Good Morning

Mr. Chairman, distinguished guests, Symposium attendees and participants.

I have been asked, as one of the surviving and still portable members of the General Electric Superpressure Team to say a few words about the early days of the Super-Pressure project and of the members of the team. I will sneak in a few comments some of the early production experiences.

Dr. C Guy Suits the director of The General Electric Research and Development Laboratory initiated the Super-Pressure Project with the object of developing a system that would allow the study of chemical reactions at high pressures. He suggested that the Mechanical Investigations Section of the Chemistry Department design and develop a system and test it by attempting to produce the high pressure phase of carbon, diamond.

The General Electric Research and Development Lab was state of the art back in the late 1940's. It was located on the old estate of the Hansons (Pink pills for pale people). It sat on a bluff overlooking the Mohawk River. The rose gardens had been preserved along with the guesthouse where receptions, for visiting dignitaries and mini seminars were held. For a larger meeting there was a several hundred-seat theater, with up to date visual presentation equipment operated from a control room in the rear or by the presenter. This may not seem like much now but this was more than 50 years ago. Noon times after lunch you could stroll down the hill, past the to the Low Temperature Lab to the river and tell if the director was in by looking to see if his seaplane was tied up to the dock. A ground flood cafeteria opened onto one of the gardens. It was a truly relaxing setting

Each lab had numerous gasses piped from a central storage system down by the river. Special gasses could be furnished each lab from a closet like facility just outside the door. Excellent machine, carpentry, metallurgy and glass shops provided support, as did an impressive array of analytical equipment. It provided the facilities for creative minds to succeed.

I was a spear-carrier in this opera so I had a excellent opportunity to observe from the front row of the chorus, while having an almost sinful amount of satisfaction from challenging job, creative companions, and the opportunity to work in a first class research facility in an peaceful setting.

Now, about the people involved.

I was hired to assist Drs. H. M. Strong and F. P. Bundy on testing thermal conductivity of encapsulating materials for a vacuum insulation project they were working on. I will start with them.
Dr. Bundy received his undergraduate degree from Otterbine University in Westreville, Ohio. Both he and Dr. strong received their advanced degree from Ohio State in Columbus, Ohio.

Bundy was a careful experimenter. The questions to be answered were carefully thought out and the best available methods of getting those answers were reviewed. For simple example is how to measure the Curie point of a material verse pressure. Measure temperature with a thermocouple. Heat the sample with a resistance heater, Measure the Curie point with a high frequency signal. Use a pre calibrated pressure vessel. Oh by the way there are only two dependable contacts to the sample. Solution: heat the sample with a thermocouple coil acting as a resistance heater and superimpose a high frequency low current signal to look for the Curie point. Sort out the DC, 60 cycle, 1000 cycle with a series of chokes. It worked first try. He used this technique later to study fusion curves.

Bundy was a natural teacher. He couldn't help him self. When he was working with me setting up an experiment he would keep up a patter of what he was doing while I looked on. He never talked down to me. It was up to me to ask questions if I did not understand. I could not ask a dumb question. All questions were answered with patience and with out condemnation. I gave him plenty of reason to condemn or to feel concerned about the results I might get but in the main I think I got him what he was looking for. I wasted a lot of time going to college; I would have learned more going to work for Francis right out of high school.

Francis remained with General Electric. He spent most of his remaining working life in the high-pressure field. Much of his work was on the science of the discovery we celebrate today and of materials at very high pressures. He developed a superbelt capable of 150,000 atmospheres and worked out the carbon phase diagram making diamond without using a metal catalyst. In it he was also able to make diamond from liquid carbon. This was a classic piece of work. He worked on pressure calibration methods, particularly at high pressures and effect of pressure on thermocouples. He extended the phase diagrams of many materials with his ultra high-pressure belt. His emphasis was on the science not the applications.

Outside work Francis was active in his Church. He used his expertise to enhance the new organ in the church by designing and building an acoustic resonating chamber. Francis always had a garden even after he retired. His other interests included soaring. He received the "Golden C aware for a long distance flight and in 2001 was inducted into the Soaring Hall of Fame. About a year ago he gave up being a glider instructor. Now in his 90's Francis still makes an occasional flight.

Herb Strong was also a good experimenter. He also was a good library researcher. He and Francis Bundy, Tracy Hall and Bob Wentorf read all they could find on diamonds including Hannay, Moissan, Bridgman and others. The library was able to get a copy of Alpheous P Williams 2-volume "The Genesis of Diamond" which covered just about all that was known about natural diamonds and diamond geology.

Dr. Strong developed a plausible tapered cone apparatus and was using it in his December 8th experiment that was originally thought to have made diamonds. The apparatus was made from steel and was unable to support diamond-forming pressures. Later when he was able to replace it with carbide it performed quite well. It was not as efficient however as the Hall Belt. Herb was working on an iron solvent method by attempting to grow diamond on seeds wrapped in iron foil. Herb was also a man of integrity. Although he spent an inordinate amount of time attempting to understand what happened in that run where he felt he made the first diamond, when there were dependable tests to distinguish between natural and man-made diamond he had the tests run and published the negative results in spite of the embarrassment it caused him.

Herb also continued to work at high pressure. He and Bundy continued to share a lab so they worked on some of the same things. Herb derived phase, temperature and composition diagrams at high pressure (aprox. 55kb) of the carbon-iron, carbon-nickel, carbon-cobalt and other carbon-metal alloys and other systems. Herb was always interested in gem diamonds. About 1970 Herb perfected methods for growing large, single-crystal, high quality diamonds – some more perfect in the crystallographic and purity sense than the best of natural diamonds. He retired in 1973 but continued active in his church and with "Fun with Physics", for children, at the Schenectady Museum. Herb passed away January 30, 2002.

Both men can be described by the word "gentlemen".

H. Tracy Hall

I did not know Tracy before he joined the group. At the time it was just a group of 3, Bundy, Strong and myself. Tracy was working on solvent studies on plastics at pressure by sealing materials in capillary tubes and heating them so he was the only one with any pressure experience.

Tracy proved to be a careful experimenter, a thorough researcher, a prolific theorist, a tenacious worker and very serious. If he had a fault it was he didn't smile enough.

Tracy joined in many of the lunch discussions we held. He had difficulty in participating in the long lunch hours when we went water skiing or glider launching because we worked late to make up the extra time we took off. It was also hard to make the weekend activities such as graphite mining because he was building a house and caring for a large and growing family. Along with trying to untangle how to make diamonds Tracy had to figure out how to make a pre-stressed, reinforced concrete cover for his septic tank.

Tracy and Bob Wentorf went about the probing the geological chemistry of diamond formation and dabbled (as did everybody else) in trying to improve the pressure vessel range and capacity. His "Belt" configuration, which eliminated the primary cause of cylinder failure while doubling the capacity, was brilliant. Following an idea gained from Strong's experiment of December 8th and using some non-stoichiometric iron sulfide Trace made the first diamonds at General Electric. Strong's experiment was never repeated but Tracy's was easily reproduced. It was found that iron sulfide was not the solvent for carbon bur that iron was. Soon after every one was involved in determining the limits of formation in the case of solvents or catalysts and temperature and pressure. The project had survived cut off by only a few weeks.

Tracy was treated poorly by management. He was given a raise but a small one. No one profited monetarily from the success of the project. Every one of the principals gained in prestige and fame. Management managed to screw that up also by listing participants alphabetically and not by relative contribution.

When Dr. Hall was offered a job at Provo University as a full professor and Director of Research he took the opportunity to leave what had been his first love, Thomas Edison's company.

After coming to Provo Tracy set about designing another device to generate high pressures. Government secrecy orders prevented him from operating the "Belt". His Tetrahedral press and anvils was successful. Later he devised a "Cubic " press on the same press concept and fitted it with von Platen like anvils and had a device that had a much more useful active volume. The presses are very clever but the guide rods that make them easy to use are even more so. Tracy began to manufacture these presses, and I mean manufacture these presses, in his own machine shop.

Tracy set about training a new generation of high-pressure researchers. Provo became an important center of high-pressure work, investigating many rare earth compounds.

More people use Dr. Hall's apparatus, all over the world, than any other high-pressure apparatus.

Bob Wentorf

Bob Wentorf was different from the rest. He was an excellent chemist and good experimenter. All the principals were good experimenters. Not only did the determine what they wanted to do and how to attempt to do it but they carefully examined the results regardless of the outcome to understand what parts went right and what parts went wrong. They were hound dog experimenters; they followed their noses.

Bob, born in West Bend, Wisconsin. He attended Northwestern Military Academy and then the University of Wisconsin. He received his Ph.D. in physical chemistry and started his 1952 with 1 day of service with the General Electric Research and Development Center as the 5th member of the team.

Bob unlike the rest of us had no need to work (He had inherited money) but he loved science and the comic strip POGO. Bob could play with science. But he played hard. His making diamonds out of peanut butter bought him fame no one else enjoyed. People loved it. It was much more fun than some other things he tried such as roofing tar, maple wood and moth flakes. The peanut butter was always at hand as Bob liked a snack in the afternoon and kept a supply of crackers and this delicious non diamond carbon in his lower left desk drawer It took some experimenting to make these materials into diamond. Bob had to first drive off the hydrogen at low pressure (to allow it to leak out through the gaskets) and then fully pressurize the run and heat it hot enough to melt the catalyst.

Bob loved all things mechanical (and chemical). His curiosity led him to completely dissemble and measure the parts of his new Porsche engine. His ability allowed him to put it back together again. He got us to layout a ¼ mile stretch of a road near the lab and to provide some noon time entertainment racing our cars against time. You needed a good engine to be in the running and good brakes to get around the corner near the end of the marked course. As a mechanic he teamed with Bundy to convert an old Pontiac station wagon into a winch tow for launching gliders. He eventually purchased his own sailplane.

Suit's challenge was not just to make diamonds but to be able to study chemical reactions and changes in material that might take place at high pressure. Bob went after boron nitride because it had a graphite like structure and he suspected that it might also have a hard phase. It took an entirely different set of catalysts but he was able to create, not synthyse, the cubic form of boron nitride and because of Bob's humility it was named Borazon and not Wentorfite.

While not as hard as diamond its' ability to machine alloys containing elements that are diamond catalysts have made it a very useful material for use in the aircraft engine and space industry where tungsten carbide or diamond would not do the job. It was one of the few useful materials, besides diamond, to come from Suits' high-pressure reactions dream. Another useful material developed by Bob and Bill Roco was sintered diamond or Borazon "compacts". Compacts extended the application of diamonds from mostly grinding into machining and drilling.

Bobs inquiring mind carried him to many places. After nearly dying from a heart attack he became active in investigating near-death experiences. He also became very concerned about ecology and energy resources.

After his retirement he taught at Rensselaer Polytechnic Institute as a distinguished professor of chemical engineering.

His most often repeated quote, "One of our jobs is to make mistakes as fast as we can, but never make the same mistake twice."

Bob died of a heart attack April 3, 1997 swimming in a pool of his own design at a home that incorporated many of his energy saving ideas. He was a kind, gentle, quiet man.

Bovenkerk

Bovenkerk, after serving in the military in the Pacific theater as a weather forecaster, graduated from Michigan with a degree in Mechanical Engineering. He joined GE working on a 2 year Program where he rotated assignments to different departments every 6 months. He came to the Research Lab on his 3ed assignment and so impressed management they pulled him off the program and took him on permanently. He worked on p-o insulation with Bundy and Strong. When Bundy and Strong were assigned to the Super-Pressure project Hal took over to wind up the Lab participation with the refrigerator department. He also began to participate in the Diamond project with his spare time. He was a regular in the noon time discussions held in Bundy and Strong's lab as he had a lab tthat was right next door. He was up to speed on the project and participating in experiments as time allowed. After Strong's result he quickly wound up the p-o project and was full time.

Hall worked both on process and equipment.

Hal later transferred to the Specialty Materials Department (The Department responsible for manufacturing Man-Made Diamonds.) to handle the Engineering Section and set up and managed a new High-Pressure Research Section. He made major contributions managing the burgeoning Patent Portfolio and contesting DeBeers in their attempt to blunt GE's effect on the industry. He himself accumulated over 25 patents

Lunch Time

. We often ate lunch in Bundy's lab. It was a relaxed time and usually we discussed our work. It was a time for cross-fertilization and debate. It was a way of keeping up on what was going on in the group. Often Tony Nerad, the manager of the Mechanical Investigations Section, joined us. Tony would sometimes discuss the work but often would make some outlandish statement or postulate a ridiculous theory and challenge us to prove him wrong. After Tracy had given an interesting mini-seminar on the interior of the earth he challenged the group with the statement that there was a hole at the center of the earth and suggested that we offer proof that he was wrong. He did not believe these offerings. They were just exercises in getting us to think outside the box. It was interesting to listen to the varied approaches the group could come up with to refute these silly statements.

These noon time sessions were not mandatory and we were sometimes joined by others in the lab who would discuss the intricacies of balancing shafts, or how to turn your tires round on a home lathe to get a better ride.

They were bonding exercises and good fun. They added flavor to the soup that was your job.

Mining Graphite

Before we were able to make diamonds we wondered if the starting material made a difference. There were a great number of materials available. Carbon or graphite comes in many forms for hundreds of different uses in industry. It is made or gathered from many sources. Amorphous carbon black, natural graphite crystals from many places in the world, (We tried some from Ceylon and Madagascar.) ultra pure graphite for spectrographic work and many derivatives from petroleum (such as adamantine and stecko) to mention a few. We ended up trying many of them.

At one time there were a number of graphite mines in the Adirondack Mountains less than 100 miles north of the GE Research Lab. None of these mines were active in the 1950's.

Strong, Bundy, Wentorf and myself decided to take a trip to and old mine and see it we could collect some samples we could use in experiments. We took off one weekend and hiked back into an abandoned mine. There were small piles of mine debris around the six foot by six-foot mine entrance. The mine had been abandoned for over 20 years so we were cautious about entering. The timbering showed its age and in some places walls or ceilings had fallen in. The graphite was matrix in single crystal flakes up to an inch wide and some places 0.075" to 0.100" thick. After a short distance we decided that we could get enough samples from material we had seen. We all filled the sacks we had bought and hiked back to the car.

The next week we worried some of the graphite out of the rock and tried it in experiments. We tried running it with the axis of the pressure perpendicular to the plain of the sheets and 90 degrees to the plain. It gave as good results as the Madagascar graphite. None

Later when we had pressure and catalysts under control it worked fine and was used to see if we might grow larger diamonds from large organized graphite crystals. It didn't.

Presses

When last I was in GE's diamond factories, years ago, I looked down rows and rows of precision high tonnage presses, all automatically controlled to run a selected force and power profile to collectively crank out tons of diamonds every year.

It reminded me that things were not always so. Even GE with its resources had to start small. After accepting Dr. C G Suits challenge to develop and apparatus that would allow the study of chemical reactions at high pressure and to prove the apparatus by trying to synthesizing diamond. A J Nerad selected 2 seasoned members of his Mechanical Investigations Section, F P Bundy and H M Strong, who had worked together 5 years on rocket flame studies and a new vacuum insulation.

After reviewing the work of Moissan, Hannay and Bridgman and visiting Bridgman in Cambridge it was time to start work. Not having a press they looked around for something to work with until new or better equipment could be procured. The first experiments were done in much more humble equipment that is now found in the factory. It was a 20-ton hydraulic automobile jack in an adjustable frame called a Carver press. It was in the glass shop that makes all the glass systems for the Chemistry Section and the vacuum systems. The glass shop was a 4 to 5000 square foot room packed with glass lathes, furnaces and glass technicians working on elaborate very friable equipment. We carried the pressure apparatus to the glass shop and put it in the press. Then we attached power leads to our power control (a Variac) and plugged it in. A plastic shield was dropped over the press and we hand pumped the jack to get pressure on the apparatus. Before we got another piece of equipment we wore out our welcome in the glass shop while trying to improve our gasket system. The sudden explosions from imperfect combinations upset the glass technicians and while we were not responsible for any breakage I know of, we were not loved nor were our visits looked forward to by any of those skilled technicians. It did give us a chance to experiment with apparatus, gasketing and heating methods We are grateful for their patience.

Management Ok'ed a new press to carry out equipment development This required the selection of a press without being sure of the pressure apparatus to be run in it. At the time it was possible that support rings might have to be built with self reliving tapers, used in some of Bridgman's designs, that would be assembled and dissembled each run. This would prevent any danger of failure of unprotected, highly stressed, rings after assembly. This required a complicated press with two rams. One 500-ton ram was to assemble the rings and a second 500-ton concentric ram to operate the piston. (They could be coupled together to operate as a 1000 ton single acting press.) It needed to be larger to allow larger sample size and had to be precision guided to protect the apparatus. The press has often been criticized but all the unknowns required a great deal of flexibility. None of the successful apparatuses needed all the features available. The location of the operating or pressure vessel area underground made it a harder press to operate. The press did perform well on pressurization and guidance.

Another press was still needed to replace the hand pumped Carver press, until the new press would arrive. Bundy resurrected a 50 year old water hydraulic press and by blocking off side rams, installing a die set for guidance and metal shields for safety they had a serviceable, but not pretty piece of equipment. It was best operated by two people but could be done by one busy one. Frequent repacking was necessary when leakage became excessive. It was a 400-ton press but seldom was run above 100 tons. At higher tonnage's it would have leaked much worse. Because it was a downward acting press the pull back rams had to be pressurized all the while for safety. Bundy made a special 2 slide slide-rule to allow one to quickly calculate and balance downward force verses upward force so you ran at the desired resultant force. This was the main press used for the bulk of the apparatus design testing. It was kept very busy and no one got what he considered his fair share of time on the press and frequent changes of apparatus were wasteful.

When the new press arrived the conflicts continued.

Work Testing Diamonds

OK. There is a repeatable process for making diamonds.

The x-ray tests and chemical tests confirm that they are diamonds.

Never mind the science. Do they work like natural diamonds do?

Why don’t we make some and test them?

Management felt the tests were needed before any announcement was made.

The people who would probably be the first to benefit from a US supply of diamonds the Carboloy Department at Detroit suggested that a few hundred carats to test would be nice for an initial test.

. Were they crazy?

They explained that several hundred carats were necessity for a test-grinding wheel.

They were asked could they run any kind of test with 25 carats?

Well, they could make a small toolmakers burr.

Good the Lab would make them 25 carats.

What was the problem? Now diamonds are made by the hundreds of carats each run. Then we struggled to make ¼ of a carat per run. On top of that there was an ambitious program of exploratory experiments planed and a very short time schedule. All the parameters for the formation of diamond, catalysts, pressures and temperatures had to be worked out. Management set the time schedule because they were afraid that the news of making diamonds would leak out.

It would take a full week of operation to make 25 carats of diamond. To make the test quantity of diamond and still have time for experiments we put on a night shift. Bovenkerk and myself worked nights for a week to make 100 runs yielding just under ¼ carat per run. The total for 1 week’s work by 2 people was just over 23 carats. (We did not sleep by the press as it says in Hazens’ book.) We did have some problems. Coming out at midnight one very cold, snowy, blustery evening to a deserted parking lot, I found my emergency brake frozen and was not able to move the car forward. I spent almost 20 minutes backing the car up and applying the brakes, trying to warm up the brake drum and surrounding cable chase to free up the brakes. When the cable finally popped loose I started up the hill from the parking lot to the guard house as fast as I could. Speed was necessary to break through a series of snowdrifts building at the brow of the hill. I was not the only one with problems that evening. At the guardhouse I met Dr. Marshal, The head of the Chemistry department on his way in to raid the electrical stores for as fuse for his furnace. In those days you did not find stores open 24 hours a day.

The test burr was made and unscientifically tested, grinding by hand, on a carbide die. The toolmaker operating it did not know what the diamonds were but thought it was a different tool supplier. He said, “It works good”.

That was enough.

GE had a new product line.

Preparation of Lithium Nitride

In the early days of the Detroit pilot plant production of Borazon, it was necessary to prepare our own Lithium Nitride catalyst. There were no reliable sources of fresh lithium nitride available at that time. We did this in a small chemical hood in the back of a building put up during the Second World War. It was a temporary structure and was still there 1n 1990.

We would place a few lumps of lithium about 1 inch square in an covered iron crucible and pass nitrogen gas through a tube in the cover while heating it with a Bunsen burner. The reaction was exothermic and when it started heat was removed. The crucible began glowing red, then got brighter and finally began to fade and you knew the reaction was over. If it was the third use of the crucible you had a 30% chance that it was thin enough that it would fail and drop the hot lithium on the stone top of the hood. There it proceeded to burn its way through the stone top and drop to and through, the metal cabinet floor and to dig a crater in the cement floor.

On the successful runs you ended up with several cubic inches of lithium nitride shaped like the inside of the crucible. The problem was we needed a powder to mix with the boron nitride to load cells to make Borazon. This lump was covered with a cloth and smacked with a ball peen hammer. The ½ inch chunks were fed into a hand grinder clamped to a bench. Then you took a deep breath and began to turn the hand wheel on the grinder. You would get about half of the chunk ground when you began to cry and cough. Lithium nitride is among other things a lacromer. At this point you let go of the handle and sprinted for the door where you gulped big breaths and wiped your eyes. After about a 5 or 10 minute rest you went back in and repeated the process until the material was all ground into a nice granular powder.

This was such a rotten job we would not let the technicians do it. They were too important to our meeting our output of diamonds.

The engineers did it and the job was rotated.

What If

I wonder where we would all be today if Orini and Turnbull of Herb Holloman's Metallurgy Department group had been successful with their program of metastable diamond formation using methane at less than atmospheric pressure Which to a man the Super-pressure crew knew would not work. How wrong we were. This work was carried on in the early 1950's. It was not until 1976 that John Angus at Case Western Reserve demonstrated growth from vapor on diamond powder.

And so the Symposium today.

What would have happened if Strong's experiment on December 15, 1954 had not been contaminated? No one knew this at the time and it gave Hall the idea for his experiment December 16, 1954. He made diamonds from, what turned out to be non stoichiometric iron sulfide. No one knew it at the time. Only after the original bottle of iron sulfide was analized did we realize that it contained some free iron. When these were x-rayed they showed iron sulfide and free IRON. Iron was tried and diamond was obtained.

The timing of the successful run was important as the project was within weeks of being stopped. The success allowed continuation of funding and work on super pressure.

And so the Symposium today

Tracy had made diamonds the same way Strong was attempting to make them, from iron. Tracy's success was the higher-pressure capabilities of the belt. If Strong had been willing to use the belt rather than his tapered piston apparatus he might have made diamonds weeks earlier with his foil wrapped samples. If he had the Symposium would be held at a different date, if at all. Neither GE nor the GE Super-abrasives' successor Diamond Innovations planed to mark the event.

What if Lundblad had published his successful run of February 16, 1953? Would this have encouraged GE to shut down the Superpressure Project earlier?

How much sooner would we have made diamonds if management had gone for carbide for the belt when Tracy first requested it?

None of these things happened and so the Symposium today

Elephant Story

As I have said before I was a member of the chorus and a spear-carrier in this opera, my meaningful contributions were later, making this "discovery" into an economical manufacturing process I have no ax to grind in credit for the discovery outside of fairness and truth.

I am disappointed in a number of management decisions made by GE at the time of filing the original patent and during the announcement at the press conference Feb 15, 1955. The teamwork above fairness consideration that led to the listing patentees in alphabetical order rather than in relative order of contribution and of including prominently those of very limited contribution was a decision not worthy of a company renown for its management expertise which includes evaluation of performance.

The listing of at least 4 contributors was fair in that it represented what really went on in the project. If it removed the fete from consideration for a Nobel Prize, that is a shame. It does not mean that the truth should have been sacrificed.

I am sure you have all heard the story of the blind men and the elephant. Each went up the animal and did a tactile examination of the part he was close to. To the person by a leg it was like a rough warm tree. To the person at the trunk it was a nervous snake like creature. The person by the tail thought it had bonny appendages with brushes on the ends. He thought it smelled bad too.

If we look at the Super-Pressure Project as the elephant and think about it we see it is much like life. It is good or bad depending on where you stand. It looks different depending on whom you are and what your expectations are. We who were involved in assembling the elephant see different things when we are done and we describe them as best we can or as we feel we should. Like many of the mindless politicians we have recently watched we become spin doctors, never lying but distorting truth, selecting truth and ignoring truth for our own glory. It is unfortunate and not hurtful until it takes some honor away from some one else. To make it more difficult we must contend with management. We find that management often does not see the elephant and tries to pound the elephant into a rhinoceros that they have invented to represent the outcome they expected. This does great damage to the elephant handlers.

Until fairly recently no published account had got it right

It is necessary to have a sighted person look at the elephant and describe it. The clearest eye so far has been Robert M. Hazen, whose book The New Alchemists, published in 1993, nailed everyone about right.

Very recently the differences in opinion among the elephant handlers have been mostly eliminated. It comes from the ability to stand back and look at the elephant from the time/distance and to see there is room for all inside.

Might I suggest that the elephant is a magnificent beast and that all the elephant handlers who contributed to its construction and should be congratulated?

The body of work leaves a lasting legacy.

Let us leave it to history and truth to weigh the credit.