one. Both these sanctuaries are fairly large with mouldings in stone at a height of about 1.83 metres from the floor. The mouldings have been covered with stucco was also painted. Ancient plaster is seen extensively on the walls of these two caves, but it has become black with soot and tarry accretions. No chemical treatment or cleaning is proposed to be undertaken in these two caves. However some samples of painted stucco have been collected from the larger of the two caves for determination of the composition of the plaster and the identification of pigments. The results of laboratory investigations on these specimens would form the subject of a separate report.

Apart from the paintings on the vaulted ceiling several met above the head and the shoulders of the Big Buddha, murals paintings may also have existed in some of the subsidiary caves belonging to this cave complex but no such paintings are now visible.

The total painted area in the cave of the Big Buddha has been estimated to be about 70 square metres.

Subsidiary Caves

On the ground level there is one small cave to the left of the Big Buddha with two openings. As one goes clockwise around the caves on the ground level, one comes across a cave which is unfinished and is free from any moulding or painting. This cave is given serial No. 1. No chemical work is needed in this cave and therefore no work is contemplated.

All other caves on the ground level have been given appropriate serial numbers in accordance with the above description.

Apart from the caves, there are three small niches in the western wall. Taken clock-wise these niches are numbered 1, 2 & 3.

Niche 1

This is a small niche which requires general cleaning. The smoke and soot would have to be removed. It is free from any moulding, decoration, plaster or painting.

Niche -2

This niche is situated in the western wall, between cave 1 and cave 2. There is no decoration in stone but remnants of old plaster are seen in patches. Due to smoky and tarry accretions, the rock surface has become black. It should be chemically cleaned and preserved. Although the ancient plaster has no special features and has become black with smoke, it is suggested that the broken edges of the plaster should be consolidated by filleting.

Cave -2

This cave is situated in the western wall of the main niche of the Big Buddha and faces east. It is an octagonal cave with each side about 2.7 metres. Upto a height of about 2 metres from the floor, the walls are free from decoration, but heavy mouldings are seen at a height of 2 metres from the ground.

The entire rock surface is black with smoke.

Remnants of ancient plaster are seen here and there on the moulded portion of the wall, traces of plaster are also seen on the domed ceiling. Since the plaster has no special features of archaeological or artistic interest, it is not considered necessary to consolidate the patches of plaster by filleting but only general cleaning is necessary.

Niche-3

This niche is very similar to niche 2, and calls for the same chemical treatment and preservation. Remnants of ancient plaster are seen inside this niche. Filleting of the broken edges of the ancient plaster may be carried out.

Cave-3

This cave in the western wall faces east or slightly south-east. It is rectangular on plan and measures 7.93 x 7.01 metres. A thick layer of ancient plaster is seen on the domed ceiling; the central portion of the plaster is, however, missing. The ancient plaster is also missing from one corner of the flat part of the ceiling. The entire surface of the walls and of the ceiling is black with heavy accretions of soot and tarry matter. A close examination of the thick layer of ancient plaster shows that it has become loose and requires consolidation and careful fixing to the rock surface. No decoration is seen on the plaster. It would be necessary to free the surface from black layers of tarry and smoky accretion by systematic chemical treatment.

The filleting of the thick layer of plaster would require a good deal of time and materials and removal of smoke would also take a lot of time and effort. It is suggested that the ancient plaster should be suitably secured to the rock surface by filling and filleting. No painting or decoration is seen on the plaster.

Cave- 4

This cave is situated in the north wall facing south, right behind the statue. It is octagonal on plan, each side being 3.20 metres long. Its circular wall and the domed ceiling are profously decorated with mouldings and stucco. The rock surface was originally plastered over decorated with painted stucco, but no trace of paintings is now left, although the plaster and stucco are still surviving over some portions of the rock surface.

The entire surface should be subjected to general chemical treatment and preservation so that the colour of the rock resembles that of the unstained surface. Extensive repairs would have to be carried to secure the loose plaster to the rock surface. Filling and filleting would, therefore, be necessary for the consolidation of the ancient plaster. No traces of paintings are discernible in this cave.

Cave-5

This cave is situated in the northern wall, and faces south end is located behind and a little to the left of the Big Buddha. It is octagonal on plan; each side of the octagon is 3.66 metres.

This cave like cave 4 is characterised by heavy mouldings in stone and stucco decoration. The stucco and the mouldings have become black with smoke. The plaster has become loose at many points and is in danger of falling off. It would, therefore, be necessary to carry out extensive repairs to the stucco and plaster after chemical cleaning. Heavy accretions of soot a smoke have made the entire surface very dark; the removal of these accretions would be very necessary for bringing out the original colour of the rock. This should entail a lot of labour and effort.

Niche-4

This niche on the eastern wall is about 3.66 metres high and 0.76 metres deep. The rock surface has become black with smoke. Remnants of ancient plaster are seen in this niche. The broken edges of the plaster may be secured to the ground by filleting.

Ceiling of circumambulatory passage

The ceiling of the circumambulatory passage behind the Big Buddha is black with smoke. Extensive remains of ancient plaster are seen on the ceiling. The ceiling would have to be subjected to general cleaning and consolidation; the plaster would require extensive repairs, filling and filleting.

Cave-6

This cave, situated in the eastern wall, faces west and is octagonal on plan, each side being about 1.83 metres. The domed ceiling of this cave carries extensive mouldings. The entire surface of the walls and of the ceiling has become black. Remnants of ancient plaster are also, but no traces of paintings are discernable.

Cave-7

This cave is situated in the eastern wall and faces west. It is rectangular on plan (6.10 x 5.64 metres) and carried a dome and ceiling. The space between the base of the dome and the moulding is plain and remnants of plaster and decorated stucco are seen at places. The entire surface of the rock, plaster and stucco has become black with smoke.

Cave-8

This cave is situated in the eastern wall and faces west. It is rectangular on plan (6.35 x 6.05 metres) and there are deep niches in its eastern and southern walls. The northern wall of this cave also had a similar niche originally, but this niche seems to have been broken open for interconnection with cave 7. Its ceiling is in the form of a

frustum of pyramid.

There are extensive remains of ancient plaster on the walls and the ceiling. The surface of the rock as well as the plaster and stucco is black with smoke. The plaster has become loose and is crumbling at places. Traces of colours are seen on the plaster here and there. The entire area inside the cave requires general chemical cleaning. Consolidation of the plaster would also be necessary. Chemical cleaning of the darkened plaster may bring to light some painted designs or original colours, but at present it cannot be said whether ancient paintings are still surviving under the thick accretions of tarry and smoky matter.

It may be remarked that it is not possible to gain access to the top of the Big Buddha through the caves on the ground floor. The first cave at ground level (cave 1) on the Western Wall has a damaged stair case leading to the upper caves to the right of the Big Buddha. After going through these caves one comes across a deep chasm in the rock and it is not possible to go across this chasm to the other caves higher up. There is thus no passage to the top of the Big Buddha from any of the caves on the ground floor to its left. The top can, however, be approached only by a path leading from the right of the Big Buddha to the hillock. From this hillock some caves are accessible and these lead one to the top of the Big Buddha.

The Small Buddha

What has been said of the Big Buddha is true, *mutatis mutandis*, of the small, 35 metres, Buddha statue, but the stucco is much more extensively preserved on this statue. The colour of the chin may have been yellow, as would be apparent from extensive remains of yellow colour on the lower right jaw of the statue the robe was probably blue as opposed to the red robe of the Big Buddha Statue.

The image

The Small Buddha is in a much better state of preservation than the Big Buddha. Both the fore arms are broken and missing. The flowing robe of the Buddha done in stucco is nearly complete except for the lower portion where the stucco has been destroyed and numerous holes have made their appearance. These holes were made in the rock so as to provide a key to the thick stucco which was decorated with colours.

Of the colours used on this statue, only red, yellow and blue are seen in traces here and there. It is clear that the stucco decoration of the Small Buddha was given

colour washes of yellow, red and blue. The general colour of the flowing robe of the Buddha was reddish to pink.

The stucco requires extensive repairs and some restoration. Pits, hollows, cavities and cracks would have to be consolidated. The surface would have to be freed from grime, mud and smoke which have caused much damage near the feet of the statue. The existing accretions of a retaining wall and a crudely made plaster could have to be cleared to expose the feet, completely.

Subsidiary caves

As one goes clock-wise around the Small Buddha, on the ground level, one sees six caves of different sizes. These caves are now numbered 1,2,3,4,5,&6, the direction being clock-wise. For going to the top of the Small Buddha, one passes across cave 1, through which a passage leads to caves up to the right of the Small Buddha. This passage is broken in one cave, so that without a ladder it is not possible to reach the top of the Small Buddha through cave 1. The other way is to climb up the hillock to the left of the Small Buddha and then to go through several caves until one can reach the top. In this manner the top of the Small Buddha is approached from the left. After going through all these caves containing mouldings carvings and paintings, one can see a series of caves lower down to the right of the Small Buddha. These are approached from the left through the gallery immediately behind the head of the Small Buddha by going down a little to the right of the statue. It is in two or three caves here that some of the finest paintings can still be seen. After seeing all these caves, one must retrace one's steps and return to the ground level by the same way since as already stated, the downward passage to the right of the Small Buddha cannot be used without a ladder. Therefore, for numbering the caves at higher levels, we have to use the numbers anti clock wise, starting from the first cave to the left of the Small Buddha as cave 1.

The various caves on the ground level and at higher level can now be numbered and described in the manner stated above.

Cave-1

The cave is situated in the western wall and faces east. Its inner surface is free from any decoration or painting, but the rock has become black with smoke. General cleaning of the surface should be carried out to bring out the original colour of the conglomerate rock.

Cave-2

This cave is also situated in the west and faces east. It is almost circular on plan with a diameter of about 3.66 metres and a height of about 2.74 metres. The entire cave has been given a coat of mud-strew (kogil) plaster in recent years. The surface is buffish grey and has been extensively scribble over by visitors. The ceiling is jet black on account of heavy accretions of sooty and tarry matter in fact it is wood tar from smokey fire that has heavily settled on the ceiling. It does not show any decoration, but is perfectly plain and flat but remnants of ancient plaster are seen here and there. The removal of smoke and tar from the ceiling is not any easy matter and perhaps it may be allowed to remain there indicating the old character of the cave, particularly when its circular wall has been recently plastered over.

If necessary, the modern plaster made of mud and straw (kogil) may be scraped away and the rock surface of the wall so exposed given a general chemical treatment along with the ceiling.

Behind the Small Buddha, there are small caves or sancturies containing mouldings in thick plaster. The plaster was once decorated with paintings, but now it is heavily coated with tarry and smoky accretions and it is impossible to make out the details of paintings.

Cave-3

This cave is situated a little to the right and behind the Small Buddha and faces south. On plan, the Cave is almost square (3.5 x 3.61 metres) and its vertical walls are about 3.05 metres high. The remnants of ancient plaster on the moulded portion about 3.05 metres from the floor level are highly fragmentary and have become black with smoke.

The vertical walls have been recently plastered over with mud-straw plaster. The new plaster may be scraped away and the surface of the four walls so exposed given a general chemical cleaning along with the upper part and the domed ceiling.

It would be necessary to subject the plaster as well as the darkened rock surface to general chemical cleaning. The loose plaster would also have to be secured to the rock surface by suitable filling and filleting.

Its straight walls are plain to a height of 3.05 metres and at this height there is a moulding in stones all around. It shows a slight curvature and the upper portion becomes gradually spherical until the domed ceiling represents a perfect hemisphere.

The upper curved portion of the four walls still carries remnants of old painted stucco; the spherical ceiling of the grotto also shows remains of ancient painted plaster. The entire surface has, however, become black with smoke. The curved surface of the four walls lying between 1.52 metres level and 2.44 metres level from the floor shows circular mouldings on the four corners. The mouldings represent a series of concentric semi-circles. The remnants of ancient plaster on the moulded portion about 3.05 metres from the floor level are highly fragmentary and have become black with smoke. In fact the paintings have been completely destroyed by a thick deposit of sooty and tarry accretions, but a few lines in black are still discernible here and there. The rock surface was first coated with a thick layer (1.0 -- 1.5 cm) of mud-straw plaster which was later finished off with a thin layer of fine textured mud plaster without strew. The smooth compact surface of the fine plaster served as the ground for the painting. Samples of smoke covered plaster have been collected.

Cave -4

Moving further in clock-wise direction, we come to cave 4 which also faces south and is exactly behind the Small Buddha. It is octagonal on plan. The lower portion of the almost circular walls is heavily plastered over with mud-straw plaster. This modern plaster may be scraped away for exposing the original darkened surface of the rock. The cave may be taken to be a roughly circular on plan, with a diameter of about 4.27 metres and vertical height of the circular wall of about 1.83 metres and the total height of the cave 3.66 metres.

This circular cave which is seen behind the Small Buddha across the feet has an elaborately moulded ceiling and the upper portion of the circular wall from a height of 1.52 metres to the ceiling (height 3.66 metres) also shows extensive mouldings. The rock mouldings were originally decorated with stucco for producing finer details. This stucco was also originally painted but now the entire stucco is heavily coated with sooty and tarry matter. The elaborately moulded ceiling is also decorated with stucco. The lower most moulding of the ceiling is octagonal on plan and each side of the octagon carries a chaitya-like moulding. The pattern on plain is as follows:-

The moulding along the circular wall at a height of about 1.52 metres from the existing floor is also octagonal and the moulding resembling a chaitya is thus about 1 metre high and lies between the two octagonal mouldings.

Heavy accretions of smoke and tar have rendered the rock surface, the mouldings and the stucco totally black. Chemical treatment would take a long time,

but is necessary to render the rock surface clean and free from smoke.

Cave-5

This cave is octagonal on plan and faces south and is located a little to the left behind the Small Buddha. This grotto has a flat ceiling with heavy mouldings. On plan the ceiling is circular with an elaborate pattern. This circular cave does not show any moulding in stone or decoration in stucco on its circular wall, but only the ceiling is nicely decorated. Its facade which is seen from a distance behind the feet of the Small Buddha is heavily coated with tarry and greasy deposit and has consequently become deep black. The sides of the cave have been recently plastered over with mud-straw plaster. The entire rock surface is black with smoke and tar. The new plaster should be scraped away and then the entire surface of the walls and the ceiling should be subjected to general chemical treatment and preservation.

Since the facade of the three caves behind the Small Buddha presents a jarring contrast with the surrounding conglomerate rock of pleasing buff to pink colour, it would be necessary to eliminate the greasy, sooty and tarry accretion for bringing out the natural colour of the rock.

The ceiling of the circumambulatory passage behind the Small Buddha black with smoke and tar and would have to be subjected to general cleaning.

Cave-6

This cave, square on plan (3.28 x 5.28 metres) is excavated in the eastern wall and faces west. Upto a height of 8.14 metres, the vertical walls are heavily plastered over with mud-straw plaster. This new plaster may be scrapped off. The unplastered upper part of the walls and the domed ceiling are all black with smoke and tar. These accretions have become very hard and it would be extremely difficult to remove them completely.

Caves higher up above ground floor

Following the foot-path to the hillock to the left of the Small Buddha and going up a little, one comes across a series of steps leading to a stair case. Going up the stair case one comes to a cave on the right hand side. This cave faces south and immediately in front of it, the stair case continues upwards leading to caves at higher levels.

Cave-1

This cave faces south and does not contain any moulding. Only remnants of ancient plaster are seen. The walls and the ceiling have become black with smoke. The cave is rectangular on plan, with length 3.35 metres, width 2.82 metres and height from the floor to the arched ceiling is 2.22 metres.

Cave-2

On going higher up we come to another cave on the right hand side. This cave faces south, and has a small opening above the entrance which is rectangular in shape, on plan, the cave is rectangular (4.78 x 5.27 metres). Its walls and the ceiling are heavily coated with smoke and tar. In fact the coating tar (wood-tar from smoky fires) - is so uniformly and thickly deposited on the walls that one could mistake it to be deliberate application. However, the accretion is purely due to the lighting of fires inside the cave using "bed" and "chanar" bush wood which is presently found in the region. It is probably that some wild grasses and brush wood from wild trees may have used for making fires. The accretion of smoke and tar is so thick and hard that a layer of almost 3mm to 4mm thickness has formed on the rock surface and on the plaster. Paintings are seen here and there, particularly on the four mouldings on the four corners above a height of about 2.44 metres from the ground. The predominant colours are white and blue, but red, green and yellow colours are also seen.

The paintings should be subjected to elaborate chemical treatment and preservation.

Cave-3

As one goes up, one comes to this cave through which access can be had to other caves. In fact this cave serves as a passage to other caves to the left of the Small Buddha. It has two openings now, one a regular entrance, rectangular in shape, and the other a semicircular opening produced as a result of breaking up of the rock. This cave is very similar in design to cave 2 but is much smaller, the length and breadth being 3.35 metres and 3.05 metres respectively. The diameter of the domed ceiling is 2.52 metres and the height is about 3.66 metres. The extensive remains of ancient plaster are present on the domed ceiling and on the upper parts of the walls and traces of old paintings are also seen. The greasy smoky and tarry deposit should be removed by careful chemical cleaning and the plaster should be consolidated and preserved. Repairs to broken edges of the plaster would also be necessary.

Cave- 4

This cave also on the right and faces south. In shoe, design and size, this cave is

similar to cave 2, already described. There is an arched opening above the entrance which is rectangular in shape. The entire surface of the walls and the domed ceiling is heavily coated with smoky and tarry matter. Remnants of ancient plaster are seen but only traces of old paintings can now be discernible. The entire surface should be freed from tarry and smoky deposits, cleaned and consolidated. Repairs to ancient plaster would also be necessary.

Cave-5

As one continues to proceed westward one comes across a cave to the right. It is oblong in shape and has a slightly arched ceiling. It is 3.35 metres long, 1.98 metres wide and 1.98 metres high. The walls and the ceiling are black with smoke. There is no moulding and no decoration, but remnants of ancient plaster are present. No traces of paintings are now noticeable in this cave. At the back of this cave there is a wide opening leading to the next cave.

Cave- 6

Proceeding westward, one comes across a wide gap in the passage. This gap leads to some steps going downwards. It is necessary to fill up this gap to provide a continuous passage west-ward. At present one goes through cave 5 to cave 6 which is situated to the right of the passage. This cave 6 has a rectangular entrance which is about 2.44 metres high and 1.22 metres wide. The cave is rectangular on plan (4.12 x 3.28 metres) with a deeply moulded ceiling having a very interesting design. It is about 4.57 metres high. The walls and the ceiling are heavily covered with accretions of smoke and wood-tar. The remnants of the plaster are also coated with smoky and tarry matter. Patches of original colours are also seen here and there but hardly any painted designs are discernible.

The walls and the ceiling would have to be freed from smoke and wood-tar and the old plaster would have to be repaired and consolidated.

Cave- 6A

To the left of the passage opposite cave 6 is another cave which faces south. This cave 6A has no decoration and no remnants of old plaster. No chemical treatment is required in this cave.

Cave-7

On following the same passage one comes into a cave with an opening facing south. It is oblong in shape and shows remnants of old plaster. The plaster and the rock

surface have become black on account of smoky and tarry accretions.

Tunnel-like passage in front of caves 5 - 7

The walls and the ceiling of this passage are black with smoke. General cleaning is necessary. Beyond cave 7 one has to go up a series of steps in the same direction. This westward passage leads to a winding stair case which simultaneously takes one to a considerable height when a verandah facing south is reached. At the back of this verandah is a cave with a rectangular entrance also facing south. There is a cave at the far end of this verandah with a rectangular entrance facing west. These caves are to the right of the stair case, and are numbered 8 & 9.

Verandah in front of cave-8

It is free from any decorated or painted stucco, but there is a cross-like pattern cut into the western wall of the verandah. There are two circular pits at the two ends of the verandah in front of cave 8. There are many marks in chalk and pencil all over the surface.

Cave-8

It is oblong on plan, the length, breadth and height being 5.18, 3.35 and 2.14 metres respectively. There is no decoration and no plaster. The walls are quite plain and no stucco is noticeable, but some portions have been plastered recently. This plaster may be removed and the cave given a general cleaning.

Cave-9

This cave at the far end of the above mentioned verandah has got a series of niches, 11 in number, on the floor level and four niches at the four corners about 2.44 metres from the floor level. It has a domed ceiling with two projecting moulded cornices. One just above the series of lower niches, and the other just near the top of the upper niches. Remnants of ancient plaster are seen here and there. Mouldings stucco are also present, but no paintings are noticeable. The walls are scribbled over with chalk and charcoal marks. General cleaning of the surface may be undertaken.

Cave-10

While going up the stair-case, one comes to a small cave near the left shoulder of the Small Buddha. The cave which has two openings, overlooking the Small

Buddha, is trapezoidal on plan. There are extensive paintings on the ceiling of the cave as well as on the walls. The predominant colours are white, blue green, red and chocolate. There are about 20-22 figures of the seated Buddha. These paintings should be subjected to elaborate chemical treatment, preservation and conservation.

Beyond cave 10 which over looks the left shoulder of the Small Buddha, one has to go higher up by a winding stair-case in order to reach the gallery behind the head of the Small Buddha. This gallery or corridor ultimately leads to the caves on the right of side of the Small Buddha by a descending rock of steps. The first cave to the right of the Small Buddha faces south and is number 11.

Cave-11

This cave to the right of the Small Buddha has a wide rectangular entrance facing south. It is circular on plan and has a deep niche in the back wall opposite the entrance. There are two series of mouldings all round the wall at a height of about 2.44 metres, from the floor level. These mouldings are plastered and the plaster carried extensive paintings in bright colours. The paintings are very bright and white, red yellow, green and blue colours and their mixtures are seen in profusion. The stucco images of the Buddha had been originally fixed between the moulded surface with the help of pegs, but these images have disappeared leaving holes and damaged plaster behind. This cave is about 3.05 metres below the top of the brick retaining wall and to the west of it.

Cave 12

This cave has a rather narrow verandah in front. The facade of the cave carries a number of paintings of the Buddha in red ochre against white back ground. The arched entrance of the cave also carries several such paintings. The paintings have been damaged considerably by wind and rain. Several of these paintings are incomplete and some outlines of designs without filled-in colours are also seen.

The main cave, circular on plan, has a diameter of about 6.10 metres and a height of about 4.57 metres. The domed ceiling carries extensive paintings on one side. These paintings have been repaired by filleting with plaster of Paris. The predominant colours of the paintings on the domed ceiling are chocolate, black, blue and green; a little of red and pink is also seen. The paintings under the front cornice which is about 2.44 metres from the ground have been done in red, black, white and a little yellow. The entire surface should be subjected to general cleaning and the painted surface should be subjected to elaborate chemical treatment, preservation and conservation. Repairs to the loose plaster would also be necessary.

Cave-13

Proceeding westward, one comes to another cave which is incomplete. It has a rectangular opening. There is no plaster and no paint.

This cave 13 does not directly over look the valley towards the south because of the intervening corridor. This is the dead end of the corridor and the passage terminates here.

If now one returns from this cave to cave 11 through cave 12 and thence to the corridor leading to staircase going lower down on the right side of the Small Buddha, one comes to a wide verandah facing south. At the back of this verandah there is a large cave. This is numbered 14.

Verandah in front of cave-14

The verandah is about 6.10 metres long and 2.74 metres high. It has some paintings on its three walls and on the ceiling. The paintings are in a very dilapidated condition. The predominant colours are white, yellow, blue, green and red. Mixtures of these colours have also been used. A beautiful pink colour is very prominent on the ceiling. The painted plaster requiring extensive repairs by way of filling and filleting. The lower parts of the walls are stained white. These white stains have to be eliminated. Pencil marks, chalk marks and other accretions have also to be removed. After chemical treatment and preservation of the paintings, the unpainted surface should be given a general chemical cleaning.

Cave -14

At the back of the verandah, there is an octagonal cave, each side of the octagon being 2.67 metres. The walls and the domed moulded ceiling are all covered with dust, smoke and tarry matter. The niches and mouldings on the walls and on the ceiling should be subjected to chemical treatment and preservation. The decorated stucco and ancient plaster would also have to be suitably repaired. There is a hole in the floor; this should be covered with an iron grill as a safety measure. It is probably that some body had carried out a digging and produced this deep pit which opens at the bottom into cave 15.

Cave 15

This is the lower-most cave to the right of the Small Buddha. It is approached from 14 by a series of winding staircases and finally one has to make use of a wooden ladder to reach it. There are a large number of niche in the circular wall of this cave

which has a moulded domed ceiling. General cleaning of the rock surface inside the cave may be carried out since heavy accretions of soot and tar have made the surface quick dark. Remnants of old plaster are also seen here and there.

At the ground level, there are 15 big and small niches with arched tops. There is above this row of niches, another row of seven niches at a height of about 3.66 metres, from the ground level. Higher still, above this series of niches is another series of smaller niches all along the circular wall. All these niches are free from any elaborate carvings decorations and no paintings are noticeable now. The main problem in this cave is the elimination of soot and tar, the general cleaning of the rock surface and consolidation of the plaster.

Paintings in subsidiary caves

A part from the paintings in the main niche of the Small Buddha, extensive paintings are noticeable in several caves (chaityas) belonging to this cave-complex. The technique, style and materials of all these paintings appear to be the same, but samples of plaster and painted stucco have been collected from different caves for an unequivocal determination of composition, technique and materials of these paintings.

The paintings in the various caves belonging to this cave-complex may now be described.

As one goes up the cliff of the Small Buddha, one comes across a grotto facing south. This grotto is almost square on plan and has a domed ceiling. At a height of about 2.44 metres from the present floor of the sanctuary are seen at the four corners four mouldings in stone in the form of concentric semiellipses. Here there are extensive paintings; paintings are also extant on the unmoulded carved walls.

These paintings may be taken up for chemical treatment, preservation and conservation after the more important and urgent work of chemical preservation of the paintings in the niche of the Small Buddha has been completed.

Slightly higher up after passing through a series of grottos and winding staircases leading to the top of the statue of the Small Buddha, one comes across a small grotto which over looks the left portion of the chest of the Small Buddha. Across its opening facing west, one can see remnants of wall paintings on the plain wall to the right of the Small Buddha.

This small grotto shows remnants of mural paintings on the ceiling and the walls. These paintings have suffered enormous damage and extensive damage has already occurred with the result that nearly all of the ceiling is now bereft of the

original plaster and the walls just carry stray patches of original paintings.

Apart from natural deterioration caused by the weakening of the mud plaster and the exposure to wind and moisture, human vandalism has played havoc with these paintings. Engravings, chalk marks, writings in pencil and charcoal have all contributed not a little to their deterioration.

Going further up through a labyrinth of grottos and sanctuaries, one comes after all to the gallery at the back, but slightly above the head of the Buddha. Here are seen remnants of ancient paintings. These have already been discussed.

To the right of the Small Buddha, after going down several caves and grottos, one comes to a circular sanctuary (a chaitya) with a domed ceiling. This sanctuary (cave 11) faces south. Its circular wall is free from moulding to a height of 3.66 metres, but above this height, there is a heavy moulding of projecting cornices, one over the other. The distance between these two cornices is about 1.14 metres. Over the upper cornices seen all round a series of elliptical designs. The stone moulding was heavily coated with mud straw plaster which was then overlaid with fine plaster of clay and sand. It seems the entire sanctuary was plastered over and painted, but now a few fragmentary figures of the Buddha are seen on the circular wall below the first cornice. The space between the two cornices was presumable originally decorated with stucco figures and the remaining area was painted in very bright colours. No stucco figures are now left but only a series of holes at regular intervals all round this curved wall indicate the positions where the stucco figures had been originally fixed.

The plaster is still decorated with paintings, wherever it is surviving, but the paintings are in a bad state and much damage has already occurred. This circular cave is about 5 metres in diameter and the total painted area in this cave is estimated to be about 30 sq. metres. A little lower down to the west of this circular chaitya facing south is another large circular chaitya (cave 12) also facing south. Its diameter is about 6.10 metres. On its domed ceiling are still some remnants noticeable of old paintings. The painted area in this cave is estimated to be about 20 sq. metres.

As one continues to go lower down, one comes across a larger circular chaitya (cave 14) with a wide verandah in front, facing south. This verandah is about 6.10 metres along and its ceiling 2.74 metres high carries remnants of paintings. The painted surface around the entrance to the circular chaitya (diameter 5 metres) also shows remnants of wall paintings. The two side walls of the verandah were also embellished with mural paintings, but only stray patches of painted plaster are now left.

These paintings in the verandah are estimated to occupy about 12 sq. metres area.

IX. Planning of the works

Execution of works in Afghanistan and particularly at a place like Bamiyan which is 245 km. away from Kabul, the place where materials are available, and at which the working period is limited to six months in a year is not to be an easy task. Even at Kabul machineries like air-compressor, drilling outfit, grouting machine, steel required for the repair work and chemicals required for preservation of the paintings are not available and must be carried from India through Pakistan. However, during our discussion with Dr. Mohammad Anar, the Minister of Education, Royal Afghan Government assured us of the supply of cement. He did not mention if cement will be given by them free of cost; perhaps the question will be taken up at the time of negotiations between the two Governments. The quantity of cement required for the work and the requirement per year are given in the Appendices.

As materials will have to be transported from Kabul it is essential that the team maintains a transit camp at Kabul where materials will be collected and the staff coming to Kabul have camping facilities. Similarly suitable accommodation for the office, residence for the staff and storage of materials will have to be hired at Bamiyan. For the conveyance of materials to Bamiyan where there is no regular bus service it is essential to have a transport. For the rocky country roads it is suggested that the transport should be essentially a four-wheeler of the type of landrover.

To come to the execution part of it - the execution of works has been estimated to take about five years in all. At the outset it may be mentioned that the available period for work is only six months in a year and that works are to be executed at great heights where output at normal rate cannot be expected. Then the chemical preservation of the rock-surface and the images must necessarily wait for completion of the structural repairs first. But until the rock surface and the images are available for chemical preservation the paintings on the ceiling of the two niches and on the walls of the caves around them would be attended to.

For the execution of the works, it is proposed that the Archaeological Engineer and the Archaeological Chemist may visit the site twice in each season; once in the beginning and again before closing of the season for proper supervision. It is also suggested that the Director General of Archaeology may visit once in each season so that the works may be reviewed and outstanding problems are decided upon at site during his visits. The composition of the team of staff, both supervisory and

executive is detailed in the list in the Appendices. It is proposed to have a junior officer of the Chemical Branch incharge of the team. To begin with, the executive staff will reach the site for making arrangements for execution of work. When necessary arrangements have been made like procurement of scaffolding materials and other repair materials essential for the work, Masson, Modellers and others may then join the party. As they will be working for six months in a year, they will be going to Afghanistan in the month of May when the working season starts and return in October when the season closes. It is not necessary for them to stay there when there is no work.

X. Expenditure on Works

The probable cost of works on the various items pertinent to it is calculated at Rs. 12,11,200,00 as per detail shown hereunder.

A. Amount of Estimates

The estimates have been prepared - one for the structural preservation and the other for chemical preservation. The former naturally includes the expenditure for structural repairs to the rock and the Buddha images which is worked out at Rs. 2,44,000,00. Provision for the tools and plants and machineries like grouting machines, air-compressor, pumping machine etc. have also been made. The estimate for chemical preservation on the other hand amounts to Rs. 1,21,000.00 to include the cost of labour and chemicals together with their transportation charges. The expenditure on works, therefore, amounts to Rs. 3,65,000.00.

B. Deputation charges

As already indicated above (page 49) a list of the supervisory staff and the workmen to be sent from India is detailed below. Their deputation charged and air-fare both for going and returning in each season have been included.

| | |
|---|------|
| 1. Jr. Archaeological Chemist | - 1 |
| 2. Chemical Assistant Grade I | - 3 |
| 3. Modeller Grade I | - 3 |
| 4. Artist | - 1 |
| 5. Senior Conservation Assistant | - 1 |
| 6. Conservation Assistant Grade I | - 1 |
| 7. Mason | - 4 |
| 8. Mechanic | - 1 |
| 9. Photographer Grade I | - 1 |
| 10. U.D.C. | - 1 |
| 11. Driver-mechanic | - 1 |
| 12. Draftsman Grade I | - 1 |
| 13. Storekeeper | - 1 |
| Period of deputation - 6 months in a year for 5 years | |
| No. of persons | - 20 |
| Grade II A & Grade II Officers | - 20 |
| 1. Return Air fare of 20 persons 5 time | |

| | |
|---|------------------------|
| @ Rs. 627/- on each occasion | Rs. 62,700.00 |
| 2. All inclusive daily allowance for 20 days persons for 180 x 5 days @ Rs. 37/- Per day. | |
| (20 x 180 x 5 x 37) | Rs. 6,66,000.00 |
| Total | Rs. 7,28,700.00 |

(Note :- The above estimated amount is as per 1965.)

C. Transport

The necessity of having a transport at the disposals of the team has already been made out above (page 48). The cost of a vehicle of the type of landrover and a trainer will be Rs. 28,500/-. The running expenses for the vehicle inclusive of charges for servicing, repairs etc. are estimated at Rs. 15,000/-. The expenditure on the transport will thus come to Rs. 43,500/-.

D. Accommodation

The necessity of hiring an accommodation at Kabul to serve as a transit camp has already been explained above (page 48). The charges for hiring accommodations at Kabul and Bamiyan are detailed below:

| | |
|---|----------------------|
| At Kabul @ Rs. 500/- P.M. For 5 years | |
| Rs. 500 x 12 x 5 | Rs. 30,000.00 |
| At Bamiyan @ Rs. 150/- P.M. For 5 years | |
| Rs. 150 x 12 x 5 | Rs. 9,000.00 |
| T otal | Rs. 39,000.00 |

E. Supervision of works

While the team will be working, periodical visits will be paid by the heads of the two branches viz., The Archeological Chemist and the Archaeological Engineer for proper execution of the works. The two officers may visit the site twice in each season with a halt of three weeks each time in Afghanistan. Within the period of three weeks two weeks will be spent at Bamiyan and one week will be spent at Kabul. It is also proposed that the Director General of Archaeology may visit the work once in each season for ten days. The expenditure on the visits will be as given hereunder :

| | |
|---|----------------------|
| a) Air fare for three officers (10 + 10 + 5 = 25) @ Rs. 627/- | Rs. 15,675.00 |
| b) Daily allowance at Kabul for three officers 2 (2x7x5) + (3x5) 155 days @ Rs. 55/- | Rs. 8,525.00 |
| c) Daily allowance at other places including Bamiyan for three officers 2 (2x14x5) + (7x5) 315 days @ 34/- | Rs. 10,710.00 |
| Total | Rs. 34,910.00 |
| Say | Rs. 35,000.00 |

Daily allowance in Afghanistan will be paid in Afghan currency. The rate has been calculated taking into consideration the prevailing exchange rate.

Rough distribution of requirements of funds during the five years.

| | In Indian currency in Lakhs | In Foreign currency in Lakhs |
|--------------|--|---|
| First Year | 1.50 | 1 |
| Second Year | .50 | 2 |
| Third Year | .50 | 2 |
| Fourth Year | .50 | 2 |
| Fifth Year | .50 | 1.60 |
| | ----- | ----- |
| | 3.50 | 8.60 |
| | ----- | ----- |
| Total | | Rs. 12.10 Lakhs. |

XI. Visit to other archaeological sites and works

Darra-e-Fauladi

P1, XV,30 Apart from the wall of the Buddha in the Bamiyan Valley, there are extensive remnants of Buddhist settlements in the other two valleys to the south east and south west. viz. the Kakrak Valley and the Fauladi Valley. The rock-out caves at Darra-e-Fauladi are in ruins, but three or four caves have still their ceilings intact. Mention may here be made of three elaborately carved and painted ceilings. One can also see, in addition, some mural paintings on the walls of the biggest cave of this group. These paintings have suffered extensive damage due to the loss of pigments and painted stuccos. The prominent colours which are still surviving are white, blue, red and yellow. The rock out of which these caves have been excavated is a heterogeneous conglomerate similar to that of the wall of the Buddhas in the Bamiyan valley. However, extensive weathering has weakened its fabric and residual deposits of gravel and are lying in enormous quantities at the foot of the hillocks. This wall of conglomerate faces south east and the greater part of the vertical wall is shielded from the direct rays of the sun for the better part of the day by several hillocks to the west. Although both chemical weathering and physical disintegration have resulted in considerable destruction of the rock, the surface of the weatherable rocks is nowhere as pink or red as the big wall of the Buddhas in the Bamiyan valley. The reason is obvious; iron oxide which is red in colour has not moved out to such an extent in the conglomerate wall of Darra-e-Fauladi as it has done in the Bamiyan conglomerate wall on account of restricted effect of the direct rays of the sun. Where the rock is exposed to direct and exposed several cells of the monastery. No vertical digging was undertaken, but according to Mons. Berre it was just an attempt to clear the debris and carry out superficial horizontal excavations with a view to bringing to light the plan of the monastery which was supposed to be the only of its kind in Afghanistan belonging to 5th-6th century AD.

P1, XVI,31 Among the important finds, Mons. Berre mentioned some inscribed sherds (writing in kharoshthi script in black ink on red ware) and two fragments of black shining pottery similar to the NBP ware of India. In texture and the fabric these two sherds compare favourably with NBP ware; the black metallic surface with characteristic shine is also similar to that of the NBP ware, but the

reddish buff layer underlying the black shining lustrous surface so prominent in NBP ware is conspicuous by its absence, and it would seem that the two sherds found at Mosa-e-Logar represent a variant of NBP ware in this part of Afghanistan.

P1, XVI, 32

The work of conservation and restoration of the Buddhist stupa of Mosa-e-Logar was carried out under the directions of Mons. P. Lezine, Unesco Consultant, and the missing parts of the plinth walls and parts of the spherical super structure ('anda' or dome) have been restored during conservation. Mortar of mud and sand was used in the original construction. Although the character of diaper-rubble masonry of the original construction was maintained in the repaired portions, the use of lime mortar has introduced a new feature into this structure. Moreover, the restoration work has been made to merge with the original diaper rubble masonry without making any attempt at differentiating the new work of restoration from the old rays of the sun for the better part of the day, iron oxide which has tended to accumulate in the horizon has come to the surface of the wall of the Buddhas, thereby providing a pleasing pink to red colour to the surface.

The plaster of the paintings in these caves is very similar to that used in the Bamiyan valley. The rock surface was covered with mud-straw plaster to render the surface smooth. Thereafter this plaster was over-laid with fine-textured clay plaster. The hard dense compact surface of this plaster served as the ground for the paintings. It seems great care was taken in the preparation of the fine plaster. It was carefully trowelled and polished with the result that a smooth compact hard surface was produced and the paintings were executed on this surface.

Kakrak Valley

The Buddhist remains at Kakrak were examined. The large image of the Buddha had been hewn out of a gravelly, pebbly conglomerate rock which lacks the homogeneity and compactness of ordinary rock. It is composed of large pebble and gravel beds cemented together with ferruginous, calcareous and clayey cementing material. The statue and the niche containing it were profusely decorated originally, but now the monument is free from painted stucco or decoration of any kind.

Mosa-e-Logar

A visit was paid to Mosa-e-Logar, about 35 km from Kabul, for studying the work of conservation of the excavation stupa and monastery. Here on behalf of DAFA Mons Berre has been carrying out excavations for the last two years and has by now cleared the debris.

Monuments at Ghazni

On a suggestion made by our Embassy at Kabul the monuments at Ghazni and Surk-Kotal were visited for studying the works done in the past by different foreign archaeological missions.

The Minarets

Pls. XVII & XVIII; 33 to 36: The two minarets of Ghazni, called the first minaret and the second minaret, were erected by Behram Shah and Masud III respectively. These are of burnt-brick set in mud mortar. In the interior each minaret is supposed to have a passage leading to the upper portion but without a ladder we could not go up to the staircase. The four storeys of the minarets, however, are separated from one another by wooden beams embedded in the brick wall set in a frame work. In the lime plaster used for decoration of the exterior surface no 'gach' is said to have been used. The bricks on the surface have been so arranged as to form various patterns and designs. No restoration work or repairs to the main body of the minarets have been carried out, but only the platforms of the minarets been repaired with stone using cement and sand mortar and plaster. These damaged minarets require extensive repairs.

Tomb of Mahmud

P1.XIX, 37: There are two elaborately carved wooden doors fitted to the entrance to the tomb which are wrongly identified with these from the Somnath temple. The super-structure has been renovated and iron sheeting has been used to cover the domed ceiling.

P1.XIX, 38:

Tomb of Abdur Razzaq

P1.XX, 39: This tomb made of mud mortar and burnt bricks has been extensively restored by the Italian Archaeological Mission. In places of mud mortar, cement-lime mortar and new bricks have been used with a very happy result as the photograph will show.

Buddhist monuments

P1. XX, 40: The stupa and the monastery at Tep-e-Sardara of early historic period were excavated by the Italian Archaeological Mission. Rubble-diaper masonry used here similar to that at Mose-e-Logar and at Taxila or diaper-pebble used at Harwan in India are the vestiges of Roman influence.

The Islamic Site

The palace of Masud III of 11th-12th century AD. has been completely excavated. For preservation of the excavated structures alkathene sheets, mats and mud plaster have been expensively used and the results of these measures seem to be quite satisfactory.

Surkh Kotal

At Surkhkotal extensive excavations were carried out by the French Archaeological Mission (D.A.F.A.) to expose Buddhist remains of 1st-2nd century AD. where the image of Kanishka is said to have existed. The work of preservation of the exposed structures was not of particular interest, the method adopted being similar to that employed by in India.

Miscellaneous

P1. XXII, 43: The mosque near Babar's tomb at the outskirts of Kabul which had suffered severe damages were being attended to by the Italian Archaeological Mission. Their idea of restoration was to dismantle the extant portion and to rebuild the mosque according to a standard so that the openings of arches with varied spans would agree. The disagreement in the size of openings were attributed to an earlier restoration. It was, however, observed that for joining the marble places instead of using any lime mortar, as used in India, a plastic emulsion was being used.

Some fragments of frescoes and a portion of the huge quantity of ivory places excavated from Begram, now housed in the Kabul Museum, were preserved a few years back by Mons. Hafez, an expert deputed by UNESCO. The frescoes from Lashkari Bazar were closely

seen from obtaining information about the methods and materials employed and the results achieved. These paintings were found in a fair state of preservation but they would require further chemical treatment and preservation on modern scientific lines. Similarly, the invaluable ivory pieces simply stored in the cupboards of the Museum need be treated and preserved. It would also be advisable to have them published preferably by an Indian scholar.

At present three foreign archaeological missions are working in Afghanistan, they are Japanese, French and Italian. The Japanese Mission is digging at Kunduz. The French (DAFA) will be taking up a new site called Ai-Khanam, a Greek settlement, near the Oxus on the Russian border. Thus Begram is still available for us to dig, as was contemplated earlier. XII.

Acknowledgments

We are grateful to the Indian Ambassador in Kabul Gen. P.N. Thapar for his kind interest in our mission. Sarvashri K.C. Johorey and A.N. Verma both the First Secretaries made helpful suggestions about the programme of our visits to other monuments in Afghanistan to whom our grateful thanks are due.

We are thankful to Dr. A. Motamedi, Director of the Kabul Museum and to his deputy, Mr. Barekzai for finalising our programme of visiting the work of conservation and preservation which had been done in Afghanistan by various foreign archaeological missions. It was through their interest and ready help that specimens of materials collected from different monuments could be brought to India for examination and analysis. The Director of the Geological Survey of Afghanistan was kind enough to discuss with us the geological aspects of the tertiary conglomerate in which the monuments of Bamiyan are excavated and he readily promised all help in geological investigation connected with our work. The climatological data for Bamiyan was very kindly supplied to us by officers of the Meteorological Department of Afghanistan. Lastly, our thanks are due to Md. Saddique an assistant of the Kabul Museum who accompanied us to all the places as interpreter and helped us in many ways.

Appendices

1. Estimate for structural preservation

The probable cost of repairs to the two images of Buddha and the associate caves comes to Rs. 2,44,000.00.

The provisions embodied in the estimate are as per the recommendations made in the report in Sections VI and VII and will be executed on the lines indicated in Section IX.

About 13.25 tones of steel of various sizes will be required for the repair while the requirement of cement will be 160 tons. Since it is proposed to procure cement locally, in instalments, the supply may be distributed over the five years at 2 tons for the first and fifth years, and at 40 tons each year for the second, third and fourth years.

Abstract of cost

| Item No. | Sub-heads and items of work | Qty. Or no. | Rate Rs. | Per Np. | Amount |
|----------|---|---------------|----------|---------|--------|
| A. | Sub-Estimate No. I | | | | 66,522 |
| B. | Sub-estimate No. II | | | | 55,460 |
| C. | Materials and Establishments | | | | |
| | 1) Mate to help in the execution | 180x5 900 | 10.00 | day | 9,000 |
| | 2) Watch and Ward 2x365x5 =3,650 | 3,650 days | 4.00 | “ | 14,600 |
| | 3) Air Compressor | | | | 35,000 |
| | 4) Rotary Drilling machine with Diamond drilling bits. | | | | 10,000 |
| | 5) Cement concrete vibrators | | | | 2,500 |

| | | |
|---|----------------|------------------------|
| 6) Cement grouting machine | | 20,000 |
| 7) Concrete mixture | 2 nos. | 7,000 |
| 8) Tools and plan | | 3,000 |
| 9) Pumping machine with hose etc. including engine 7.5 Hp. | | 5,500 |
| 10) Cost of diesel oil for running the air compressor and other motors | | 7,500 |
| 11) Conveyance of materials | | 8,000 |
| | Total | 2,44,082 |
| | Say Rs. | <u>2,44,000</u> |

| Item No. | Sub-heads and items of work | Qty. Or no. | Rate Rs. Np | Per | Amount |
|----------|-----------------------------|-------------|-------------|-----|--------|
|----------|-----------------------------|-------------|-------------|-----|--------|

Sub-eastimate I

The Big Buddha

A. The Facade

| | | | | | |
|----|---|-----------|--------|-----------|-------|
| 1. | Filling up the cavities with cement concrete 1:3:6 using ½" to ¾" size metal and steel wherever necessary at an average height of 100 feet. | 615cft. | 270.00 | 100 cft. | 1,660 |
| 2. | Filling up the scars at a height of 180 to 200 feet with cement concrete 1:3:6 using ½" to ¾" also metal | 930cft. | 319.00 | 100 cft. | 2,967 |
| 3. | Filling up the cracks 1"x 2'-0" with cement mortar 1:4 at an average height of 80 feet. | 75ft. | 88.00 | 100 ft. | 66 |
| 4. | Plastering the concreted surface with tinted cement mortar 1:4, ¾" thick and matching with rock surface at a height of 100 to 200 feet. | 6,783.ft. | 74.00 | 100 s.ft. | 496 |

B. Drainage

| | | | | | |
|----|---|-----------|--------|----------|-------|
| 1. | Earth work excavation in hard soil for drain including conveying the excavated soil to a distance of 100 feet. | 7,000cft. | 46.00 | 100 cft. | 322 |
| 2. | Random rubble masonry in cement mortar 1:1:6 including collecting stones available at site from within a distance of 100 feet, at a height of 200 feet. | 780cft. | 188.00 | 100 cft. | 1,466 |
| 3. | Cutting hard rock by chiselling for drainage. | 165cft. | 22.00 | 1 cft | 3,630 |
| 4. | Providing R.C.C. Roof with 1:2:4 cement concrete (1 cement, 2 sand and 4 stone ballast) over the gaps of the entrance, including centering, shuttering ¼" thick plaster to the ceiling with cement mortar 1:3 excluding the cost of reinforcement, at a height of 180 feet. | 120 cft | 572.00 | 100 cft | 686 |

C. Image

| | | | | | |
|----|---|---------------|--------|-------------|--------|
| 1. | Underpinning the overhanging portion with R.C.C. 1:2:4 including necessary chiselling and jumping for steel dowel bars. | 2,800 cft. | 428.00 | 100 cft. | 1,1984 |
| 2. | Repair in cement concrete 1:2:4 with nominal reinforcements for binding, | 3,600 cft. | 432.00 | 100 cft. | 15,552 |
| 3. | Filling up cracks 4" wide and 3 feet deep with cement mortar 1:4 using coarse aggregate in it | 300 rft. | 199.00 | 100 rft. | 597 |
| 4. | Plastering the concreted surface with cement mortar 1:4 and 3/4" thick at an average height of 100 feet. | 903 sft. | 74.00 | 100 sft. | 668 |
| 5. | Chiselling the plastered surface to match the rock | 903 sft. | 12.00 | 100 sft. | 108 |
| 6. | Filleting the broken edge of plastering | 600 rft. | 40-00 | 100 sft. | 240 |
| 7. | Restoration of the missing portions of the upper garment. | 500 Sft. | 43-00 | 100 Sft. | 215 |

D. The caves

| | | | | | |
|----|--|------------|--------|-------------|-------|
| 1. | Dismantling brick masonry in lime mortar | 1,140 cft. | 18.00 | 100 cft. | 205 |
| 2. | Repairs to the walls, steps etc. In cement concrete 1:3:6 | 1,150 cft. | 233.00 | 100 cft. | 2,680 |
| 3. | Plastering the concreted surface with tinted cement mortar 1:4, 3/4" thick | 1,550 sft. | 74.00 | 100 sft. | 1,147 |
| 4. | Chiselling the plastered surface to match the rock | 1,550 sft. | 12.00 | 100 | 186 |

| | | | | | |
|----|--|---------|--------|----------|-----|
| 5. | Filling the cracks 2"x2'-6" with cement mortar 1:4 | 90 rft. | 150.00 | 100 rft. | 135 |
|----|--|---------|--------|----------|-----|

E. Fore Court

| | | | | | |
|----|---|------------|-------|-----------|-------|
| 1. | Earth work excavation in all soil including carting away the excavated earth to a distance beyond 100 feet. | 2,800 cft. | 25.00 | 1000 cft. | 70 |
| 2. | Spreading coarse sand and pebbles ½" down 6" thick including watering and rolling complete. | 2800 cft. | 45.50 | 100 cft. | 1,247 |

F. Scaffolding

| | | | | | |
|--|---|--|------|--|--------|
| | Scaffolding to cover area of 90x67 and 200 feet high. | | L.S. | | 10,000 |
|--|---|--|------|--|--------|

G. Steel.

| | | | | | |
|--|---------------------------|--|------|--|-------|
| | Steel required for R.C.C. | | L.S. | | 7,000 |
|--|---------------------------|--|------|--|-------|

H. Contingencies and unforeseen items 5%

| | | |
|--|--------------|---------------|
| | | 3168 |
| | Total | 66,522 |

Sub-estimate II
Abstract of Cost

The Small Buddha

A. The Facade

| | | | | | |
|----|--|------------|--------|----------|-------|
| 1. | Filling up the cavities in walls with cement concrete 1:3:6 (using ½" to ¾" size metal) using steel wherever necessary | 1,443 cft. | 270.00 | 100 cft. | 3,896 |
| 2. | Making grooves in the rock for belts | L.S. | | 200 | |
| 3. | Providing belts of M.S. Rail at a height Of 50' | 2.84 Tonne | 634.00 | Tonne | 1,826 |
| 4. | Encasing the belts with cement concrete and chiselling etc. | L.S. | | | 200 |

| | | | | | |
|----|--|---------------|--------|-------------|--------|
| 5. | Dismantling the brick work | 2,200 cft. | 38.00 | 100 cft. | 836 |
| 6. | Providing R.C.C. Column 1:2:4 | 5,550 cft. | 440.00 | 100 cft. | 24,420 |
| 7. | Finishing the surface by plastering area, chiselling to match the surrounding rock 1:3 | 1150 sft. | 55,00 | 100 sft. | 633 |
| 8. | Grouting the fissures 2" to 3" wide and 3' to 4' deep with cement mortar 1:4 | 150 rft. | 353.00 | 100 rft. | 530 |

B. Drainage

| | | | | | |
|----|---|------------|--------|-------------|-----|
| 1. | Providing R.C.C. slab over the depression at the top 1:2:4 | 36 cft. | 457.00 | 100 cft. | 165 |
| 2. | Providing cement concrete 1:4:8 on the surface | 67 | 235.00 | 100 cft. | 157 |
| 3. | Dressing the area | L.S. | | | 100 |

C. The Image

| | | | | | |
|----|---|---------------|-------|-------------|-----|
| 1. | Removing the rubbish | L.S. | | | 100 |
| 2. | a) Repair with cement concrete 1:4:8 with nominal reinforcement | 1,126 cft. | 38.50 | 100 cft. | 434 |
| | b) At a height of 100 feet (Lobes) | 20 cft. | 50.50 | 100 cft. | 10 |
| 3. | Repairs to the surface of the garment at a height of 80 feet to 100 feet | 750 sft. | 50.50 | 100 cft. | 240 |
| 4. | Filleting the broken edge of plaster upto a height of 80' | 600 rft. | 40.00 | 100 rft. | 240 |
| 5. | Repair to the broken and of right area by inseting copper rods | L.S. | | | 50 |
| 6. | Finishing the concreted surface by plastering and chiselling to match rock surface 1:3 | 225 sft. | 55.00 | 100 sft. | 124 |

D. The caves

| | | | | | |
|----|---|-------------|--------|-------------|-----|
| 1. | a) Repairs to the damaged members in cement concrete. | 361 cft. | 235.00 | 100 cft. | 848 |
| | B) At a height of 40 feet | 235 cft. | 241.00 | 100 cft. | 566 |
| 2. | R.C.C. Work for steps, slabs 1:2:4 | 183 cft. | 440.00 | 100 cft. | 805 |
| 3. | Finishing the concrete portions with cement plaster and chiselling to match rock surface. | 650 sft | 55.00 | 100 sft. | 358 |
| 4. | Providing G.I. Rods on the steps for support. | 38 rft. | 2.00 | rft. | 76 |
| 5. | Providing steel cramps in the severed steps | L.S. | | | 150 |
| 6. | Clearing the passage at grand level | L.S. | | | 50 |

E. Courtyard

| | | | | | |
|----|--|-------------|-------|-------------|-----|
| 1. | Clearance of debris levelling and dressing | L.S. | | | 200 |
| 2. | Spreading coarse sand and pebbles 6" thick | 750 cft. | 45.50 | 100 cft. | 341 |

F. Scaffolding

| | | | | | |
|---|------|--|--|--|-------|
| Scaffolding to cover an area of 50"x30" and 150' high | L.S. | | | | 6,000 |
|---|------|--|--|--|-------|

| | | | | | |
|---|------|--|--|--|-------|
| <u>G. Steel:</u> Steel required for reinforcement work | L.S. | | | | 9,000 |
|---|------|--|--|--|-------|

| | | | | | |
|--------------------------------|----|--|--|--|-------|
| <u>H. Contingencies</u> | 5% | | | | 2,642 |
|--------------------------------|----|--|--|--|-------|

Total -----
55,460

2. Estimate for chemical Preservation -

The estimated cost on chemical preservation calculated as per detailed measurement taken at site works out at Rs. 1,21,000.00. The total area of rock and a stucco requiring treatment and preservation is 6229.26 sq. mts. The total painted area in the various niches and caves described in the report on chemical preservation is 263.67 sq. mts.

Time required for work

It is thought that structural conservation and chemical preservation of Big Buddha and Small Buddha and the paintings within various niches and caves may take about two and a half years continuous work. Since the weather at Bamiyan is unfavourable for the work for about six months in a year, only a period of six months (May to Oct.) Would be available for actual work every year. Consequently the works would have to be spread over five years (six months each) and a period of five years would thus be required for completion of the works.

It is therefore, estimated that about 25 months would be required for the complete chemical treatment and preservation of the rock and stucco work and the paintings. Roughly a period of 10 months is estimated for the preservation of rock and stucco, while a period of 15 months may be required for the chemical treatment and preservation of paintings.

1. Expenditure on Labour

If four trained assistants are deputed to Bamiyan for the execution of these works they would require 3 skilled coolies each for general assistance at the site of the work. In addition 3 skilled coolies would be required for transporting chemicals and apparatus etc. from the stores to the site of work and for attending to the sundry jobs of preparation of solutions, handling of heavy stress etc. etc. A provision of 15 coolies is proposed for chemical conservation of the rock and stucco work and the paintings. The 15 coolies would have to be engaged for at least 25 months and in addition a period of five months is provided for preliminary arrangements such a putting up of scaffolding, transportation of materials, preparing solutions, and assistance in the documentation work.

2. Expenditure on scaffolding

Scaffolding materials required for the chemical work are not included in this estimate, since the materials required for structural conservation can be utilized for chemical conservation by staggering both the works in a suitable manner.

3. Expenditure on Chemicals & consumable stores

It is estimated that the cost of chemical, detergents, solvents, consolidants and preservatives etc. may work out to above Rs. 10.00 per sq mt., provided all the chemicals and other stores required for the work are collected at Bamiyan.

4. Expenditure on transportation

Since materials may have to be transported over long distances a provision of 10% of the cost of chemicals is tentatively suggested for transportation charges.

5. Expenditure on documentation & Modelling

A lump sum provision has been made for the cost of photo sensitive materials, such as colour films black and white films, paper and photo chemicals. Similarly the amount of Rs. 2000/- provided under this item would cover the cost of paper etc. required for preparation of sketches and plans etc. The cost of materials required for repairs to paintings is also included in this amount.

6. Expenditure on accommodation

No provision has been made in this estimate. The accommodation that is hired for structural conservation would be utilized for chemical work as well.

The estimate is as follows :-

- | | | |
|----|--|---------------|
| 1. | Labour - 15 coolies for 30 months 13500 coolies @ Rs. 3/- P.D. | Rs. 40,500.00 |
| 2. | Scaffolding (to be used from stock of structural conservation.) | |

| | | |
|----|--|---------------------------------------|
| 3. | Chemicals and consumable stores i. @ Rs. 10/- per sq. mt. in case of rock & stucco work. | Rs. 62,292.00 |
| | ii. @ Rs. 15/- per sq. mt. in case of paintings. | Rs. 3,955.00 |
| | Net Rs 66247/- say Rs. 66250 | |
| 4. | Transportation charges @ 10/- of 66,250/- i.e. of item 3. | Rs. 66,250.00 |
| 5. | Documentation & modelling (L.S.) | Rs. 2,000 |
| 6. | Accommodation (to be utilized as hired for structural conservation.) | |
| 7. | Contingencies @ Rs.5% of items 1 and 3 i.e. of Rs. 1,06,750 | Rs. 5,337 |
| | Total | ----- Rs. 1,20,712 ----- |
| | Say | Rs. 1,21,000 ----- |

Total Area Requiring Preservation And Chemical Conservation

In The Various Niches And Caves At Bamiyan

| (a) Area of rock and Stucco - | Total Area | Grand Total |
|---|------------------------|--------------------|
| | (In sq. Metres) | |
| i. The niche of the Big Buddha including the facade - | 2310.28 | |
| ii. The subsidiary caves around the Big Buddha - | 1161.48 | |
| iii. The niche of the Small Buddha including the facade - | 1331.92 | |
| iv. The subsidiary caves around the Small Buddha. | 1425.58 | 6229.26 |
| (B) Area of paintings - | | |
| i. The niche of the Big Buddha - | 70.00 | |
| ii. The niche of the Small Buddha- | 50.00 | |
| iii. The subsidiary caves around the Small Buddha - | 143.67 | 263.67 sq.mts. |

3. Personnel.

It is proposed to depute three trained Chemical Assistans under a Junior Archaeological Chemist for the execution of chemical works for the entire period of 30 months spread over a period of five years. In addition, one Artist one photographer and three Modellers would have to work there. The Modellers beside carrying out the works of filleting the broken edges of plaster carrying the paintings would also works on the images. The Artist, Draftsman and the Photographer would prepare a complete record of the repairs executed at all stages viz. before the execution, during the works in progress and after the execution is over.

The repairs being of a special nature only persons with sufficient training and experience are to be employed on them. As none is available in Afghanistan four masons who have worked at Ajanta and Ellora are proposed to be taken from India. The structural repairs will be supervised by two Conservation Assistants having experience in conservation of rock-cut monuments; it may be necessary to depute an Assistant Engineer for a short period to supervise execution of important and delicate work. The Driver-machenic will be driving the vehicle while the mechanic will operate and maintain the different machines like drilling machine, air-compressor water-pump, engines etc. The office work will be attended to by an Upper Division Clerk and the stores of the entire camp will be looked after by a storekeeper.

4. CLIMATOLOGICAL DATA FOR BAMIYAN

| Year | Period | <u>Temperature 'C'</u> | | Wind | Snowfall | Monthly Rainfall. |
|------|--|------------------------|-------|-----------------------------|-----------|----------------------|
| | | Max. | Min. | | | |
| 1341 | H- Saraten Asad | 27 | 7 | S. Northerly S. Westerly | | |
| | | 26 | 6 | | | |
| | Sumbula | 25 | 1. | S. Northerly | | |
| | Miram | 19 | -7 | S. Easterly S. Westerly | | 2 ½ mm |
| | Arab | 18 | -11 | S Northerly S Westerly | | |
| | Qaus | 9 | -20 | S Westerly | 12 cm | 4 ½ mm |
| | Jedy | 9 | -23 | - | 6 cm | |
| | Dalva | 11 | -17 | - | ? | 67 mm |
| | Hoot | 15 | -6 | S Westerly | 10 cm | 29 ½ mm |
| 1342 | H- Hamal Saur | 23 | -4 | S Westerly S Northerly | 6 cm | 32 mm |
| | | 20 | -1 | S Easterly | - | 69 mm |
| 1343 | H Sumbula Miram Aqrab Qauz Jedy Dalva Hoot | 27 | 8 | - | - | - |
| | | 18 | 1 | - | - | - |
| | | 15 | -6 | - | - | - |
| | | 10 | -18 | - | 27 cm | - |
| | | 4 | -11 | - | 4 cm | - |
| | | 3 | -13 | - | 30 cm | - |
| 4 | -12 | - | 12 cm | 17 mm | | |
| 1344 | H Hamal Saur | 16 | -11 | - | 18 cm (?) | 54 mm |
| | | 24 | -2 | S Westerly | 3 cm | 52 mm |
| | | * | * | * | * | |

*Through the courtesy of the Director, Department of Climatological Survey, Kabul on 2.6.1965.

5. Previous Indian Archaeological Missions to Afghanistan.

(a) Dr. Mortimer Wheeler, 1946.

The first Indian Archaeological Mission to Afghanistan was lead by Dr. Mortimer Wheeler then Director General of Archaeology in India in 1946. He was accompanied by his wife, Mr. Justice Edgely, President of the Asiatic Society of Bengal and the Curator of the Peshwar Museum. His mission appears to have been more of an exploratory nature and did not concern itself with the question of preservation of the rock-cut shrines at Bamiyan. But he definitely had recommended specific actions to be taken in the field of Archaeological research to secure enduring co-operation between the two countries.

(b) T.N. Ramachandran and Dr. Y.D. Sharma, 1956.

Following the recommendations of Dr. Wheeler a proposal was mooted to send a small team of Archaeologists and Historians to Afghanistan in order to develop closer contracts between the two countries. However, it was only in 1956 that an Archaeological delegation could be sent to conduct archaeological explorations of such sculptures, inscriptions, coins and archaeological sites as are of interest to India. Obviously, preservation was outside the perview of this delegation and there was no question of recommending any action by them to that effect.

(c) A. Ghosh, 1964.

As there has already been an idea in the minds of the Indian Archaeologists to dig some potential site in Afghanistan, it was thought best to explore the possibilities of an Indian delegation of Archaeologists being sent to that country. Accordingly, at the instance of Shri, A. Ghosh, Director General of Archaeology in India, Prof. Humayun Kabir then Minister for Scientific Research and Cultural Affairs during his visit to Afghanistan in 1963, at the time of signing a cultural agreement, made an offer to excavate a site and to help in the preservation of Bamiyan monuments. The proposal having welcomed by the Afghan Government Shri Ghosh was deputed by the Government of India to find out a suitable site for the excavation. The question of preserving the rock-cut shrines at Bamiyan also received his attention. In his report to the Government he had recommended the measures to be taken. Relevant portion of the report is reproduced below :

‘THE PRESERVATION BAMIYAN’

(1) The two famous odossi of Buddha, one 53 metres and the other 35 metres high, and the thousands of caves in the neighbourhood of Bamiyan are excavated in the Tertiary conglomerate between the Hindu-Kush and the Kohli-Baba ranges. The conglomerate consists of clay, gritty gravel and sandstone blacks without the compactness of rock. (I had consultations with the French and German Geologists in the Geological Survey of Afghanistan and obtained confirmation of what is stated above). The Statues were originally covered with stucco which was relieved to provide the folds of the garments of Buddha and was fixed to the conglomerate-surface with wooden pegs, holes to support which are seen in large numbers wherever stucco has disappeared. The fact, it is only the dry climate of Afghanistan that has helped in their survival; in a wet land like India they would have disintegrated long ago. However, as Bamiyan is subjected to annual snow-fall, the melting snow flowing down the vertical conglomerate-surface has left deep scars everywhere. The action of frost must have in addition contributed to the deterioration of the surface, for the furtherance of which landslides are also responsible.

2. (6) The niches under which the statues are carved were originally painted, patches of paintings being even now seen here and there, particularly towards the top. The surrounding caves, which are internally connected with each other by steps and provide access right to the tops of the statues, were also painted.

3. (7) In spite of the popularity of Bamiyan which foreign tourists, the precincts of the caves are in a sadly neglected condition. Besides, a museum building and a petrol-pump have been allowed to come up on the land between the road and the smaller statue largely hiding the front view of the latter. It is noted that when an Italian architect carried out an archaeological survey of Afghanistan in 1960 and 1961 on behalf of the Italian Archaeological mission in Afghanistan, he saw a school building in front of the smaller Buddha, which is not unlikely to be the building shown to me as the museum, and objected to its presence. He also prepared a scheme of the improvements to the site, including the construction of an under-ground museum¹; but nothing has been done to implement it. Conditions have perhaps worsened during the last three or four years.

1. Andrea Bruno in **East and West**, New Series, Vol.13, nos. 2-3 (June-September 1983), pp. 99-185. Bruno, however, did not make any important recommendation to consolidate the statues and the caves.

4. (8) By the side of the smaller Buddha an equally tall brick retaining-wall has been constructed to hold in position an enormous detached block of conglomerate; besides being aesthetically objectionable, it is of dubious utility. If a wall was at all necessary, it should have been done in mass concrete simulating the adjoining surface.

5. (9) Any proposal of preservation of Bamiyan should primarily concern itself with the two statues and the vertical rows of caves surrounding them. Generally speaking, the major measures should consist of -

(a) Cutting of one or more drains in the conglomerate to prevent the following down of snow-water;

(b) consolidation of the surface of the statues and the surrounding areas with suitable chemicals;

(c) roughly-finished restoration of the ugly scars on the statues;

(d) securing of the stucco work by filleting and restoring of the missing folds of the garments in small patches;

(e) removal of the brick retaining-wall referred to in paragraph 8 and its re-doing in concrete, if considered necessary;

(f) making good of the interior of the surrounding caves and connecting steps in concrete;

(g) chemical treatment and preservation of the extant paintings and filleting the patches as required.

6. (10) The above items indicate only in general terms the measures of conservation that are required. To work out a detailed scheme and estimate of cost, extensive measurements have to be taken, limited chemical experiments undertaken and enquiries be made on the rates of material and labour. It has also to be ascertained to what extent help in the form of material can be expected of the Afghan Government. It is only then that the relative shares of the Governments of India and Afghanistan (paragraph 18 below) can be worked out and the staff and the material and equipment to be sent from India for the purpose decided.

7. (11) If the proposal is to be pursued (and according to the Indian Embassy it

must be pursued), it is absolutely necessary that the Archaeological Engineer and the Archaeological Chemist should be deputed to Bamiyan for a period of three weeks to collect the data and prepare an estimate. It is likely that they may find it necessary to add to the list of measures mentioned in paragraph 9 above. While the details can be worked out only after the estimate has been prepared, it is foreseen that the work will not cost less than Rs. 10 lakhs spread over a period of about three years. It may be mentioned here that the season of work at Bamiyan is May to October.

8. (12) I do not think we should undertake the work of dressing up and beautifying the site. That has to be attended to by the Afghan Government.

Plates



1. General view of the Bamiyan caves with the Big Buddha in the centre.



2. General view of the Bamiyan caves with the Small Buddha in the centre.



3. Big Buddha. Afghanistan.



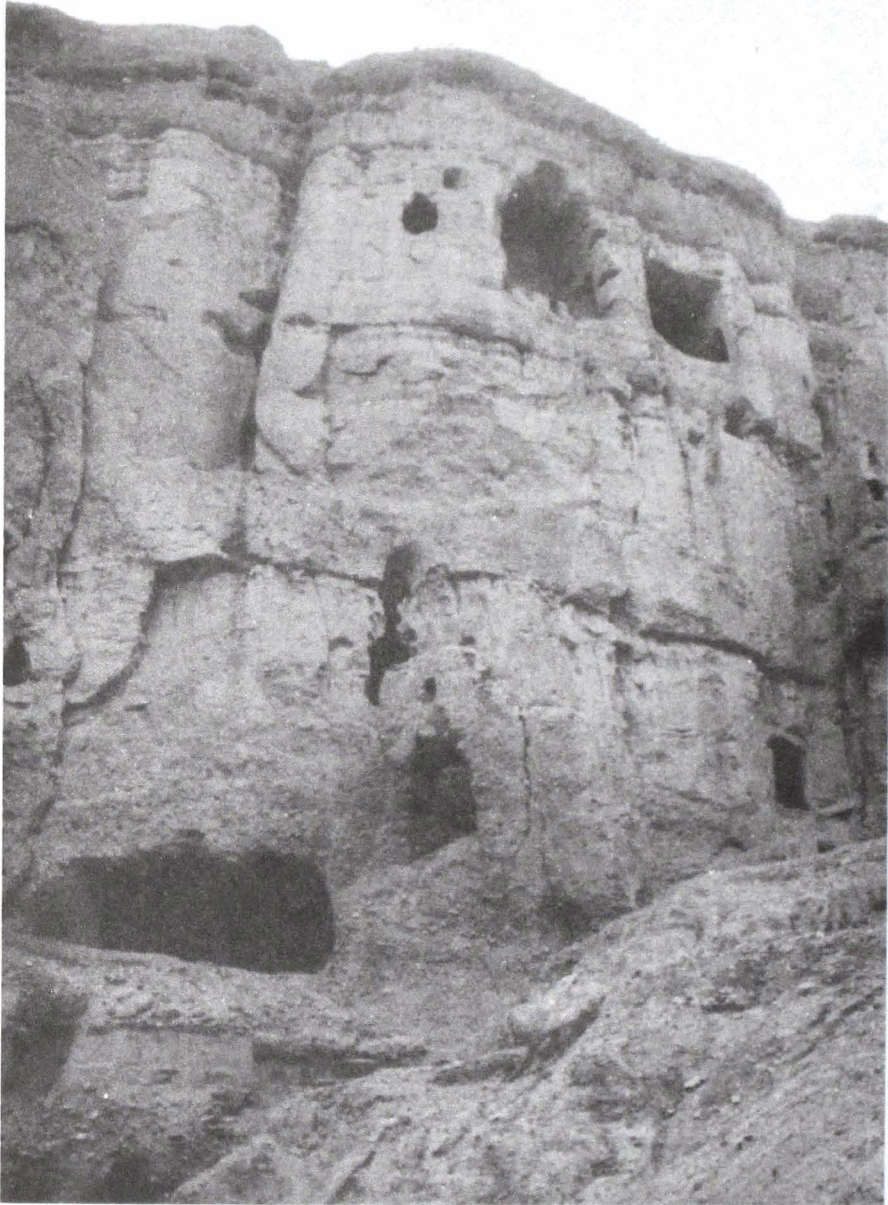
4. General view of the Small Buddha.



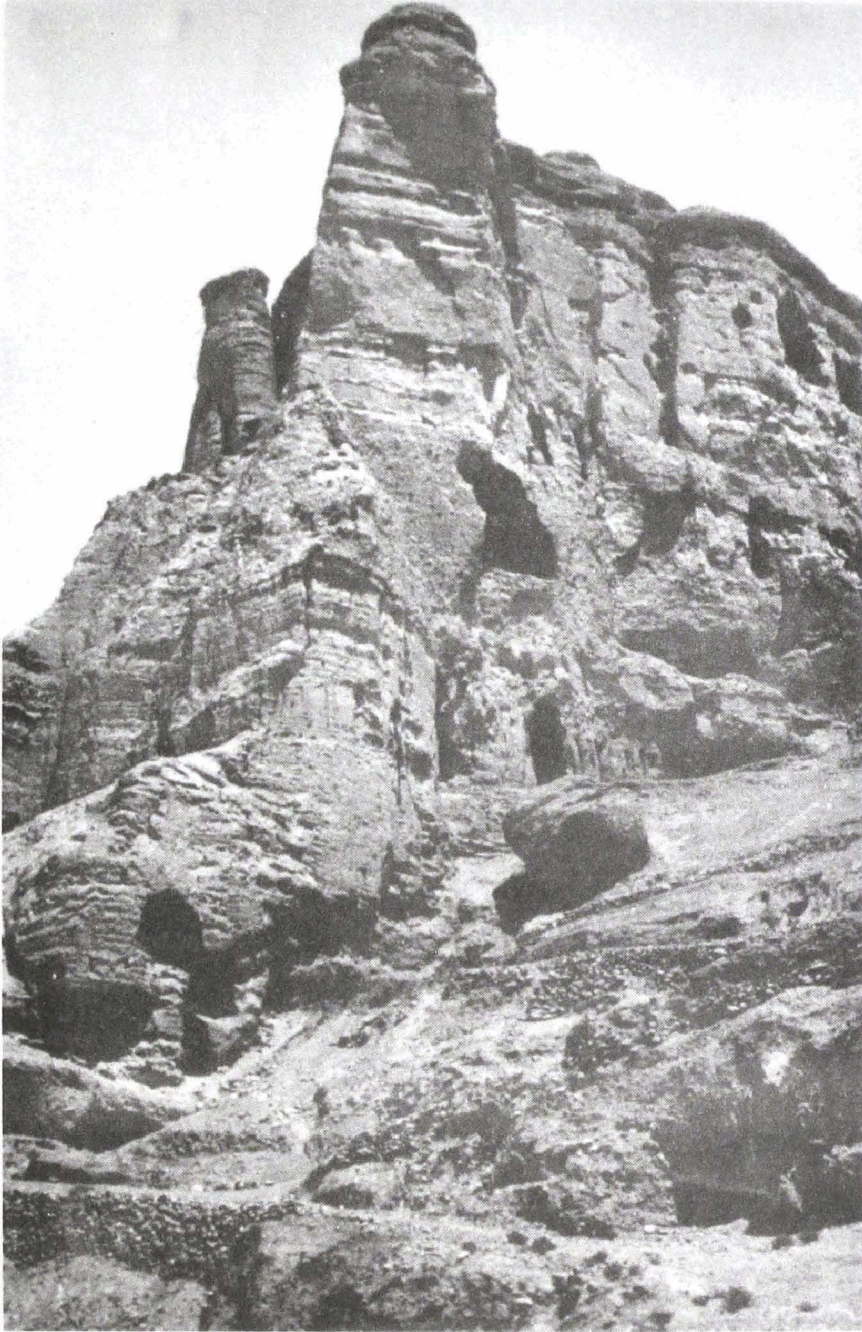
5. Section of the conglomerate showing the composition with bigger sized pebbles.



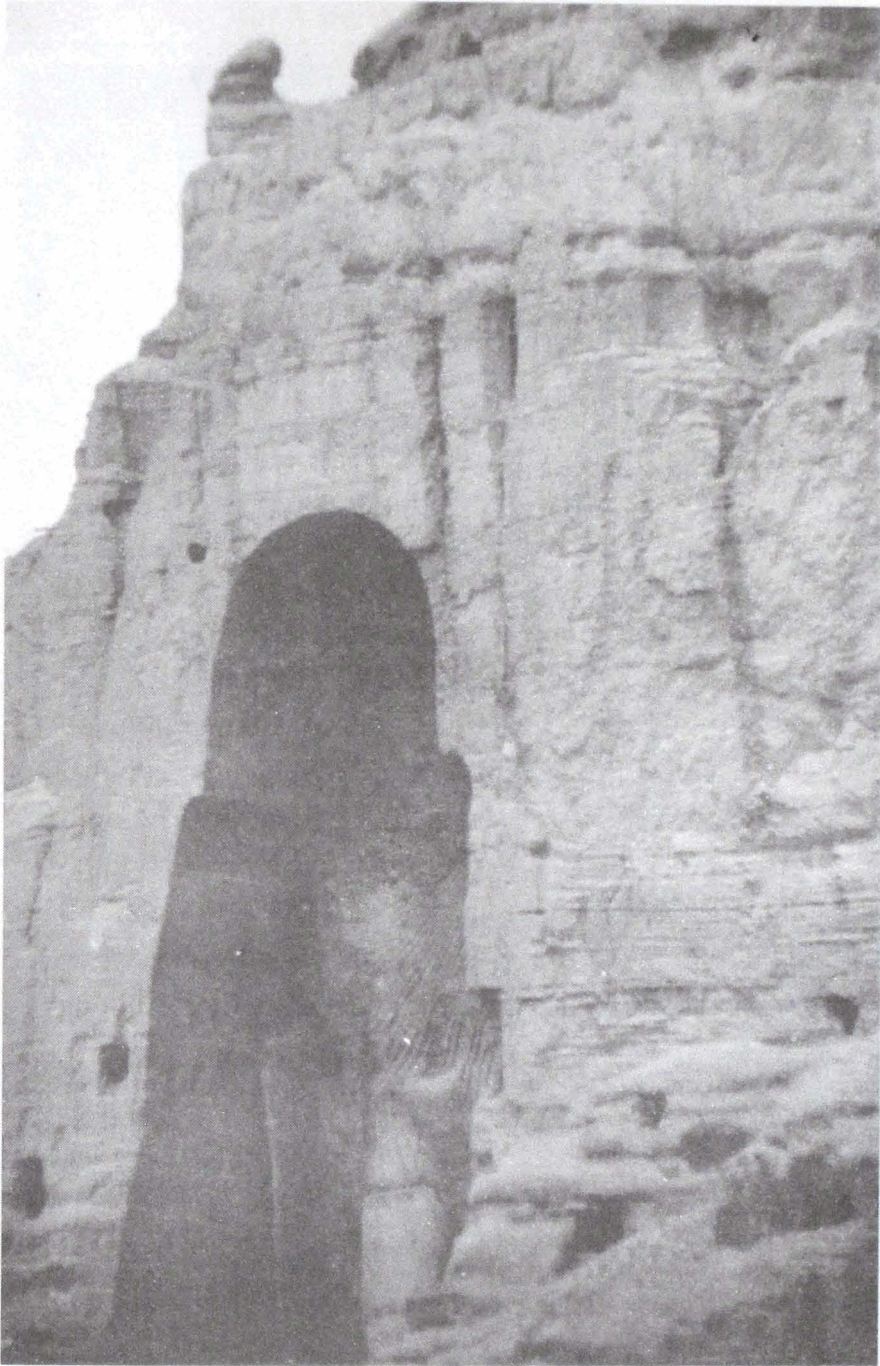
6. Exposed section of the conglomerate showing the composition with gravels.



7. A section showing the layers of conglomerate of the rock of Bamiyan.



8. Disintegration of rock.



9. Facade of the rock around the niche of the Big Buddha.



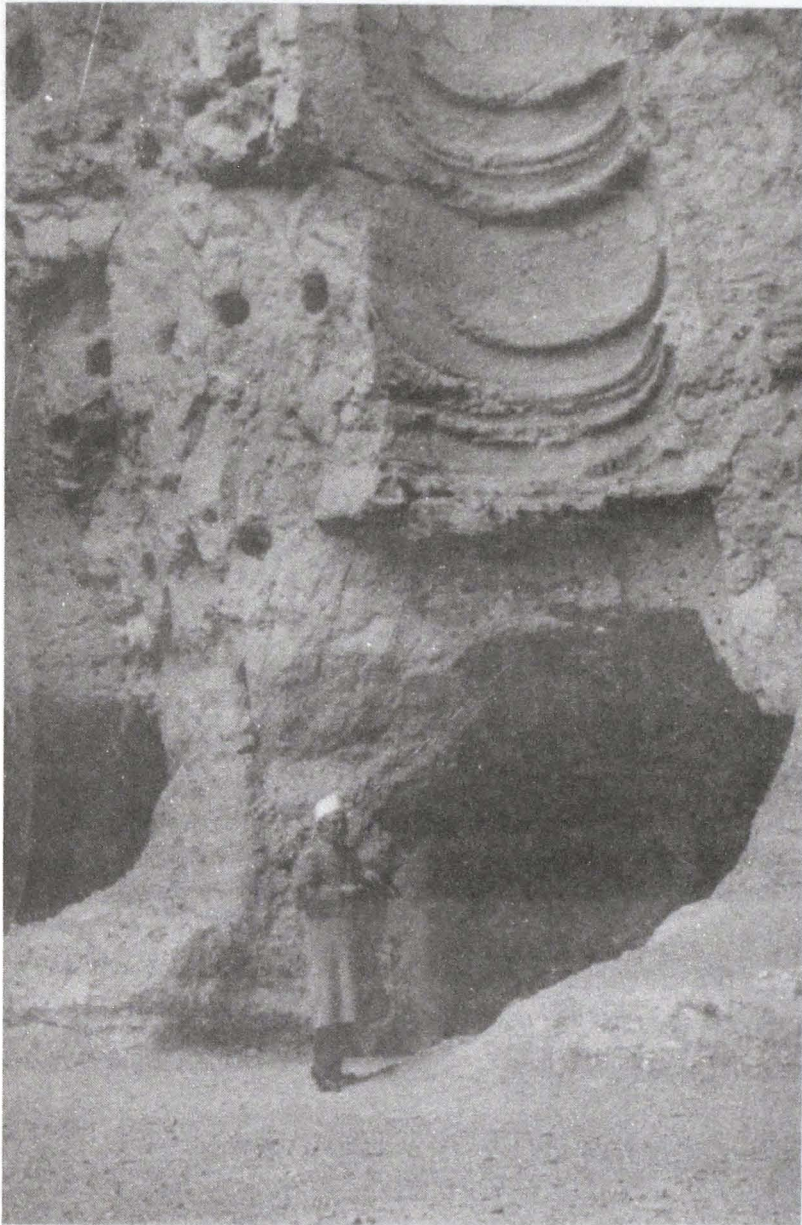
**10. General view of the facade of the niche
of the Small Buddha.**



11. The facade of niche and the Big Buddha.



12. Course of drainage above the niche of the Big Buddha.



13. The damaged feet of the Big Buddha.



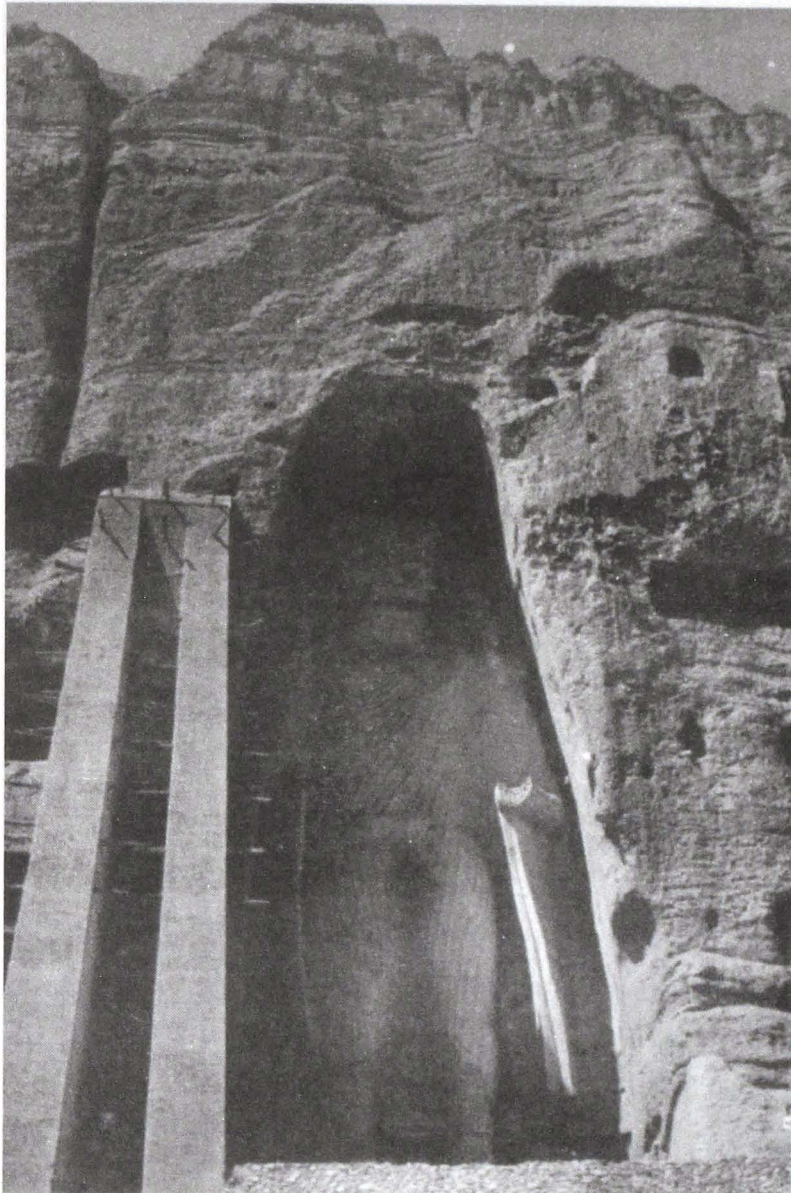
**14. Bamiyan. The Big Buddha
Afghanistan showing crack in the body.**



15. Right thigh of the Big Buddha showing cracks.



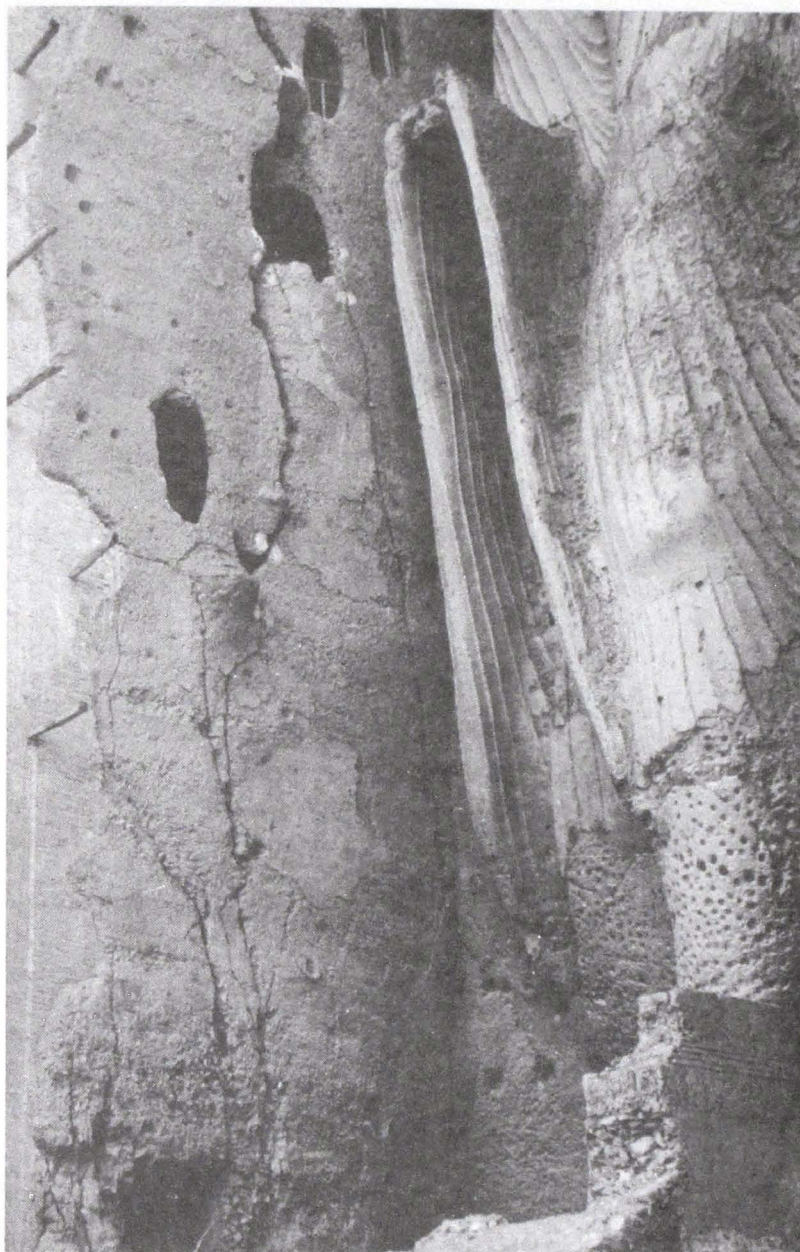
16. The damaged heel of the right foot of the Big Buddha.



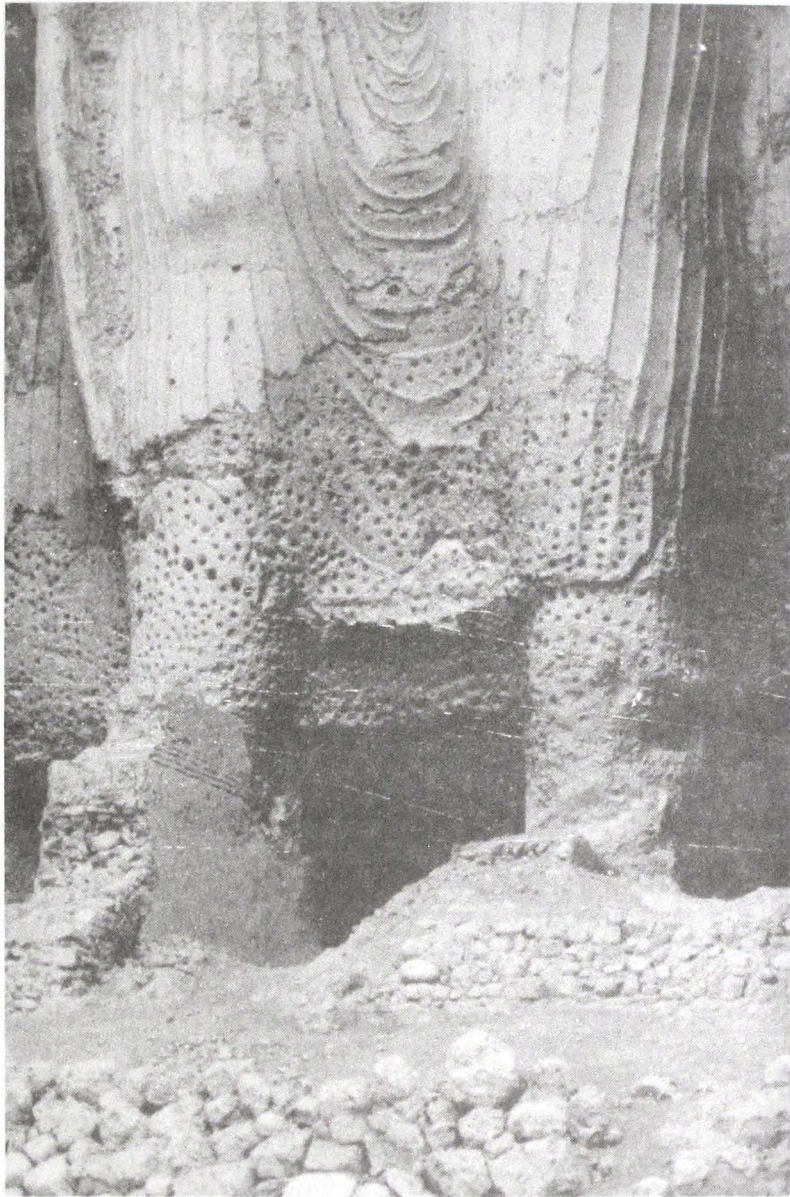
**17. Facade of the Small Buddha showing
the buttress wall of brick.**



**18. Cracks on the western wall of the niche of
the Small Buddha.**



**19. Cracks on the western wall of the niche
of the Small Buddha.**



20. The damaged lower portion of the Small Buddha.



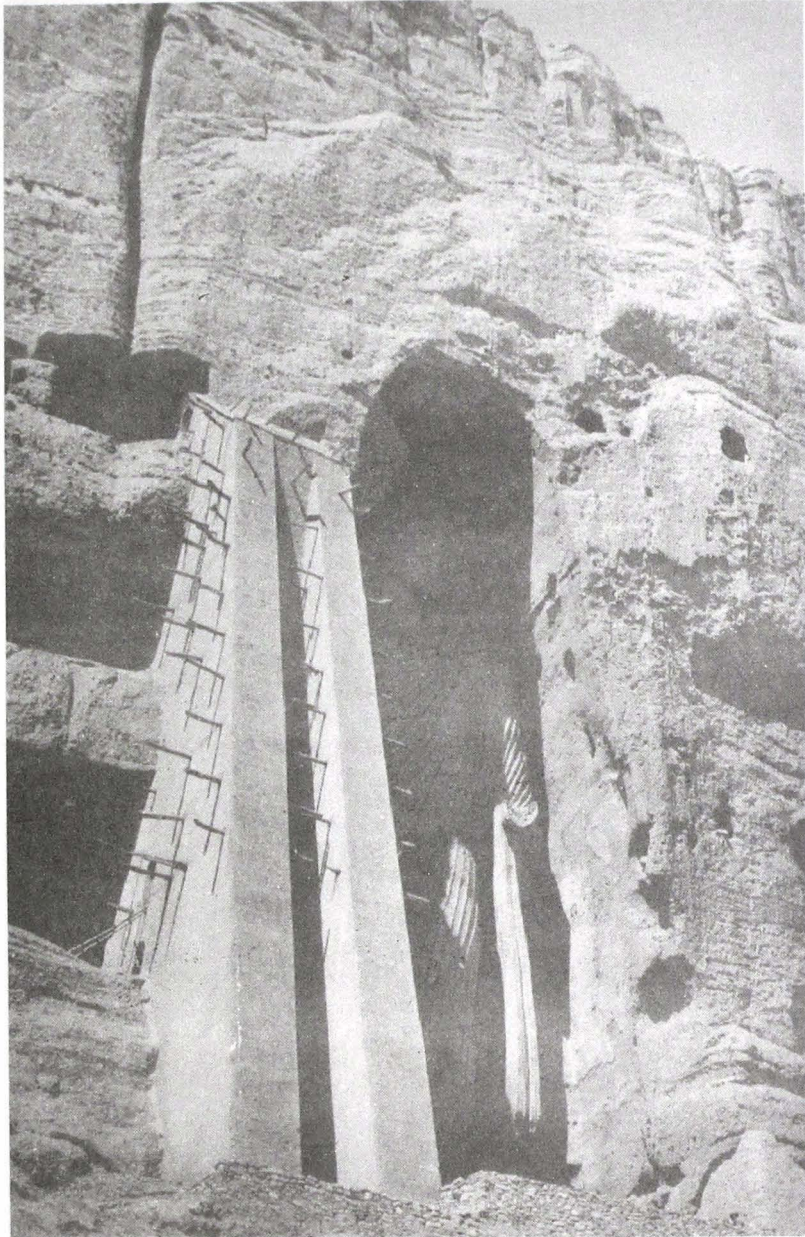
21. General view of the image of the Small Buddha.



22. Small Buddha showing the damage portion of the upper garment.



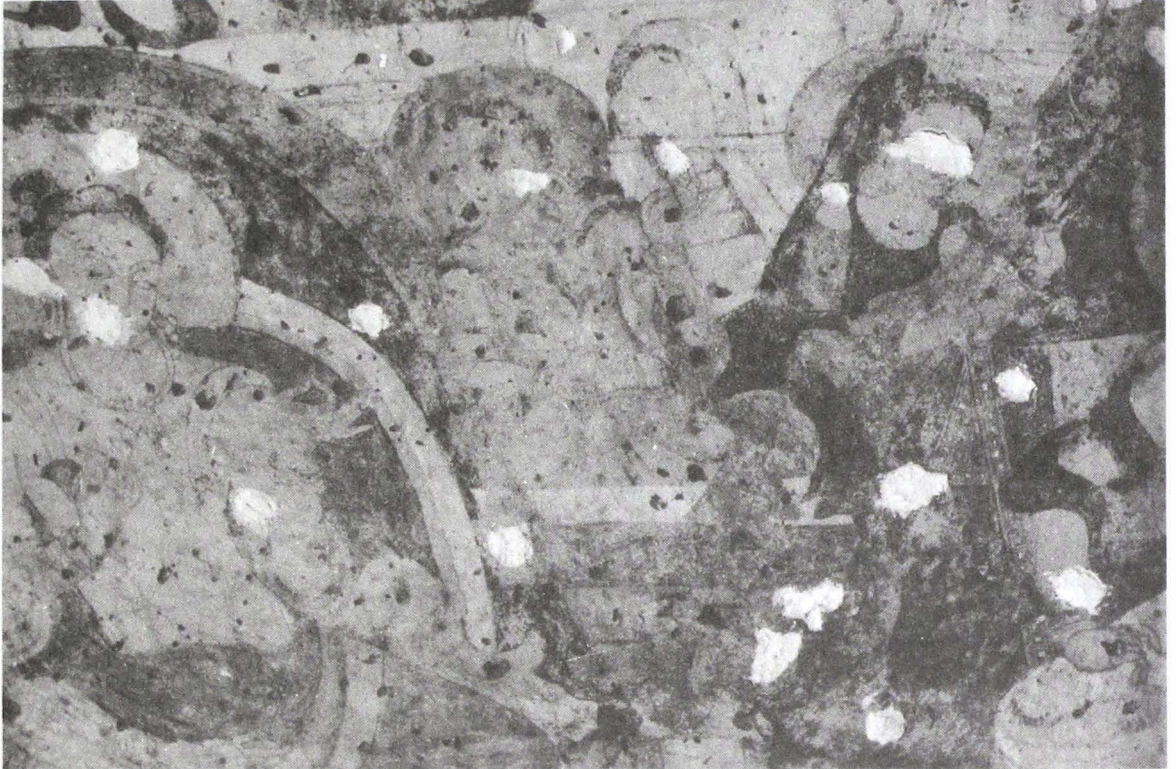
23. The head of the Small Buddha showing the damaged portion.



24. View of the facade of the niche of the Small Buddha.



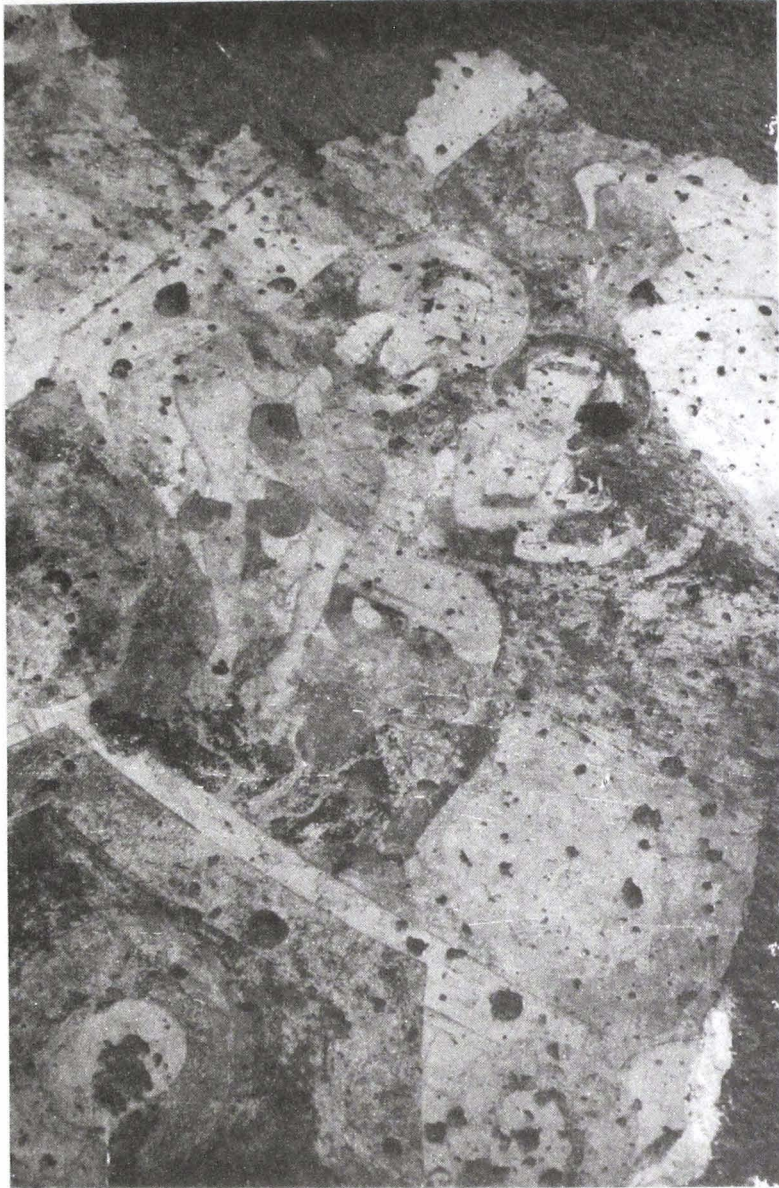
25. Paintings on the ceiling of the niche of the Big Buddha.



26. Paintings on the ceiling of the niche of the Big Buddha-right side.



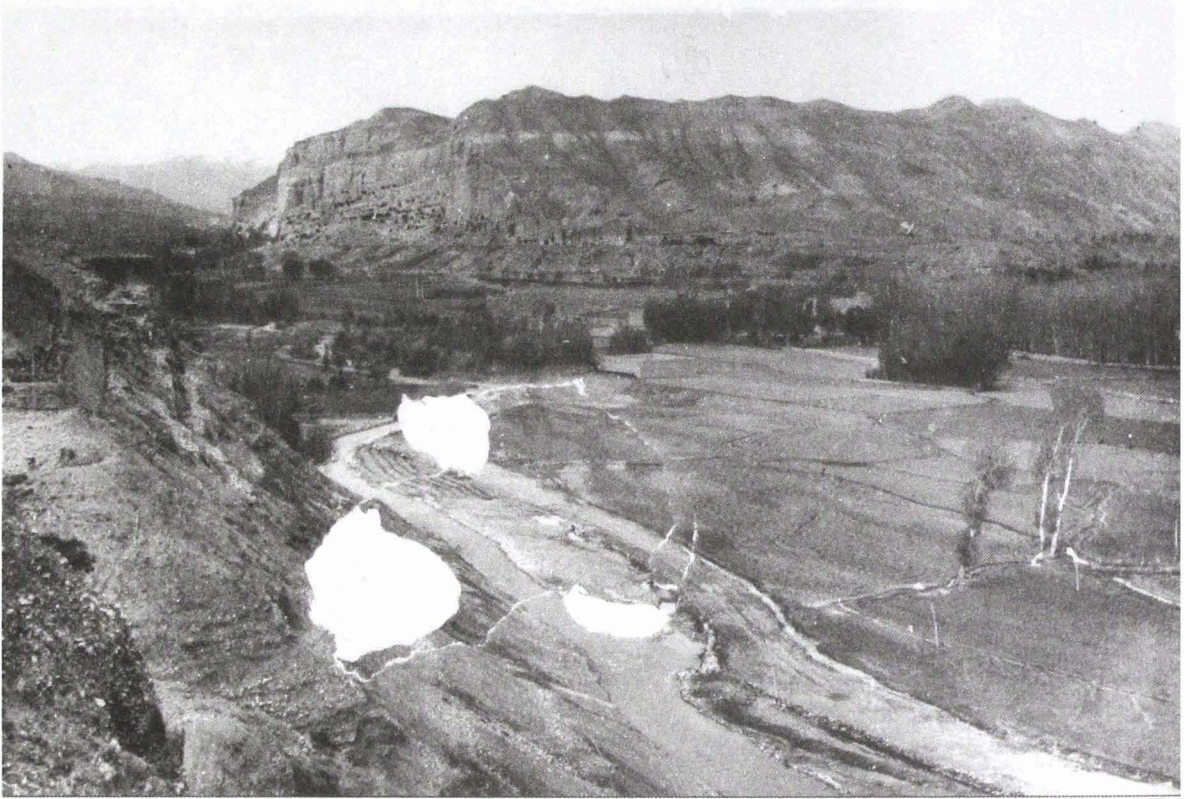
**27. Painting on the ceiling of the niche
of the Big Buddha.**



**28. Paintings on the ceiling of the niche
of the Big Buddha.**



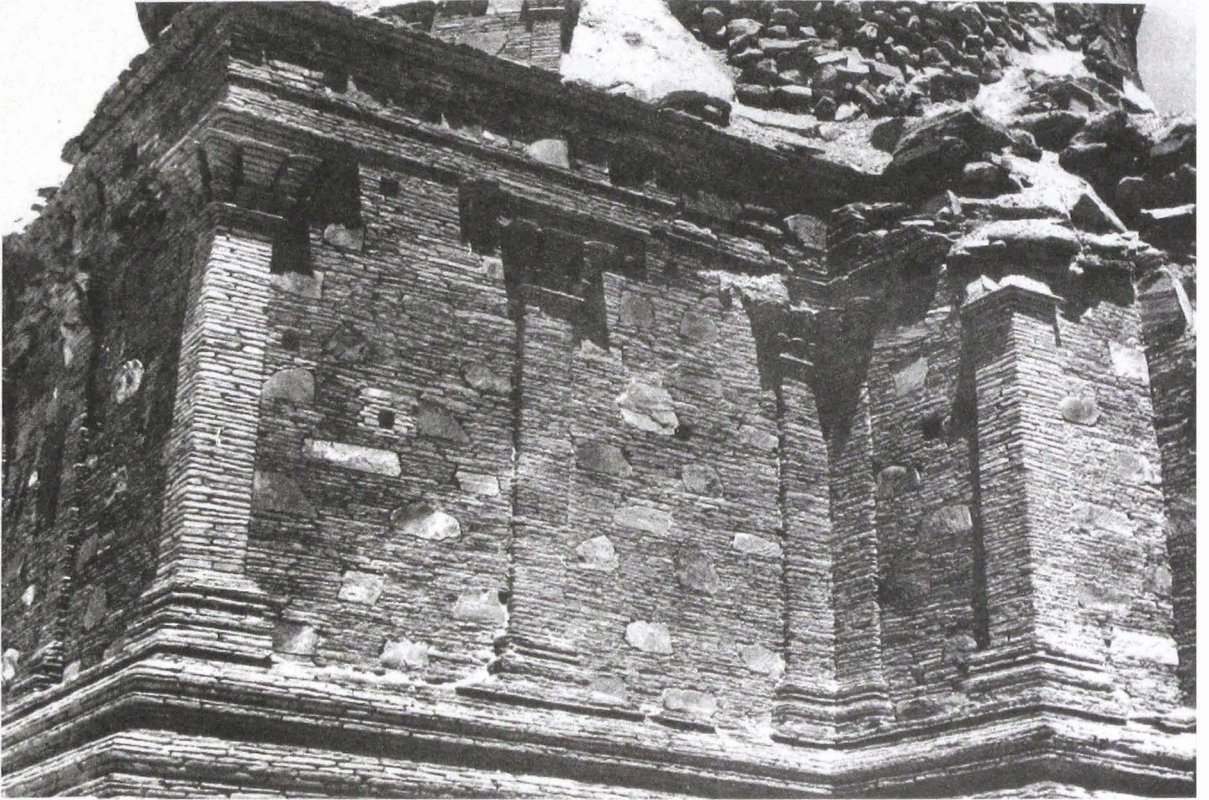
**29. Painting on back wall of the verandah of cave 12
to the right of the Small Buddha.**



30. Distant view of caves of Darra-e-Fauladi from Bamiyan.



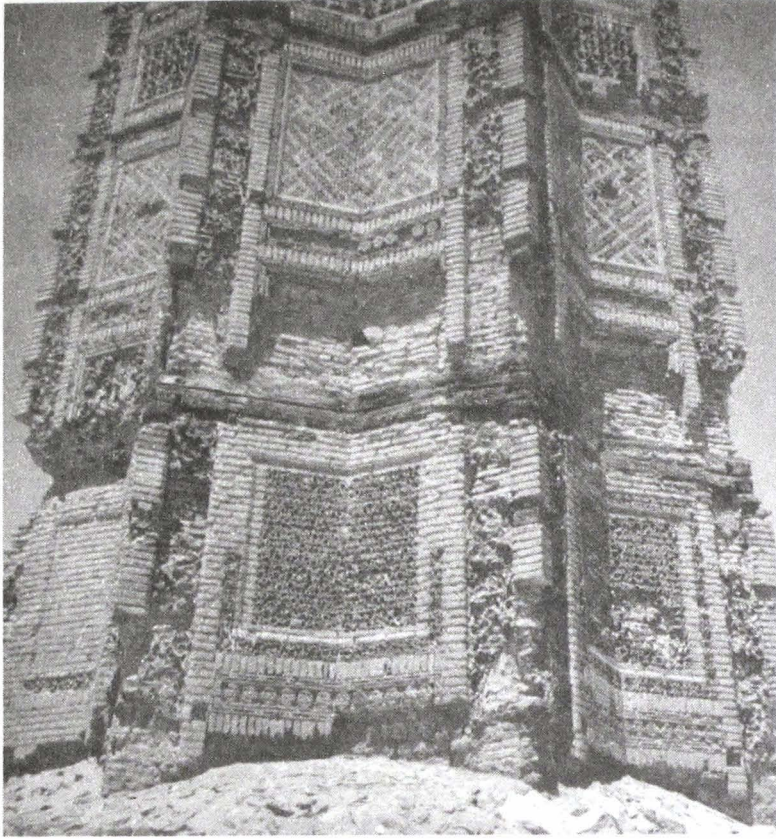
**31. Stupa at Guldara showing the ruins of a vihara
in the foreground during excavation.**



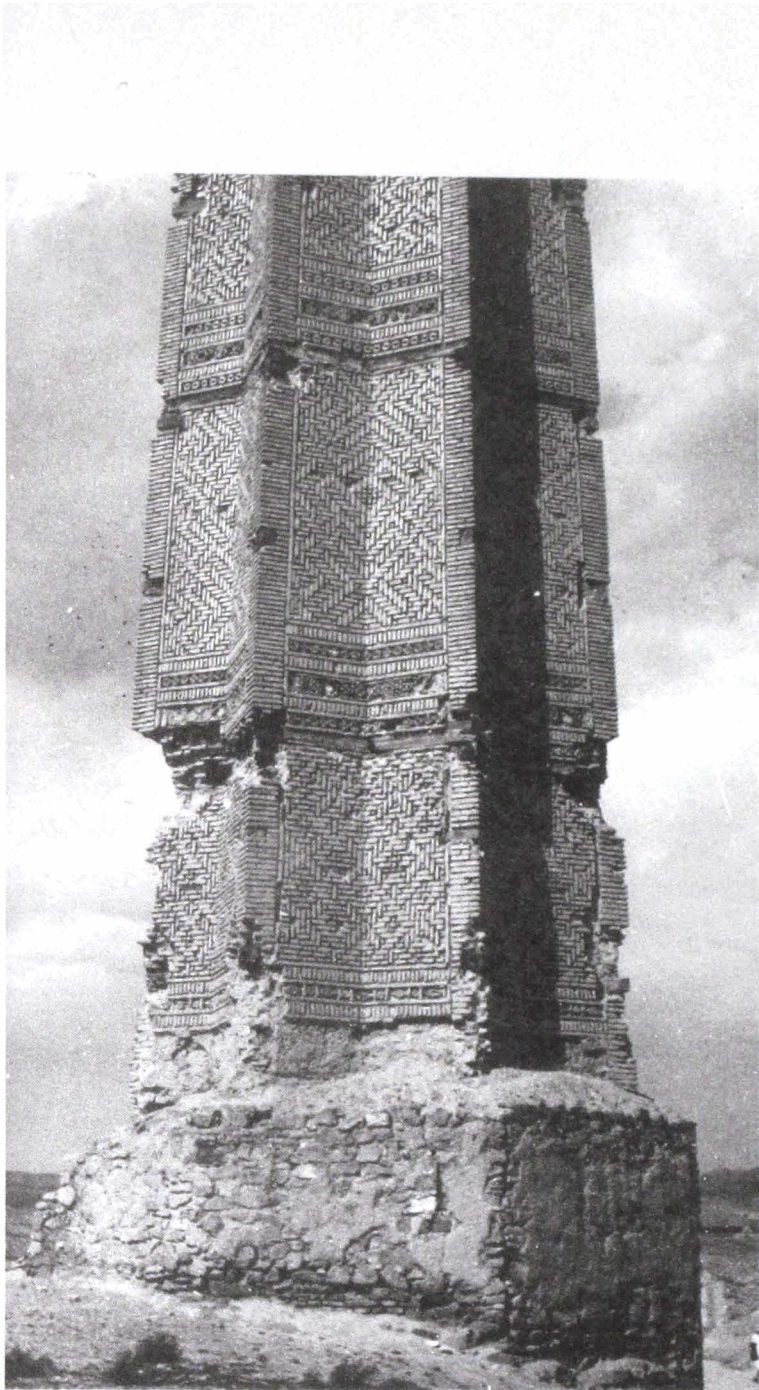
32. Stupa at Musa-e-logar showing the reconstructed portion.



33. Ghazni. First Minar on the right side of the road built by Bahram.



**34. Ghazni. Details of the masonry
of the 1st Minar to the right side of the road.**



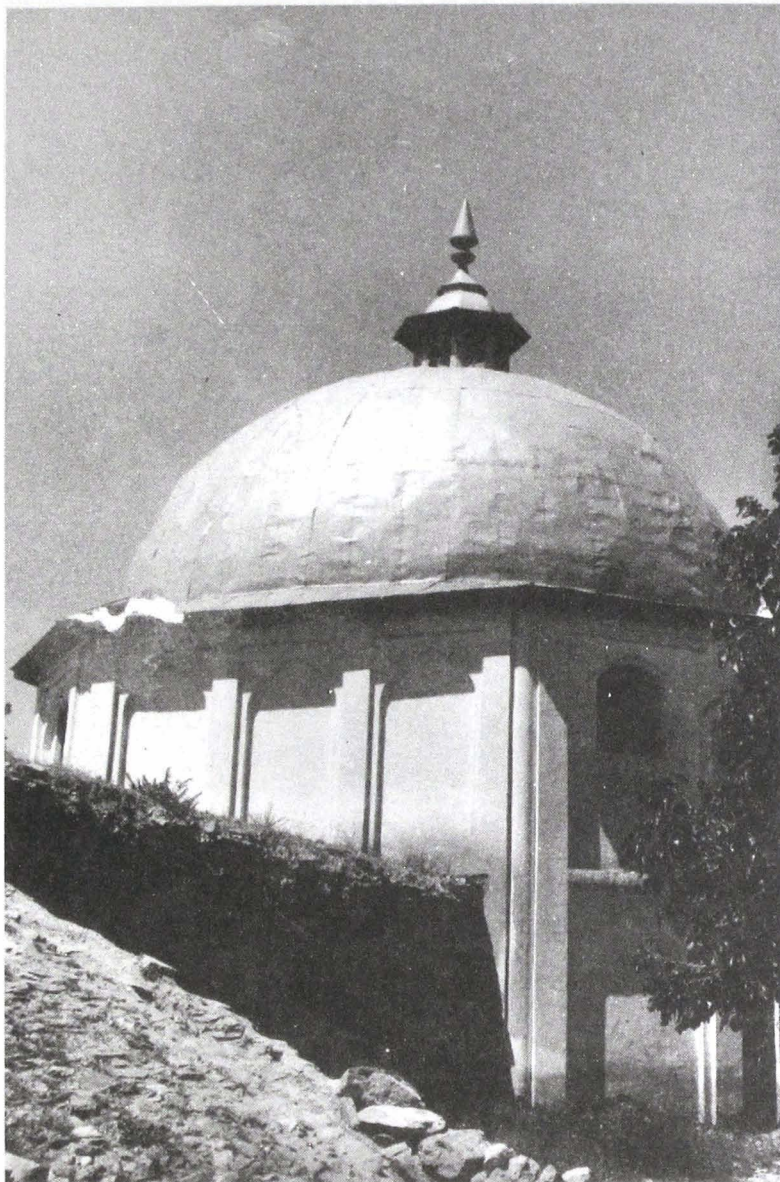
35. Ghazni. Details of designs on the 2nd Minar to the left of the road.



36. Ghazni. Second Minar on the left side of the road built by Masud III.



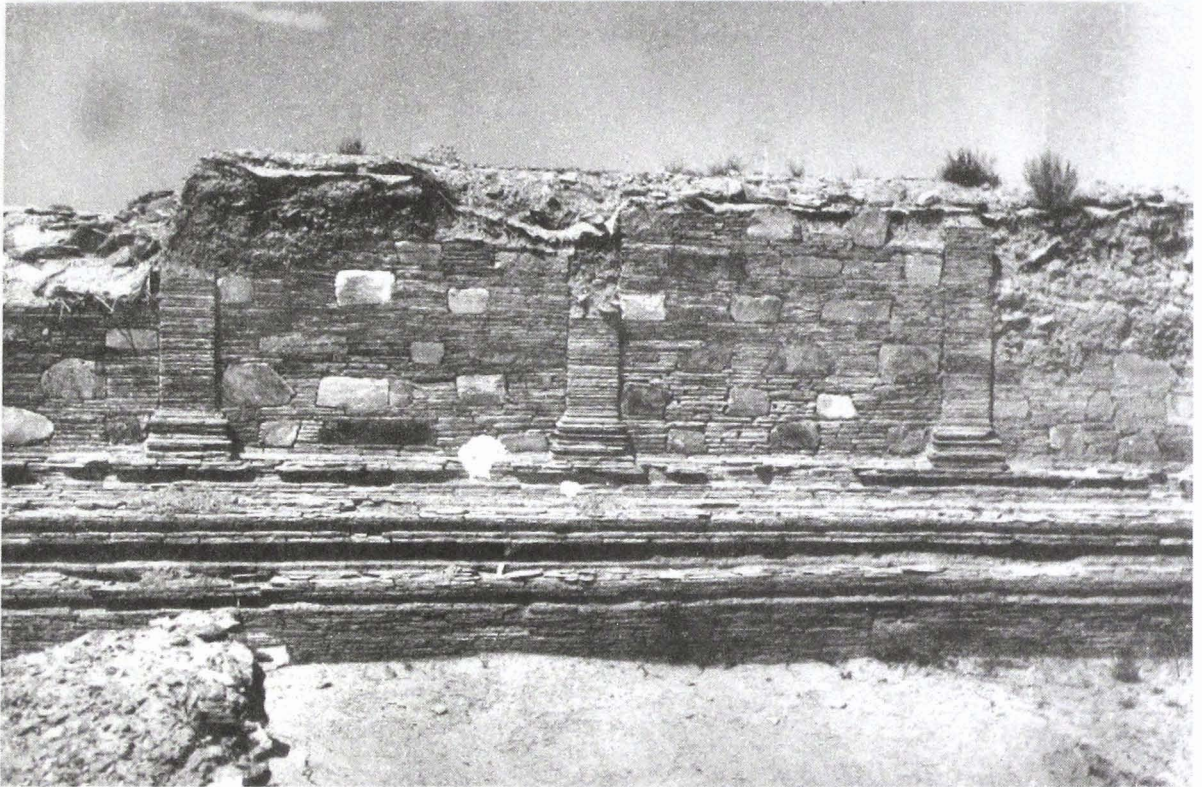
37. The wooden gate of the tomb of Mahmud of Ghazni wrongly believed to be of the temple of Somnath.



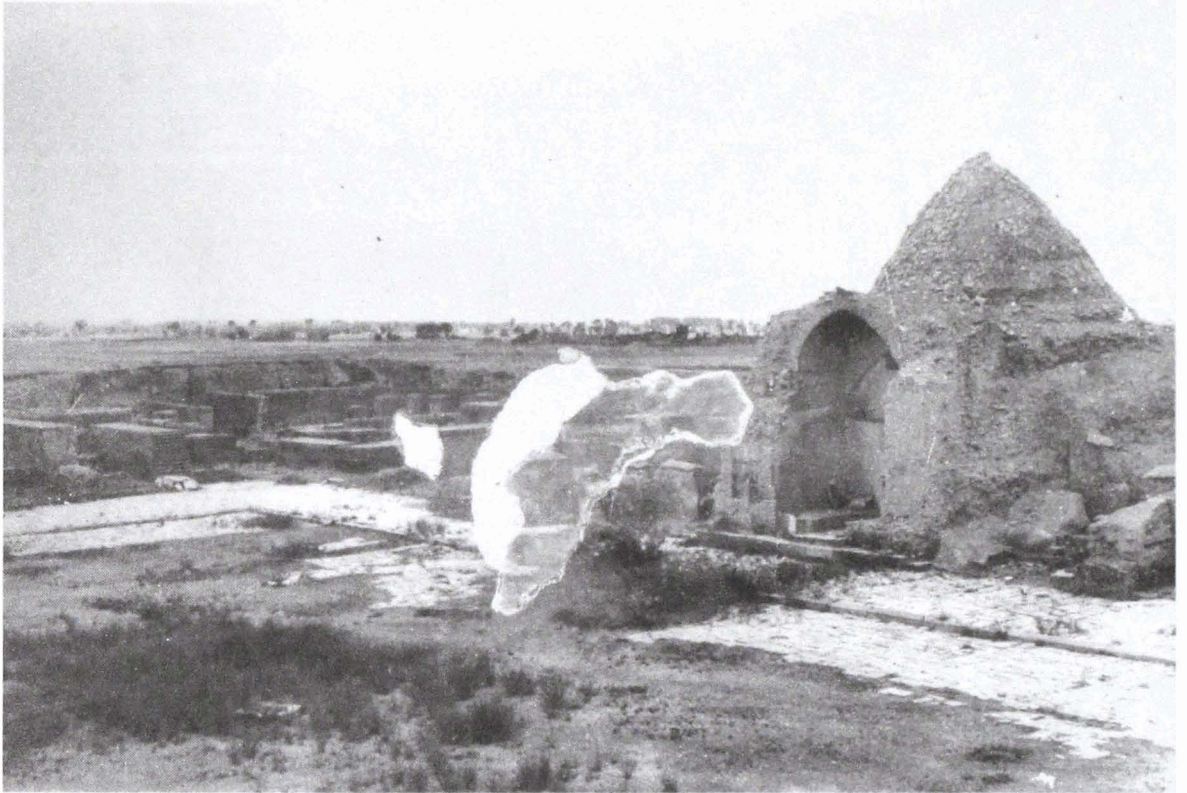
**38. Copper sheeting on the dome of the tomb
of Sultan Mahmud of Ghazni.**



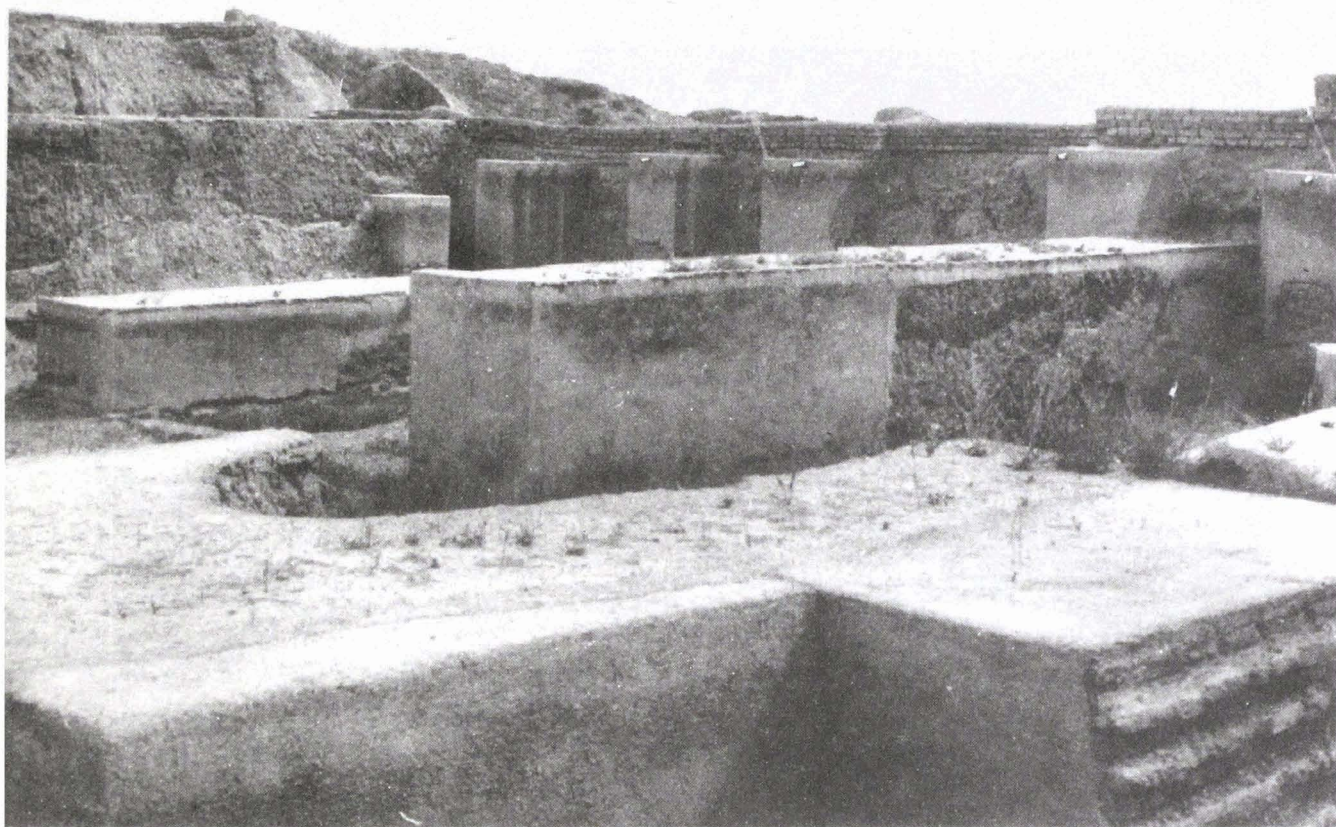
39. Tomb of Abdur Razzaq (as repaired by Italian Mission) at Ghazni.



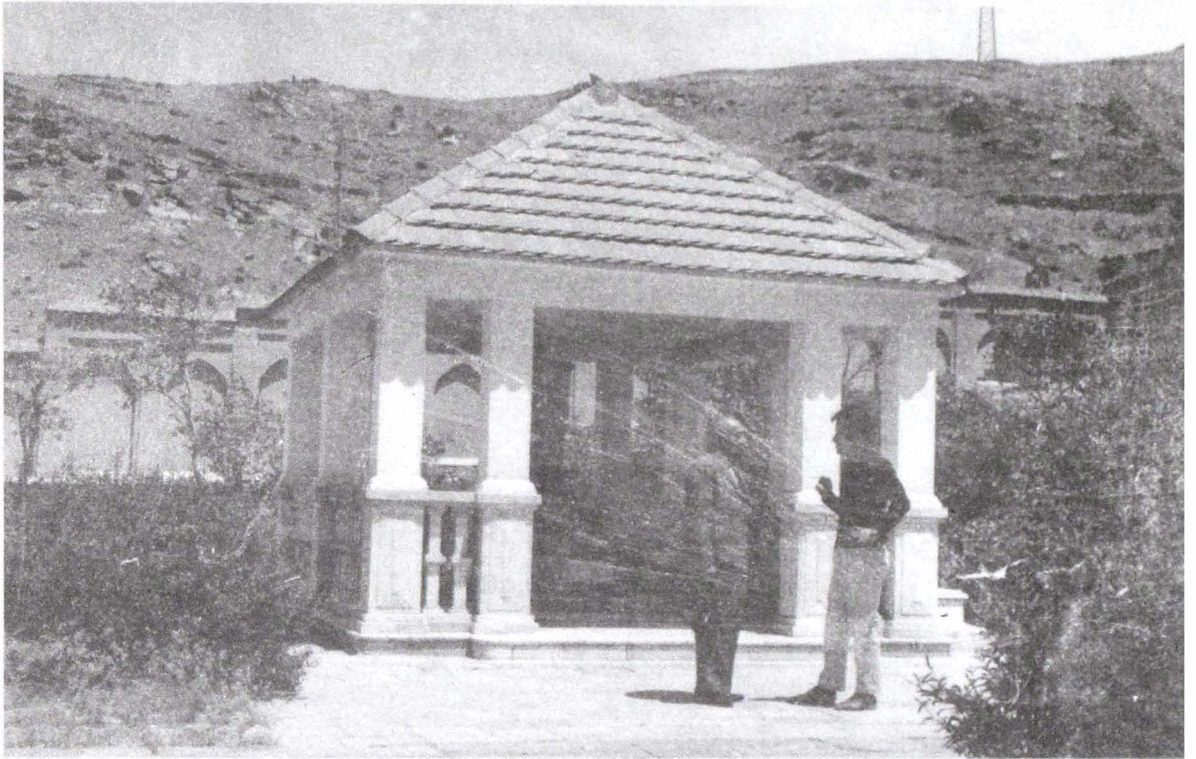
40. Ghazni. Details of masonry from the Tepesardara.



41. Excavated ruins of the palace of Masud III at Ghazni.



42. Mud plaster covering on the walls of the palace of Masud III at Ghazni.



43. The tomb of Babur with the modern construction over it.



44. A portion of Shahjahan's mosque showing repairs near the tomb of Babur.



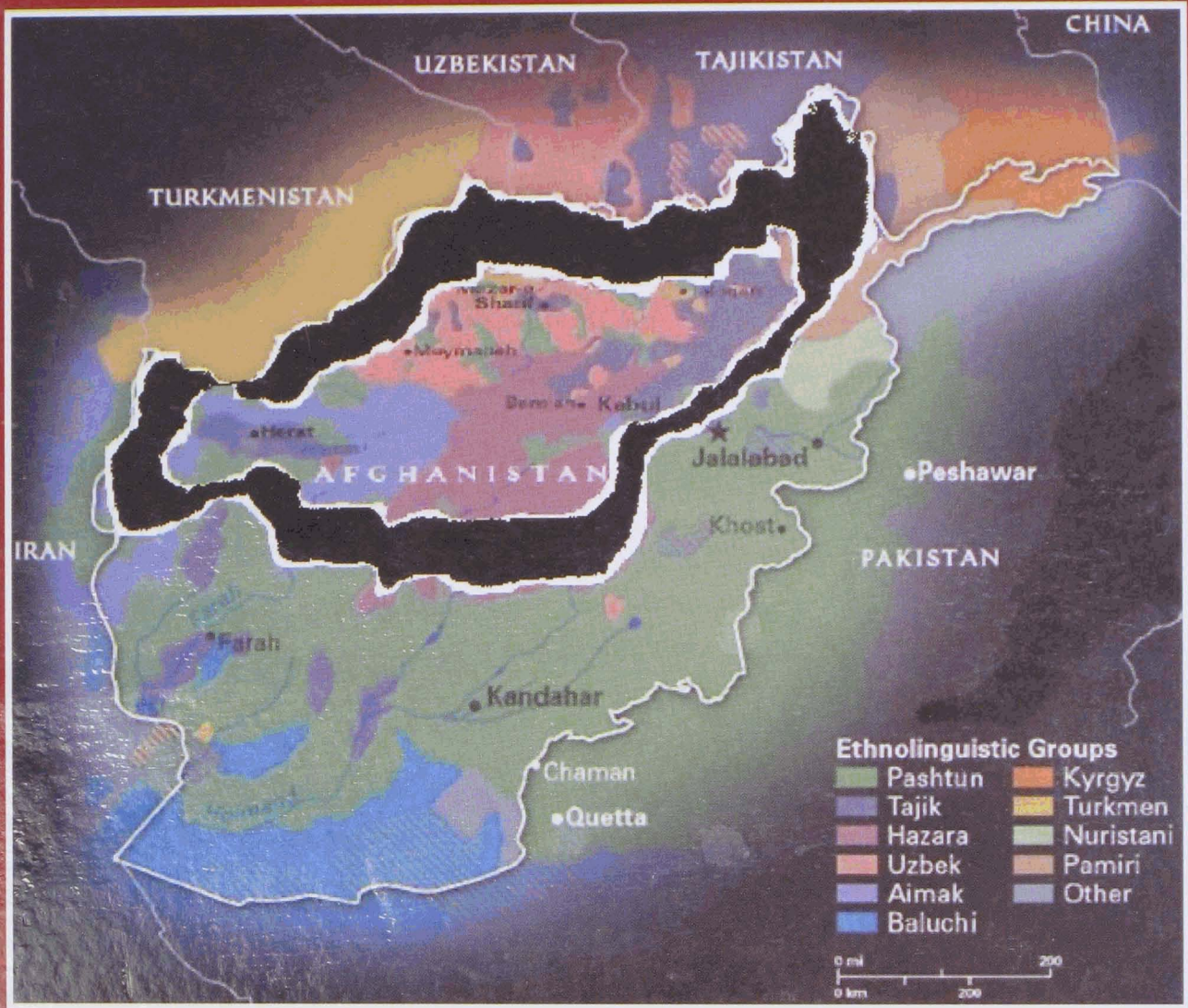
Buddha statues to rise from the dust

Seven years after the Taliban blew Buddha statues up, Afghan labourers picked up the pieces of two once - towing Buddha statues, hoping they will rise again and breathe new life into this dirt-poor province.

While they wait for the Afghan government and international community to decide whether to rebuild them, a \$ 1.3 million UNESCO-funded project is sorting out the chunks of clay and plaster - ranging from boulders weighing several tons to fragments the size of tennis balls and sheltering them from the elements.

Progress is slow in the central high land town of Bamiyan where the statues chiseled more than 1500 years ago into a cliff face about quarter of a mile apart.

They were originally painted in gold and adorned with wooden faces and ornaments. Mural paintings of Buddha images covered cave rooftops flanking the niches from which the statues were hewn.



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