

BUILDING CRASH PROBE

Gangaram had overall charge of construction

By A Staff Reporter

BANGALORE, Nov. 9. — Mr. N. Gangaram, the owner of the collapsed Gangaram building complex, said today that he had been in charge of the overall management of the building construction project.

Deposing before the Desai Commission probing the cause of the disaster, Mr. Gangaram said though he had initially entered into an agreement with the architect in his individual capacity, he had subsequently informed him of the formation of a company named "Gangaram Commercial Enterprises." During the course of construction he had also floated a partnership company which had later been converted into a private limited company.

On cross-examination by Mr. B. V. Achar, counsel for the architect, Mr. Deepak Master, Mr. Gangaram said, "I orally informed the architect about the company. I did not write to him on behalf of the company any time."

Mr. Gangaram, who had been given the site on lease for 20 years by M/s Gopal Films (who themselves had got the site on lease from Mr. Narendra for 40 years), said Gopal Films had not told him that the foundation was capable of supporting only seven floors.

To a question from Mr. Ganapati (Chief Architect of the Department of Space) and technical member of the commission whether he was supervising the construction work, Mr. Gangaram claimed that whenever he had visited the Bangalore Book Bureau he had visited the hotel complex under construction. "I have studied only up to Standard IX. I do not have any experience in construction work," he said.

To a specific question from the other technical member, Mr. K. T. S. Iyengar (IISc professor), the witness deposed that it had not occurred to him that he should arrange a meeting between the old and the new archi-

tects.

"I did not get the strength of the existing structure checked up to see whether it could bear the additional load of seven floors," he said.

Throughout the cross-examination, Mr. Gangaram maintained that whatever he had done, including the deviations from the original plan, had been done in consultation with the architect. He, however, admitted that he had not consulted anyone in the appointment of the interior decorator for the hotel project. "As per an agreement between me and Mr. Nagaraj Gupta, the prospective tenant of the hotel complex, he was to get the interior decoration work done."

Mr. Gangaram, however, deposed that at the instance of Mr. Gupta, M/s Harsha and Ramaswamy were appointed the interior decorators. "It is possible that the modified plan, submitted to the Corporation in July 1983, was based on the plans for interior decoration given by M/s Harsha and Ramaswamy."

About the plumbing work, he admitted that though the architects had made provisions for laying the plumbers, he had not consulted them while appointing the plumbing contractor. The electrical work had not started at the time of the collapse.

Mr. Gangaram, who used to supply the cement to the project himself, said he had taken delivery of Korean cement at Mangalore Port and bought some from the Dalmia Co., in Tumkur and Chitradurga. He said he did not have details of the "controlled cement" he had bought. He admitted that the architects used to certify only the quantity of the cement needed for the project and not its quality.

About the controversial basement floor, Mr. Gangaram said he had told the architect in April 1981 about his intention to have it. He had plans of starting a printing press in the cellar floor (basement floor). He denied that the idea of that floor was his own and said it was one that had cropped up during discussions with the architect.

He said he did not know before the work started that the drawings meant for "submitting to the corporation" were different from "the working drawings meant for actual construction." The plan submitted by the architects in July 1984, he said, contained provisions for basement but not the earlier ones.

He admitted that there were a number of changes in the 1982 plan and the 1983 modified plan, approved by the Corporation after collecting a compounding fee of Rs. 40,000. He denied that he had told the architect that the 1982 plan had been approved by the Corporation and he could go ahead with the work.

On cross-examination by Smt. Uma Shankar, counsel for Mr. Bhanu Murthy, the structural engineer, Mr. Gangaram said Mr. Murthy had to inspect works when called upon to do so. He admitted that at one of the meetings of himself, the architect, the contractor, and the structural engineer, Mr. Murthy had brought to his notice that the contractor had undertaken the RCC works without his knowledge.

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BUILDING COLLAPSE

Govt urged to punish guilty officials

By A Staff Reporter

BANGALORE, Sept. 22. — The Government should not spare any Corporation officials, including the Corporation Commissioner, if scrutiny of files proved that they were guilty of irregularities in the construction of the Gangaram highrise building and they should be kept under suspension, Mr. A. K. Subbaiah said in the Council today.

He observed that a judicial inquiry would be time-consuming and the guilty officials were likely to manipulate records and escape responsibility for the recent tragedy that struck the City.

Mr. Subbaiah said that according to one version, the original plan of the Gangaram complex did not contain the provision for the cellar which was said to be used for showing blue films.

Mr. Subbaiah, who was participating in the discussion on the working of the Urban Development Department, said he was given to understand that the previous Corporation Commissioner had ordered the demolition of the structure for deviating from the original plan.

He asked the Minister to show courage in tackling the racket of house building societies and the vested interests engaged in this business.

The Acts relating to the Corporations and the Municipalities should be amended to give more powers to the elected representatives like the proposed zilla parishads, he said.

He wanted an inquiry into the temporary appointments of over 1,000 pourakarmiks in the City Corporation. He alleged that bribes of around Rs. 3,000 had been taken from these employees.

Mr. Hajee Abdul Sattar Sait

(Cong-I), initiating the debate, regretted the delay in commissioning the Cauvery Water II Stage and urged the Government to take up the III Stage also in view of the rapid growth of the City.

Opposing any move to hand portions of the Bangalore Palace lands at Rajamahal Guttahalli either to the son of the former Maharaja or a particular contractor, the member asked the Government to develop the property as a public park or a disneyland. The palace lands should belong to the people and the Government should throw the gates open to the public, he said.

Mr. Sait expressed his fear that the 'Space Museum' project, financed by the Centre, might be denied to the City if the Corporation failed to allot the lands for the purpose.

Deploing the fact that Bangalore had become a "slum city," he suggested that 'slum Squads' should be formed to check their growth.

Mr. V. S. Krishna Iyer (Janata) warned the Government that Bangalore would be a doomed city like Calcutta if its growth was not planned through a statutory metropolitan council. He said over one lakh unauthorised constructions, including huts, had come up during the last 10 years changing the face of the City.

He advocated the re-imposition of octroi levy as it was a source of revenue to the City Corporation. The Slum Board should have more powers to make it more effective.

Mr. Iyer said arrangements for the proper distribution of the water flowing from the Cauvery II Stage should be immediately taken up. The III Stage of the project should also be undertaken without delay, he said.

Four more bodies recovered from debris in Bangalore

BANGALORE, Sept. 26.

Four more bodies, two male and two female, were extricated today from the debris of the multi-storied building which collapsed here on Sept. 12.

One body taken out in the afternoon was identified as that of Mohammed Hussain (25), a construction worker. The other bodies could not be identified. With this, the number of bodies recovered so far is 45.

Today the tunnelling operations to rescue possible survivors still trapped in the rubble, were stopped. The Public Works Department has taken charge of clearing the debris. A special crane capable of lifting about 15 tonnes of debris at a time would be used from tomorrow, official sources said. — Our Staff Reporter.

Contractors alone cannot be blamed for building collapses

BANGALORE, Sept. 26.

The Public Works Minister, Mr. H. D. Deve Gowda, said here on Monday that, contractors alone should not be held responsible for building collapses and dam and bridge works going awry.

Addressing the concluding session of the two-day conference of the State contractors here, he referred to the Chief Minister's advice to contractors on Sunday and said in tragedies like the Gangaram shopping arcade crash and the Gopinathan tank breach, the contractors could hardly be blamed. The data collected for use in the execution of a work and the work design as such could be faulty.

The Minister felt that the quality control division in the Public Works Department needed to be streamlined for ensuring good work by contractors and engineers of the department. He said he would bring to the notice of the Centre the pilferage and "underhand dealings" in the supply of cement to States.

The Minister appealed to the Contractors' Association to contribute 75 per cent of the share-capital for the proposed cooperation bank to be set up to help the needy contractors.

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5-1-88.

It's a long nerve-wrecking wait for relatives of those still trapped under the collapsed Gangaram complex in Bangalore, seventeen days after the tragedy (Tuesday). Chances of finding survivors are remote, it's only bodies trickling out.

SEVEN BODIES RECOVERED

25-tonne crane working on debris

By A Staff Reporter
BANGALORE, Sept. 27. — Seven more bodies were recovered from the debris of the collapsed building here as demolition operations continued.

Three of the bodies have been identified as Mani, 35, a construction worker hailing from Thiruvarthur in Tamil Nadu, Kanan, 35, a coolie and Annamalai, 15. The other four bodies have not been identified as yet. A 25-tonne crane from the Railways has meanwhile been pressed into action

and is clearing away massive pieces of concrete. PWD men reportedly had to search high and low to find a trailer that could transport the crane to the site and finally found one in Mysore which was used yesterday.

The daily wage PWD employees clearing away the debris, are reluctant to work beyond 10 p.m. in the night it is said. They are also reportedly panicky about touching the decomposed bodies and so the work of transporting the dead is being done as before by Home Guard personnel and volunteers, among whom is an ex-serviceman, Krishna, employed at HMT.

About 300 tonnes of debris on an average are being carted away daily and HAL has provided 20 gas cutters for the work of cutting through the steel rods embedded in the concrete. About 17 lorries are being used to cart away five tonnes each. Seventeen more lorries have been kept in reserve.

It has been suggested that Civil Defence people may be used to clear the debris during the night, so that work could be done speedier. The daily wage employees number between 300 and 350. After some confusion as to organisation of the work in the first few days, the clearing operation is now following a systematic pattern as far as the daily wage workers are concerned. It is hoped the debris may be cleared in about 10 days.

HERALD

One more body extricated

By A Staff Reporter
BANGALORE, Sept. 25. — A 50-year-old construction worker's body was extricated today from the rubble of the collapsed Gangaram building taking the number of bodies recovered so far to 40.

The latest find has been identified as Siddamma, wife of Sabanna, belonging to Boodanav in Shahapur Taluk.

It is difficult to say as to how many more bodies are in the debris. If one goes by the list of missing persons prepared by the police, the number of bodies still under the rubble must be about 60.

However, the police themselves are sceptical about the authenticity of the complaints about missing persons. They expect only 30 more bodies from the debris.

The bodies extricated so far have been mostly of construction workers. A small number of employees of the book bureau figure among the finds.

Acute decomposition of bodies have rendered their identification problematic. The relatives have been identifying the bodies on the basis of the dress or ornaments.

The bodies of Medappa, Deviprasad and sales girls are yet to be extricated.

Meanwhile, the PWD authorities had pressed into service 200 workers to remove the debris. The workforce is expected to be raised to 350 from tomorrow. The rate of removal of debris has been around 300 tons a day. The "Fork Grab" from the HAL and the heavy crane from the Wheel and Axle Plant have still not arrived.

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DECCAN HERALD

6 bodies recovered, road opened

By A Staff Reporter
BANGALORE, Sept. 21. — With massive clearing operations of the debris of the collapsed building here by armymen with the help of the Public Works Department, life has returned to normal on Subedar Chatram Road, one of the city's busiest roads, which opened for vehicular movement today.

While tunneling continues from the last point to the basement of the collapsed building, the general opinion seems to rule out the possibility of any more survivors.

Six bodies were removed today — two male and four female. Two of the females were identified as Banamma, a 12-year-old coolie, and Shabamma, (25), a coolie from Gulbarga. While one male body has been identified as Dayal, (17), a coolie from Andhra Pradesh, the identity of the other three bodies was yet to be known at the time of going to press.

With the assistance of the PWD men, and the use of a 20-ton capacity crane from a private firm in Pune, the debris are being cleared quite speedily.

Meanwhile, owing to the advanced state of decomposition of bodies, police are finding it difficult, since a number of claimants are claiming the bodies to be their kin. The only means of identification seems to be by the clothes, and in view of the compensation announced to the next of kin, conflicting claims are being put forward as to the identity of the victims.

The tunnel to the basement seems to be repeatedly facing problems owing to beams coming in the way, but the work is being continued. In the meantime, the road is the scene of hectic normal business, and the usual row of taxis has returned along with other traffic, although they have to follow deviations. Even BTS buses were seen plying, almost upto the accident-spot. Business had come to a standstill on

the road for the last nine days, a shopkeepers, while voicing concern over the fate of the victims, were becoming agitated over the slow pace of clearing operations. The collapsed building is flanked on all sides by hotels which came in handy for the rescuers, police and pressmen to set up their bases.

Meanwhile, most of the BGML team from Kolar, which did most of the tunneling work, has returned, their work having been completed. The armymen have taken over work on the last tunnel. The volunteers have also packed up, having given their all to the rescue operations for nine days and nights. Mr. B. V. Sreeram, an ex-serviceman, who has been on the spot since the collapse, and has pulled out a number of rescued persons, had not left the spot since the collapse.

DECCAN HERALD

Stay on high-rise buildings altered

BANGALORE, Sept. 28. — The City Police Commissioner has modified the stay order on construction of multi-storey buildings following recommendations by the Expert Committee constituted to examine the state of high-rise buildings presently under construction.

According to the notification structural and non-structural work is permitted pending inspection in relation to the number of floors sanctioned by the Corporation.

For sanctioned construction of ground floor plus three or four upper floors, work is permitted on ground floor plus one floor. For sanctioned ground floor plus five or six upper floors, ground floor plus two floors is permitted. For ground floor plus seven or more upper floors work in ground floor plus three floors is permitted.

The order said that in case the work has already proceeded beyond the permitted floor limits curing of all concrete already cast is permitted and items of work involving concreting or involving use of lime, cement, reinforcing steel is permitted. Structural steel is not permitted in any floor and brick work is also not permitted in any floor.

The above restrictions will not apply to those buildings for which the competent authority has accorded sanction for construction of greater height.

Gangaram blames builders

By Our Staff Reporter

Bangalore, Sept. 25 — Poor workmanship in the construction may be the reason for the collapse of the nine-storey building in Subedar Chattram Road, according to its owner Gangaram.

According to experts' opinion, had curing might be a strong factor for the collapse on September 12. Gangaram told newsmen today.

The building contract was given to M/s Digvijay Construction Company. The building was not covered by insurance, he added.

Denying the charges levelled by a legislator, about his relationship with Chief Minister Ramakrishna Hegde Gangaram said he had met Hegde only once, a few years ago "when I wanted him to inaugurate a book fair. I thought of inviting L. K. Advani through Hegde", he said. "After that, I have not met him. I don't have any kind of relationship with him". He said only "The Times of Deccan", had published an accurate report about the building licence.

"The Times", yesterday had published a report regarding the licence under the caption "The Story Of Missing File."

He said he had spent about Rs. 90 lakh to construct the building. The licence was first



GANGARAM

given in 1980 by Patnaik, then Commissioner of the City Corporation and it was renewed in 1982. On August 19, 1983 the present commissioner Rangappa gave permission to build a compound wall. Gangaram produced a receipt for Rs. 40,000 the amount paid to the Corporation by him.

He denied that a printing press was installed in the basement floor and said that truth would be known soon when the debris is cleared. When asked about his son Deviprasad who is yet to be traced, Gangaram broke down and said, "I may not be able to identify my son. He was having a wrist-watch with a calculator and a ring with a black stone. Only on that basis I may be able to identify him". It pains me to hear rumours that Deviprasad has gone underground."

Gangaram said that there were 14 of his staff in the building when it collapsed. The bodies are yet to be traced, he added.

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SUNDAY MID-DAY

Ghastly tragedy

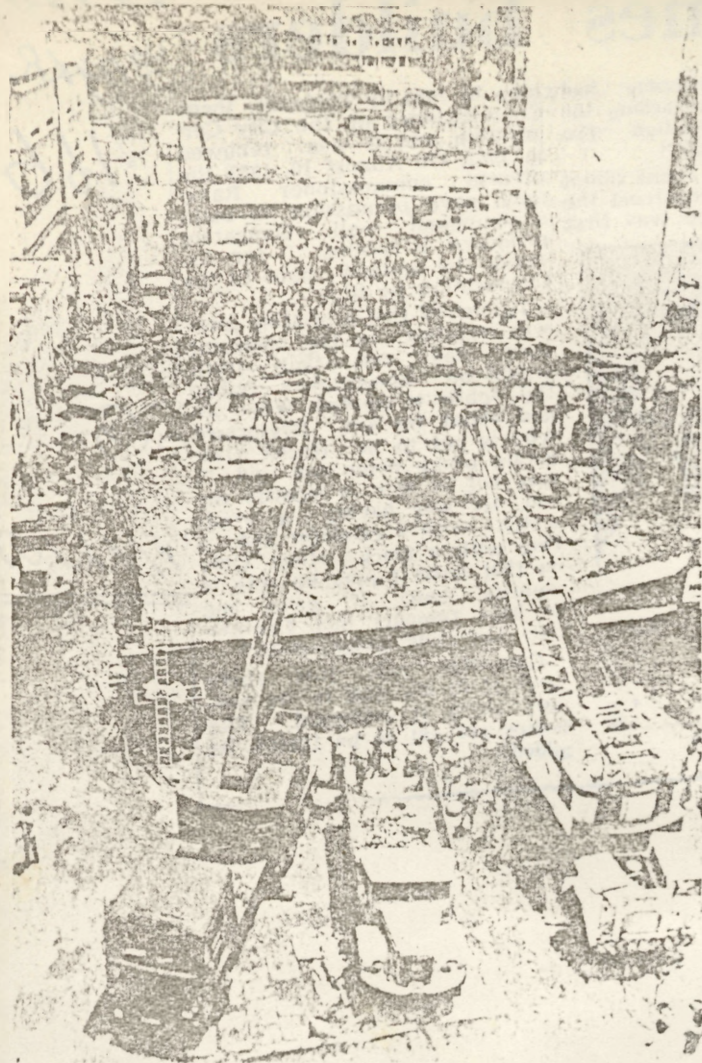
Man's inhumanity to man is once again exemplified poignantly in the inexplicable collapse of the high-rise building on Subedar Chatram Road abutting the country's biggest cinemahouse. At the time of writing, the death toll has been placed at around 30, but it might well reach the 100 mark by the time the forbidding rescue operations are over, making it one of the most gruesome tragedies of its kind in the country. It has been a heroic battle against several odds by teams of the MEG, the fire force and the police, with various other agencies also being involved as the graver extents of the damage are revealing themselves. The stench of decomposed bodies has already started filling the air in the heart of the city and there is no knowing when the massive operations will end and how many hapless souls the terrible tragedy will finally account for.

The tragedy raises several questions which go beyond routine administrative lapses. In fact, it cannot be the result of a routine lapse since its frightening nature marks it out as a deliberate conspiracy of some greedy individuals to play with human lives. Who these individuals are can be determined only by a thorough judicial inquiry into the incident, and it is heartening that the government has lost no time in ordering such an inquiry. Cynicism about the outcome of such inquiries apart (people are still wondering what came out of the Desai and Kudoor Commission inquiries into the hooch and circus tragedies which have been a permanent blotch on the fair name of this state), it is important that the guilty men are fixed and given their desserts. Their sin is abysmal and no punishment is too small for it. One only hopes that one is not asking or hoping for too much. Having ordered the judicial inquiry, the Hegde government should follow up the decision post-haste and ensure that the inquiry is held without any let up or delay.

While one awaits the outcome of the inquiry to determine the exact causes for the tragedy and the rapacious men behind it, certain immediate reasons suggest themselves. The care imperative in such matters does not seem to have been taken while issuing the licence for the construction of the building considering particularly the fact that its seven floors would be sitting on top of the two floors which had already been constructed. Surely the authorities should have deliberated a lot more on whether the building would not pose any foundation problems. If it is true that the then corporation engineer had expressed himself strongly against the issue of a licence for the building, it only makes the whole business even more reprehensible. The judicial inquiry would do well to find out if any undue political interference had been brought in to secure the licence.

The architect and contractors of the building also have a lot of explaining to do. The samples of soil and cement used in the construction are being sent to the Public Works Department research station in KR Sagar for a thorough analysis which should reveal whether any sub-standard material was used by the contractors. If this was indeed a fact, how did the architect ever persuade himself to allow the construction to proceed? It is imperative that these kinglypins of the construction of the ill-fated building are put in the dock and that the outcome of the inquiry should act as a shock treatment to those of their ilk whose only motivation seems to be to make money, quite bestially oblivious of how the money is made.

The government deserves both praise and gratitude from the people for the expeditious action it has taken not only in ordering the judicial inquiry but also in organising the massive rescue operations, the kind of which Bangalore has not witnessed before. But the operations have also disclosed the primitive state of our preparedness to meet such contingencies. Even elementary equipment is lacking, despite the fact that the city has become a concrete jungle with scores of high-rise buildings changing its very ethos. The last-minute search for even some basic gadgets which could have saved many more lives was quite pathetic. The Gangaram complex collapse experience should serve as a warning to the government agencies which have to bear the brunt on such occasions that they should fill up the embarrassing gaps soon. This tragedy is not the first and wouldn't certainly be the last.



Operation debris clearance in progress on the eleventh day (Thursday) after the collapse of the Gangaram complex on Subedar Chatram Road in Bangalore.

Crash: 3 more bodies recovered

By A Staff Reporter

BANGALORE, Sept. 22. — As the debris is being removed from last Monday's building crash only isolated tell-tale signs of the hapless victims surface, here and there a piece of clothing, some papers, a bag or two, all mute remnants that tell of the tragic victims who once breathed with life and vigour.

At the time of going to press only one body was being extricated through the tedious process of removal of concrete debris and steel rods that had pinned it down. Another three female bodies were found near the steps leading to the basement. While it is not sure where they were the sales girls at the Bureau or construction workers, their attitudes in death suggest that they were making a frantic bid to reach the entrance and escape their fate. The bodies were difficult to extricate covered as they were with the debris.

In another spot a yellow hand bag was found. It contained a stainless steel tiffin box inscribed with the letters K. Lalitha, who is said to have been a sales girl.

The body of her elder sister Jayalakshmi was removed from the debris three days ago. The two sisters were employed at the Bureau and were residing at the Malleswaram Pipeline area. A couple of days ago some personal letters were found in the debris, but were said to belong to sales girl, who had escaped the incident since she had not been present at the site.

Meanwhile, the tunnelling is continuing although no signs of life have been encountered. The army men con-

smaller pieces and then lifted by cranes. A 40-ton capacity crane from the BEML will be pressed into service tomorrow. It will be useful since it can reach upto 100 feet horizontally and in different directions and thus be able to lift debris from the far side of the building.

Meanwhile, many construction workers who have lost their kin in the tragedy continue to wait hopefully at the site. Mr. G. Narayana Kumar, MLA, has undertaken to supply food packets to these persons as well as other members of the rescue team working at the site for the last five days.

PWD guiding operations

By A Staff Reporter
BANGALORE, Sept. 29. — Ten bodies were today recovered from the collapsed Gangaram building, and official figures have now put the toll at 67. The first three bodies to be recovered were of Neelamma, a coolie, her nine-day-old baby and her four-year-old son. The mother was reportedly found embracing the two children in an attempt to save them from the falling debris. It is said that the three hapless victims might have been alive a day or two after the accident, but crushed due to falling debris when the clearing and rescue operations were being conducted. The other bodies include Periyasamy, 20, a coolie, Devamma, 35, a female labourer, Raju, a maistri from Chiknagar, Yeshodamma, 50, a female labourer, Ravi, 18, a coolie and Lalitha, 27, said to be a resident of the area. The other body of Kalpana, 28, a coolie, was smashed into pieces, it is said.

Most of the bodies were recovered from the third floor of the collapsed building. Today there was not much trouble identifying the bodies. The volume of the debris has now sizeably decreased, and the attempt is to clear the area from the front and rear portions and finally the central area of the collapsed building. The yellow-helmeted Home Guards are still handling the removal of decomposed bodies which are emitting a foul smell. Some kites were seen hovering over the area, attracted by the smell of decomposing bodies. Some of the relatives of the victims have taken up lodging in the neighbouring hotels to be near the spot at all times.

From tonight, Fire Force personnel will work at night, between 10 p.m. to 6 a.m., so that round-the-clock clearance of the debris is enabled. The PWD has made its site office at the adjoining building, and is monitoring the clearing operations by microphone. A number of PWD supervisors and officials are guiding the daily-wage workers in the work.

The 25-tonne crane from the Railways has proved to be a big asset in clearing the debris and is removing massive pieces of concrete at one stroke.

Life-saving operation in progress



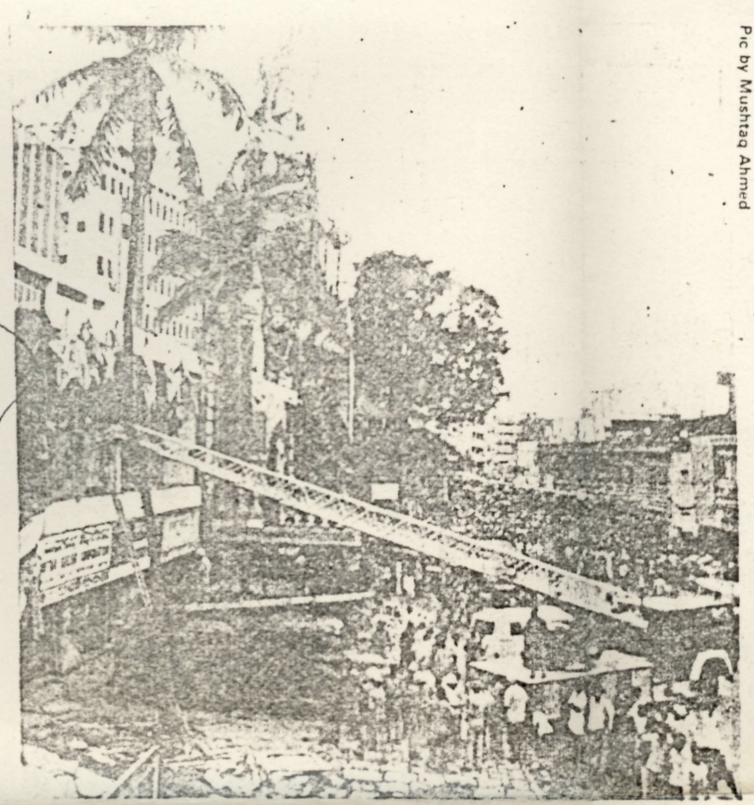
Pic by Mushfaq Ahmed



A massive slab of concrete being lifted out of the debris with the help of a crane.

A massive structure, now a mount of rubble.

Rescue teams looking for survivors



Pic by Mushfaq Ahmed

Kapali, the prize theatre of Bangalore, will soon be demolished. It's been declared unsafe.

City

WHAT CAUSED THE TRAGIC COLLAPSE? SPECIALISTS' GUESS,

Defective design, inferior material, callous construction & taring hurry

By Shanthi Mohanram

Now that the rubble and the dust of that horrendous building crash have finally settled — the sole grim task before the rescue teams is that of extracting the bodies. When, nearly 20 days after that disastrous day (Sept. 12), is still proving to be a back-breaking exercise for the valiant workers. As on Sept 30, the count was 69 bodies.

Now it is time for some serious soul-searching. Certain drastic cleansing of affairs has to be undertaken, if we are to be spared a similar tragedy.

Police Commissioner P.G. Halarnkar who had, immediately after the accident, stayed all construction activity on buildings which have more than two storeys, for a two-month period, has now revised the order and has permitted certain amount of activity to be undertaken. The three-member expert committee, set up to study the condition of high-rise buildings in the city, has reportedly, included near 50 buildings in its inspection list.

A point of tremendous anxiety, not only for the average resident, but also for experts such as architects, structural engineers and contractors is how could Rs.80-lakh, seemingly impenetrable concrete and steel structure, come crumbling down like a sand-house?

Until the judicial committee, not yet in operation, submits its report, no specific reasons can be cited for the collapse. But the fact remains that Bangalore's building boom, has shunted, scruples and safety to the back-seat. Faulty structures which blatantly by-pass the corporation rules and the use of sub-standard materials are the order of the day.

P.K. Venkataraman, an ex-chairman of the Indian Institute of Architects, Karnataka Chapter, cites adulteration of cement, as a very serious problem. "Legislation

should be introduced, as in the case, for drugs, for the date of manufacture, to be stamped on the cement bags," he adds. Cement which is preserved beyond a three month period, loses at least 30 per cent of its strength.

then a test is conducted after 28 days, when it has to yield a strength of 220 kg/sq. cm. If even this is not obtained, then the concrete has to be struck down and re-built with fresh cement. So sub-standard cement could also have led to the collapse

reasons. Whether it was due to design deficiencies, callous construction or sub-standard materials, only the enquiry can decide, but one structural engineer reveals, "deviations from the original design, seemed to have occurred on a large scale."

Another structural engineer feels that the 'human element' could also have crept in, in the form of carelessness on the part of the contractors. He mentions, as an example, how the building did not have blocked door openings for its lift well. A girl, according to him had a miraculous escape, when she fell into the lift well some days before the crash.

D. Srinivasan, Secretary of the Kamataka Ownership Apartments Promoters Association and a structural engineer, discounts the theory, that the two water tanks on top of the building could have caused the collapse. He explains, "normally, the ratio of dead load (i.e. the building) to live load is 60:40. Assuming that 50 per cent of the dead load was completed, it means that the building was unable to support even the standard dead load."

An interesting point to note, is that any building, after construction, will receive 90 per cent dead load, and only 10 per cent is contributed by stationery, personnel, furniture, etc. But in case of libraries, bookshops and garages the live load is usually much more. The ISI code provides for 250 kg/sq. metre, for a normal building and for a library 1000 kg/sq.m.

Warns another engineer, "even the M.G. Road, bookshop might not be very safe, since it was originally meant for an office."

Every engineer, when constructing a building uses, what is known as a 'safety factor', which acts as a buff against minor failings which are bound to creep in. The Indian Standards Code of Practice for Plain and Reinforced Concrete, provides for a safety factor of 2.25 per cent. That means, failure should take place only when double the load, for which it is built, is enforced. But in the case of the Gangaram complex, the crash took place, when not even half its load was ready.

Contd on page 29



A sandwich of concrete: The seven floors came down like a pack of cards killing about 100 people

Vishwanatha Rao, president, Contractors' Association, in fact, stresses, that the ISI mark should also be introduced for cement. During 1980, especially, fake cement was prevalent in such large quantities in the market that quite a few buildings had to be pulled down and rebuilt. In the case of the Gangaram building, it is alleged that Gangaram, who was in a tearing hurry to complete his seven-storey building, purchased cement from as many sources as possible and is even reported to have skipped the requisite 'Cube tests' done on cement, to verify its strength. After seven days, cement has to yield a strength of 80 kg/sq.cm. If this is not obtained,

But quite a few, structural engineers, voiced 'column failure' as the reason for the mishap. Somewhere between, the second or third floor, a column has snapped, which caused the top floors to come tumbling down. Most of them overrule, the theory that a weak foundation could have led to the collapse, since, the basement is still intact. The 'column collapse' could have occurred due to various

The number of rooms per floor, which were originally planned to be about 20, were later, allegedly, at the insistence of Gangaram, increased to 26. So the architects, M/s Masters Ltd., are said to have quit the scene in disgust, and a Madras firm took over. The contractors were Digvijay Engineering Company and the Structural Engineer is Bhanumurthy.

Thank God, Kapali'll stay

By Saranya Hariharan

Monday, September 12, was a black day in more ways than one, for it saw not only the crash of the Gangaram building and annihilation of scores of hapless victims within, but also the destruction of a portion of Kapali, one of Bangalore's most prestigious theatres. The toilet, canteen and screen of the theatre were damaged, along with a portion of the auditorium housing the lower denomination seats, and subsequently the development of cracks on the side-wall of the theatre forced corporation authorities to declare the theatre unsafe. And so, the theatre which had registered frenzied crowds for the much publicized "Bhaktha Prahalada", was out of business. Rumours of its demolition began floating around.

The situation wasn't as bad as it seemed, however. A more thorough inspection by experts revealed that due to the unusual construction of the theatre, it was not as badly damaged as had been thought at first. The balcony, a 440-seater and one of Asia's largest, does not rest on the side-walls, but on a U-shaped structure turned through 90°. The roof too is supported by columns, 10 ft. apart, and thereby the side-wall is reduced to being merely a partition wall. The theatre's owners plan to have the damage assessed and reconstruction work commence immediately after. Debris clearing, they estimate, should take another week or two, and then subsequently the demolition of the defective side-wall and reconstruction approximately three months. And so Kapali has been spared to the Bangaloreans for a little while longer.

Kapali was inaugurated on January 26, 1968, as India's first

theatre with a cinerama screen. This example was followed a short while after by Pilot theatre in Madras. Built by Gopal films, a partnership concern which had previously managed Gopal Theatre in Yeswanthpur on lease, it was designed by a Bombay firm. The site, measuring 300 x 300 ft. and taken on a 40 year lease, originally had a residential bungalow on it. The theatre's principal architect, Razdan, more than justified his clients' hopes of setting up a theatre which would stand out among Bangalore's ninety-odd theatres already in existence. He designed a bell-shaped auditorium with built-in acoustics, meant to seat 1500 people, an unheard of number among theatres of the time. Certainly, Kapali was intended to be the biggest theatre in South-east Asia. The number of seats was later reduced to 1460 in order to accommodate the Cinerama screen which protruded into the auditorium. Pushback seats were staggered in such a way as to make for comfortable viewing, while the screen was louver in type, 90' x 30' according to cinerama requirements. Air-cooled initially, it was later airconditioned.

The theatre was built during the Cinerama age, a time when this wide-screen process fired the public imagination and made for far more satisfying viewing than the hitherto conventional 35 mm films being shown. Developed by Fred Waller of Paramount's special effects department, the process utilized three cameras, and three projectors to record and project a single image. When projected on a special, huge screen, curved to an angle of 165° the images blended together to produce an illusion of vastness and plasticity. Three electronically synchronized projectors were used, the middle one projecting straight ahead, and the other two projecting

to the right and left in a criss-cross arrangement. Although successful commercially, the three images did not always match properly, causing an irritating jarring effect where they joined. As a result, the three lens system was dropped and a single lens 70 mm process, similar to other wide-screen processes, except for its curved screen, was adopted.

Kapali's first offering to the public was "This is Cinerama", a thrill-filled travelogue type of film which featured a roller-coaster ride, a plane flight over the Grand Canyon, and several other spectacular scenes. This was followed by "7 Wonders of the World" and others. The trend ended within two years however, due to difficulties in import of cinerama films. The screen was changed to a 70 mm one, and Kapali switched to screening films in regional languages. The first Kannada film screened was "Matheya Maha Mandira". It was to be the first of a series of Kannada, Tamil and Hindi films, with the odd Malayalam or Telugu film among them, several turning out to be silver jubilee hits. In 1980, Kapali had its first Filmotsav.

At the moment, the theatre presents a depressing sight inside. Seats close to the screen have been damaged, and scaffolding has been erected to support the wall adjacent to the Gangaram building, which has three massive cracks in it. A huge pile of upholstery lies in front of the screen, while construction materials strewn around everywhere. The owners claim that many more people would have been killed or hurt if the theatre had not been constructed to its unique design. The damage could have been much worse. It is perhaps a blessing in disguise that the theatre next to the Gangaram Complex was Kapali and not any other less well-designed one. We should be grateful for small mercies.