



UNIVERSITY OF SUSSEX

THE MEETING
HOUSE ORGAN

REPORT & RECOMMENDATIONS

BY

PAUL HALE

FEBRUARY 2013

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PAUL HALE

ACCREDITED MEMBER OF THE AIOA

FEBRUARY 2013

**The University
of Sussex**

MEETING HOUSE – ORGAN SURVEY & RECOMMENDATIONS

This Report begins with a brief history then considers the condition of the organ before making recommendations of a musical and technical nature.

The story of the Grant, Degens and Bradbeer organ in the Meeting House

Sussex University is the fortunate possessor of a particularly significant organ made in 1966 for the Basil Spence designed Meeting House. Just as Spence showed himself to be at the leading edge of building design in Coventry cathedral, winning projects such as Sussex University shortly after, so did a fledgling firm of organ-builders – Grant, Degens & Rippin – find themselves in the avant-garde of the progressive organ world.

The long-established London organ-builders John Compton & Co were in the descent from the late 1950s, their work being considered dated. Three leading employees left the company in 1961 and set up their own company in Hammersmith – called Degens & Rippin. John Degens was a superb pipe voice and Ted Rippin was a fine craftsman in wood. Together with a Compton-trained pipe-maker they set out to build high-quality modern instruments at a modest price, beginning with a remarkably progressive organ in St Mary le Boltons, Kensington. They soon attracted the attention of wealthy amateur organ-builder Maurice Forsyth-Grant, who was Chairman of Racal and of the Grant's Whisky family. Grant had experimented with progressive techniques and materials he had observed in modern North European organ building and needed a company to build the type of organs he felt the emerging educated British market would want.

He was quite correct in that belief and soon gathered an enthusiastic following among leading British organ teachers and academics, including Peter Hurford (founder of the St Albans Organ Festival) with Dr David Lumsden (Organist of New College Oxford) and Nicholas Danby (organ professor at the Guildhall School of Music and Drama). All three were to commission organs from the company, including their magnum opus in New College Chapel Oxford (1968/9). Further educational trips to Germany and Denmark ensued and orders began to come in for the company, which became Grant, Degens and Rippin. Finding an architect with a passion for organs and a similarly modernistic (not to say iconoclastic) outlook to his own, Grant took into partnership Frank Bradbeer and the company name changed one more time, to Grant, Degens & Bradbeer (Ted Rippin having left by then). It is a GDB label that graces the Meeting House organ.

After a concert at their workshops in September 1965 showcasing two new organs, Peter Hurford and Robert Caffyn (who became a notable donor to the University of Sussex) asked Grant how much an organ for the new University of Sussex would cost. Grant suggested £10,000 and Caffyn offered £7,500, for which sum the organ was built, though reportedly costing Grant about twice that amount. (The instrument would at today's prices cost around £400,000). Basil Spence and his team (particularly Anthony Blee) were deeply involved in the visual design, specifying, for example, the plate-glass enclosures, including glass swell-shutters – both of them British 'firsts' and to this day scarcely repeated. The striking black metal framework and black finish to the console have been commented on by many observers. In fact these relate (especially the console) to that which Spence specified for Coventry Cathedral where uniquely the 4-manual Harrison & Harrison console is encased in black leather. The black finish to the Meeting House console is in the same vein and is, along with the glass tonal cabinets, part of its iconic and now historic significance. Frank Bradbeer liaised with the Spence team to ensure that their visual concept was rendered practical in organ-building terms.

The instrument was made with Grant's design of slider soundboards using contemporary materials such as high-grade particle-board along with traditional hardwoods. The soundboards are fitted with an electro-pneumatic under-action on heavier wind pressure than the pipes, for the pressure on which the pipes speak is very low. The wind is supplied by a high quality Discus blower, by Watkins & Watson, in a solid silencing cabinet behind the Swell organ. From this a main wind trunk feeds underneath the centre of the organ. From this is drawn a direct supply to each of the double-acting electro-pneumatic slider-machines (also painted black) and to the Pedal soundboard's inbuilt wind regulator ('Schwimmer'). The main trunk feeds a static wind regulator (which the firm called a 'dropper' because it reduced the wind-pressure) under each of the Great and Swell soundboards. These in turn feed a Schwimmer on the bottom-board of each soundboard, which regulate the final wind pressure to each division and also keep the wind steady and constant. Whereas the droppers use a pantograph with coil springs to set the wind pressure, the Schwimmers employ 'harmonium springs'. In the company's later design, a pantograph with coil springs supplanted the more crude harmonium springs, and there is evidence (in revised springing) that some work was required to establish an optimal wind supply to each division. The Tremulants are operated by pulsators agitating a large pneumatic motor on the pan of each Schwimmer. The 1976 Pedal 8ft Flute is fed (inelegantly) via flexible Kopex trunking from the Great dropper.

An analysis of the c. 1,400 metal pipes (small pipes of a tin/lead alloy known as 'spotted metal'; large pipes of rolled zinc) reveals that whereas the larger ranks were made by the company's pipe-makers, from metal cast in house, the smaller ranks of pipes were made (to Grant's specifications of scales and mouth proportions) by the famous Dutch firm of pipe-makers, Stinkens, of Zeist. Some reed stops came from Giesecke in Germany, who until its unfortunate demise in 2012 was the world's finest producer of reed pipes. The large wooden Subbass pipes appear to have been made by Laukhuff, in Germany, as do most of the original 1966 electrical components, the most numerous being the lever-magnets which operate the soundboard underactions, the stop-key solenoids and the piston relays.

The console itself is veneered and edged particle-board with some solid wood, the keyboards being fine quality English keys with ivory facings, as was perfectly normal until about 1980 when an ivory ban came into place for new keyboards. The Pedalboard appears to be to AGO (North American) or ISO (European) proportions rather than RCO (British), though is perfectly comfortable.

The swell shutters are mechanically controlled from the console, the initial run being by Bowden-cable so that the console, theoretically, can, be moved for maintenance access.

The Bishop of Chichester dedicated the organ on 30th October 1966. An opening recital was given by John Birch, the organist of Chichester cathedral, who had been appointed University Organist. Birch (a distinguished musician who died in May 2012) established the weekly recital series which his successors have maintained to this day.

Ten years after its completion, John Birch commissioned some minor improvements, in the light of experience gained in his weekly performances on the instrument.

These changes were:

1. An 8ft *Flöte* was added to the Pedal Organ, on a direct-electric chest behind the Great.
2. The three General Toe Pistons and an (unalterable) Tutti which (other than two reversible toe pistons) were the sum total of the organ's playing aids, were made into four alterable Generals, duplicated on thumb pistons, and augmented by four thumb pistons to the Great, four to the Swell and four toe pistons to the Pedal. These were made adjustable at a new switchboard on the rear console top, replacing the original switchboard but retaining the electro-mechanical General Piston relays.
3. A *Great & Pedal Combinations Coupled* stop-key was added.
4. In addition, the Swell *Cymbale IV* (33.36.38.40) was considered (no doubt with good cause) too high-pitched to be of much use and so was recast as a *Plein Jeu IV* 22.26.29.33 (though on the console it is labelled an octave lower – 15.19.22.26).

The alterations made to the console are unfortunately apparent as neither the additional two stop-keys and their electrical units, nor the additional toe pistons match the original. This rather mars the console.

The work was carried out not by Grant, Degens & Bradbeer, but by Tony Foster-Waite, who added his nameplate in 1976 to that of Grant, Degens & Rippin, and maintained the organ for many years until handing over to Pat Christian, who now tunes it.

Specification as revised 1976:

Great

| | | |
|---------------------|----|--|
| Quintadena | 16 | bass 12 pipes of 5 ¹ / ₃ pitch |
| Principal | 8 | bass octave haskelled pipes |
| Gedackt | 8 | |
| Octave | 4 | |
| Lieblich Flöte | 4 | a chimney flute; the trebles are open tapered pipes |
| Blockflöte | 2 | voiced as a cross between a principal and a flute |
| Sesquialtera 12.17 | II | the tierce rank enters at middle C; Stinkens |
| Mixture 19.22.26.29 | IV | breaking back one rank on every C; Stinkens |
| Tremulant | | |
| Swell to Great | | |

Swell

| | | |
|-----------------------|-------------------------------|---|
| Rohrflöte | 8 | |
| Spitzgamba | 8 | bass octave haskelled pipes |
| Koppelflöte | 4 | the trebles are open tapered pipes |
| Principal | 2 | |
| Larigot | 1 ¹ / ₃ | Stinkens |
| Plein Jeu 22.26.29.33 | IV | breaking on each C; top rank, top octave, removed; Stinkens |
| Dulzian | 16 | Clarinet construction, half-length (8ft) |
| Trompette | 8 | small scale, Giesecke |
| Tremulant | | |

Pedal

| | | |
|------------------|-----|----------------|
| Subbass | 16 | wood; Laukhuff |
| Octave | 8 | |
| Flöte | 8 | added 1976 |
| Hohlflöte | 4 | |
| Mixture 15.19.22 | III | |
| Fagot | 16 | Giesecke |
| Rohr Schalmey | 4 | Stinkens |
| Great to Pedal | | |
| Swell to Pedal | | |

Great & Pedal Combinations Coupled

- 4 thumb pistons to Great [added 1976]
- 4 thumb pistons to Swell [added 1976]
- 4 general thumb pistons [added 1976]
- Reversible thumb piston to Great to Pedal [added 1976]
- Reversible thumb piston to Swell to Pedal [added 1976]
- Reversible thumb piston to Swell to Great [added 1976]
- General cancel [added 1976]
- 4 toe pistons to Pedal [added 1976]
- 4 general toe pistons [No.4 converted from *tutti* 1976]
- Reversible toe piston to Great to Pedal
- Reversible toe piston to Swell to Pedal

Setter piston [added 1976]

Balanced swell pedal

Adjustable bench

Discus blower

Other than the additions above, the replacement of console lights and, I estimate, one partial cleaning, the organ has remained as built in 1966. For a piece of complicated multi-circuited electro-pneumatic machinery now within sight of its 50th birthday it has lasted remarkably well. There can be very few other complex machines installed in the University in 1966 still in daily use. This speaks volumes for the quality of design and construction employed by GDB, and also, it must be said, for the University's readiness to keep it regularly tuned and fully in use.

An Assessment of the instrument's strengths and weaknesses

The instrument was well made throughout and is generally in 'typical to fair' condition for its age. It was clear to me from my technical and musical survey / appraisal of the organ what work now needs carrying out to enable the instrument to perform reliably and musically for the next fifty years, and to enable it to deal better with the uses to which it might be put as music technology develops.

The four main areas which need addressing, are: (1) a build-up of dirt and debris, (2) natural wear and tear, (3) electrical obsolescence, and (4) poor work in 1976.

I deal with these in detail below but first make a comment about the sound of the instrument.

The sound and significance of the Meeting House organ

The instrument is an excellent example, of national importance, of the emerging 1950s/60s school of neo-classical organ design and construction in Britain, which was partially triggered by the advent of the Royal Festival Hall organ in 1951. The Meeting House instrument is particularly important as the number of completely new organs made in this style was small, and their commissioning largely dried up when GDB and some other companies ceased operating in the 1980s and 1990s – a period where tastes changed. It has clear parallels with the work of architects such as Basil Spence, who particularly flourished at this confident time of post-war Modernism, where 'form follows function' was the guiding principle in both architecture and progressive organ-building. Since this extraordinarily fertile period of new ideas, a more pastiche-driven design period has prevailed, along with the dominantly conservationist approach now taken to buildings and organs alike. Such striking new directions are unlikely to find commercial favour in the immediate future. Thus the work of Basil Spence, Grant, Degens & Bradbeer, and their progressive contemporaries such as John Piper should be held in special respect and treated with a similarly conservationist approach to that applied to work of earlier periods. Though the 1976 Flöte was a sensible addition to the Pedal organ, no other stops can really be added – nor should they be, as the organ has a successful internal balance and an historic integrity.

Areas where remedial work is now needed

Dirt

The instrument is very dirty, the layers of deposit containing two elements: (1) 'historic' dust from skin and clothes laid down since 1966, and (2) a more recent and much more invasive thick layer of more abrasive debris which looks like dirty fragments of plaster or cement, sitting on all parts of the organ not enclosed in the two glass cases.

The wind system / perished leather

1. The leather which forms a membrane on the three Schwimmers has reached the end of its life and is failing (particularly on the Great Schwimmer). The escaping air can be heard in the body of the building.
2. The leather which, together with a thin board, forms the 'pan' to put on or off a stop slider has perished and is leaking badly from the 'on' side to the 'off' side and vice versa, depending upon which side is charged. The leaking air then vents to the atmosphere through the exhaust valves, greatly increasing the leaking wind, the noise of which is now all too apparent.
3. The rubber-cloth which forms a membrane on the two regulators has reached an age where one would expect it soon to fail, though it has not yet done so.
4. The leather covering the power-motors within the soundboard underactions appears at first analysis to be still in supple and sound condition.
5. The blower has had its original motor replaced (which remains lying on the floor) and appears to be in excellent condition. With occasional oiling it will remain a reliable machine for several more decades before the bearings eventually need replacing and the fan rebalancing.
6. The wind trunking is somewhat haphazard, though all solid trunking is sound. The flexible trunk to the 1976 Pedal Flöte chest is poorly run and risks being flattened by maintenance personnel.

Electrical components and wiring

The organ works by each key closing a series of silver electrical contacts to complete a circuit, which then operates a lever-arm electro-magnet for each note. This in turn works a double-valve to admit or exhaust pressurised wind from a pneumatic 'motor'. The motor is attached to the pallet (valve) under each note, opening the pallet when the motor is emptied of wind by the player pressing a key. The stops are put on or off by a different sort of electro-pneumatic mechanism. The operating voltage is around 15 volts, regulated from the mains by a transformer-rectifier.

All the original 1966 wiring and electrical equipment remains in use, with the exception of the combination action in the console, which was upgraded and expanded in 1976. The wiring is mainly pvc-sheathed colour-coded multi-core 'Post Office' cabling, which is perfectly serviceable. However, there is much cotton-covered cabling within the console,

mixed up with later pvc-sheathed looms. Access and maintenance of this mass of wiring and associated relays (for stops and pistons) and key/pedal contacts is extremely difficult; it all needs re-planning and replacing for electrical standards compliance, safety, efficiency, long-term reliability, and for maintenance accessibility. In addition, the centre pins of the note-action lever magnets have worn, leading to loose and noisy movements.

Main structure

1. The glass panes are dirty and would respond to cleaning, after which they should be treated with some sort of dirt-repelling agent if such exists.
2. The Swell shutters clatter because the 'draft-excluder' strips on their leading edges have perished.
3. The Bowden-cable link to the swell shutters works well – probably because it is a short run.
4. The heating pipes, lagged though they are, which run underneath the Great soundboard, give off sufficient heat, especially around the exposed valve areas, to diminish the humidity in that part of organ significantly. It is no surprise, therefore, that the leatherwork on the Great Schwimmer and on the Tremulant motor is more perished than its equivalent under the Swell. This will also affect the tuning of the organ, as one side of the instrument will go out of tune with the other.
5. The supports for the 1976 Pedal Flöte chest are very poorly made, being of Dexion (steel racking); the chest itself has pipes on blocks and odd pieces of plywood. Bottom C has fallen over as the foot has collapsed. This is not remotely up to the standard of the rest of the organ.
6. The three slider-soundboards are in good condition, though the slides are somewhat tight. Lifting the upperboards and examining the sliders and table will establish how they can be eased – probably with colloidal graphite.

Console

1. The black-finished surfaces of the console are looking somewhat tired, as one would expect after all these years. On the edges the black surface has worn off. Most of the timber is particleboard with solid edging.
2. The adjustable bench is worn out.
3. The key-bench protrudes too far forward for those with long legs. People are significantly taller on average than in 1966 so this needs taking into account.
4. The obsolete low-voltage electrical equipment for stop control, note switching and combination pistons, has been mentioned above.
5. The good-quality manual keys are moderately worn but are restorable.
6. The pedalboard has significant wear on both key faces and centres, leading to loose, sloppy pedals. I am not convinced that the rosewood caps to the sharps are original or indeed in keeping with the black finish of the console. I surmise that the original sharps were black.

7. Two white stop-keys (added in 1976) do not match the originals.
8. The swell-pedal needs a new top surface.
9. The lock is broken and is best removed.
10. The console lighting is crude and ill-wired, as are small spot-lights to the organ itself, mounted near the console.
11. The console cannot readily be moved out for access to its components. This militates against easy maintenance.

Pipework

1. There are 30 wooden pipes and 1,516 metal pipes, mainly of 75% tin, with bass (large) pipes of hard-rolled zinc.
2. Most of this is in excellent condition and needs no work other than cleaning and then scrupulous patient tonal regulation.
3. I am concerned about the red cloth used to seal the canisters of the 1976 Pedal Flöte as it will shortly become unsound.
4. The Swell 16ft Dulzian is irregular in tone and amplitude.
5. The Pedal 4ft Schalmei is somewhat too soft.
6. The Swell Mixture is pitched too high to 'reach down' to the 16/8 reeds, despite post-1966 revision.
7. The Great Quintadena 16ft is arguably too 'wiry' in tone to fulfil a chorus or even solo function.
8. The Swell Rohrflöte is somewhat thin toned, possibly owing to the very narrow chimneys; it looks somewhat experimental – as do some of the other stops – and would benefit from modest improvement.
9. The tin-plate tuning slides on most of the flue pipes are oxidised with age and through their 'rusty' colour mar the appearance of the tops of the pipes. Consideration should be given to fitting new bright tuning slides throughout, to restore the pipework to its original appearance.
10. I surmise that the tuning of the pipework is affected by several factors (a) the heating pipes under the Great, (b) strong afternoon sun coming in through the coloured glass behind the organ, and (c) the heating system if used to raise the Meeting House's temperature at all quickly. These are reasons why one side of the organ is often out of tune with the other, and why the Swell reeds are out of tune with the flues.

A proposed scheme of work

Pipework

1. Remove all pipes.
2. Clean the pipes extremely carefully to avoid disturbing the mouths and toes.
3. Fit new tuning slides if the budget allows.
4. Check canisters and stoppers for soundness and re-pack as necessary.
5. Replace the foot on bottom C of the Pedal Flöte.
6. Revoice the Dulzian to establish evenness of tone. This needs more detailed inspection first to decide what to do.
7. All reed stops – undertake the usual cleaning of shallots and tongues, reassemble and check that all wedges are re-usable and tightly fixed.
8. Revoice the Great Quintadena 16ft during tonal finishing, with a slightly raised, possibly curved, cut-up.
9. Revoice the Swell Rohflöte 8ft during tonal finishing, with a slightly raised, possibly curved, cut-up.
10. Recast the Swell Plein Jeu as C¹ 22.26.29.33; A¹⁰ 19.22.26.29; F^{#19} 15.19.22.26; D^{#28} 12.15.19.22; E⁴¹ 8.12.15.19; D⁵¹ 1.8.12.15
11. Louden the Rohr Schalmey, though not much leeway is available for this.

Electrical equipment and wiring

In need of replacement are:

1. Lever-magnets (Laukhuff) operating the underactions
2. Manual key contacts
3. Pedal key contacts
4. Stop-key units (Laukhuff)
5. Thumb piston units (P&S)
6. General cancel piston (P&S)
7. Toe piston units (Laukhuff and Kimber-Allen)
8. Piston relays (Laukhuff)
9. Piston setter-board
10. Reversible pistons relays
11. Cabling throughout the console
12. Main transformer-rectifier in the organ

13. Main transmission system – electro-mechanical relays to be replaced by a computerised system.
14. Combination piston system – electro-mechanical relays and switches to be replaced by a computerised system with multiple memories.
15. The console should have its own power supply for the new systems.
16. Although the cables from console to soundboards are serviceable it might be wise to upgrade all the cabling at the same time, so on balance I recommend this is undertaken as well.
17. A sensible addition would be a MIDI (in/out/thru) capability to the console (only possible with a new software-based transmission as proposed) so that the organ can be used to play other digital musical instruments, or vice versa, in addition to which sound modules could be played by the organ greatly to widen the sounds that it can produce. Innovative music-making and compositions by University members and others could thus be embraced.
18. The blower control box should be electrically upgraded.
19. It should be said in passing that a mobile second console, placed on the Meeting House floor, would be an easy thing to achieve electrically once the organ is fitted with a modern processor-based transmission. An electrical device to open the Swell box would also be needed. All that would be required for connection is a Cat5 wire and a mains supply.
20. See under Soundboards (4) below, concerning slider-solenoids.

Console

When all electrical components have been stripped out:

1. Refinish all painted / ebonised surfaces back to original condition.
2. Cut the key-bench back to the Great pistons from inside the Great key cheeks.
3. Remove the lock from the locking fall and make good.
4. Remove the raised piston selector panel from the top of the console and refinish the top, flush.
5. Replace the bench with a new, more solid, adjustable bench, which could have black side and back panels to match the console finish.
6. Re-cover the Swell pedal in new lino of a similar colour.
7. Refurbish the manual keys as is found necessary when taken apart. All new felts.
8. Replace the two extreme RH stop-keys with genuine white Compton blanks to match the others, or have two made specially.

9. In addition to replacing the electrical components as described above, include in the new piston system a setter piston, two stepper '+' and one stepper '-' thumb pistons, along with one '+' toe piston and one '-' toe piston; all piston positions to be agreed at a later stage.
10. Reversible toe pistons to be Great to Pedal and Swell to Great.
11. New thumb pistons to be the same pattern as currently, the 'golf-tee' shape, fitted by P&S when they restore the keyboards.
12. Toe pistons will need to be the same type as those added in 1976 as there is no toe sweep for the more elegant domed type used by GDB on their later consoles.
13. Pedalboard: rebuild to a high standard, ensuring all centres are firm for many years to come. New springs. Sharps recapped in ebony to match the dark finish of the console.
14. Kneeboard: fit a metal frame to the swell-pedal opening to prevent further wear and tear from feet.
15. Fixings: replace all screws with matching new brass ones, in brass cups. Fill any holes in which the thread has stripped.
16. Endeavour either to make the console easy to pull away from the organ (to gain access to the back) or make all maintenance access possible through the top and the knee-board.
17. Mains wiring: new console lights and (if required) lights to illuminate the organ. The wiring to be neatly run out of sight in conduit (black, not white) as much as possible. This is not organ-builders' work.

Wind system

1. Clean off all dirt and debris.
2. Remove Schwimmers, Tremulant pneumatic motors and static regulators, then releather the Schwimmers and Tremulant motors and consider replacing the rubber-cloth on the regulators.
3. Tremulant pulsators: refurbish, and add a control slide beneath the block holding the exit Kopex tube so that volume of exiting air as well as its speed of pulsation can be adjusted.
4. Re-trunk Pedal Flöte chest with a feed (preferably of zinc) from the Pedal's own wind supply, rather than from the Great regulator, as now.
5. Check all trunks and flanges for soundness and re-bed any doubtful connections.

Soundboards and Flöte chest

1. Vacuum top surfaces, then remove rackboards, upperboards and slides. Clean, re-graphite and reassemble.
2. Clean pallets.
3. Check pull-down motors for soundness and likely future soundness. Note: my inspection suggests that they have decades of life yet in them but I was not in a position to test one thoroughly in case it became perforated.
4. Replace electro-pneumatic slider machines with electric solenoids (e.g. Taylor) with their own power supplies. These might need fitting through squares and mounted vertically as they will otherwise project further out than the slider machines.
5. Neatly plate over the trunk holes from the main supply, which currently feed the three [now redundant] slider-machines.
6. Remake the connections from the slider actions to the slides, as there is significant wear at this crucial place with lost motion in the connection.
7. Replace Flöte unit chest with a similar but better-made chest, allowing correct space for the pipes to stand, the largest pipes supported with a half-moon rack. Consider carefully its placement and stand it on wooden supports fixed to the wall or floor – not using Dexion as at present.

Tone cabinets

1. Clean all glass extremely thoroughly and finish with a dust-repellent / antistatic agent, if such exists.
2. Refit Swell shutters with new strips of a soft edging material, to replace the perished draft-excluder presently glued to the leading edges. Discussion as to what this should be will need to take place. The challenge is to find something which will prevent the shutters banging when they close, will have sufficient 'give' to enable them to bed together when closed (acting as a sound-trap), to be as invisible as possible, and to be long-lasting. Though self-adhesive draft-excluding strip has the first three characteristics its foam material has a notorious short life-span and is thus not really appropriate for use in a structure for which a lifespan of decades is expected. On the other hand, it is fairly easily replaced in the future as the shutters can be reached from the front.
3. Check that the Bowden-cable from the console to Swell shutter mechanism is still working at maximum efficiency; if not, replace with one of equal or higher quality.
4. Refit back doors with new screws.

Organ platform & surrounding area

1. Vacuum the whole area and ensure that all is solid and clean before reinstalling the wind system, console and pipes.
2. Consider improving storage arrangements for the organist's music so that it can be stored tidily and securely.
3. Heating pipes should be given extra lagging and ideally the valves re-sited well away from the organ.
4. The coloured glass window-panes in the wall behind the organ should ideally be fitted with a transparent form of double-glazing of a refractive nature to prevent the afternoon sun from beaming straight into the organ, heating up the rear pipes and putting them out of tune with the front pipes. This is one reason why the Swell reeds are out of tune with the flues, because the reeds are at the front - and respond most slowly in any case to changes of temperature.

Tonal finishing

Once all this work has been done and the organ is reassembled and playing again there should be a period of very careful tonal regulation. This is particularly vital with 'open foot - no nicking' pipework such as this, on particularly low pressure.

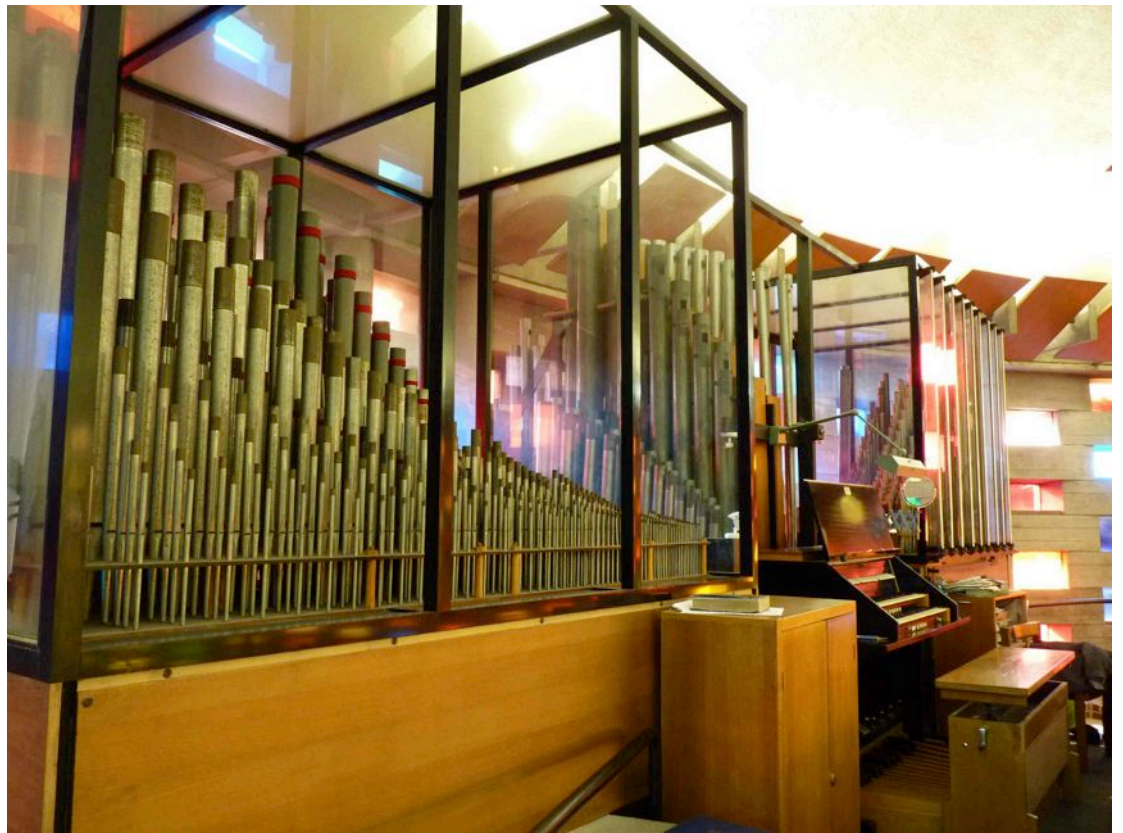
After the restoration

Nothing else should then need doing apart from routine tuning for a further thirty years.

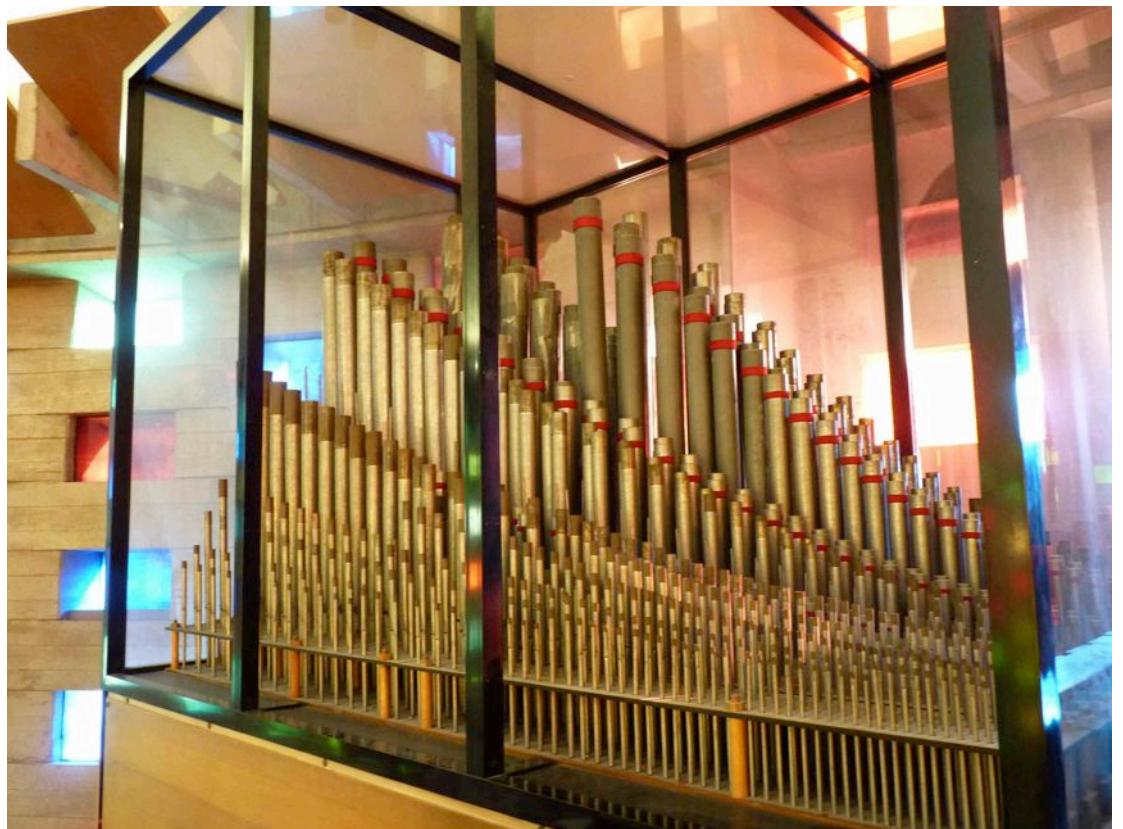
Photographs to illustrate the report

Pipework

*General
view:*



*Great
Organ:*



*Great
haskelled
basses*



*Great
smallest
pipes
& dust*



*Swell
Organ
with
glass
shutters*



*Swell
pipes
mitred
for
height*



*Pedal Flöte
pipes
sagging;
bottom
note
collapsed*



*Flöte
canister
cloth –
poor*

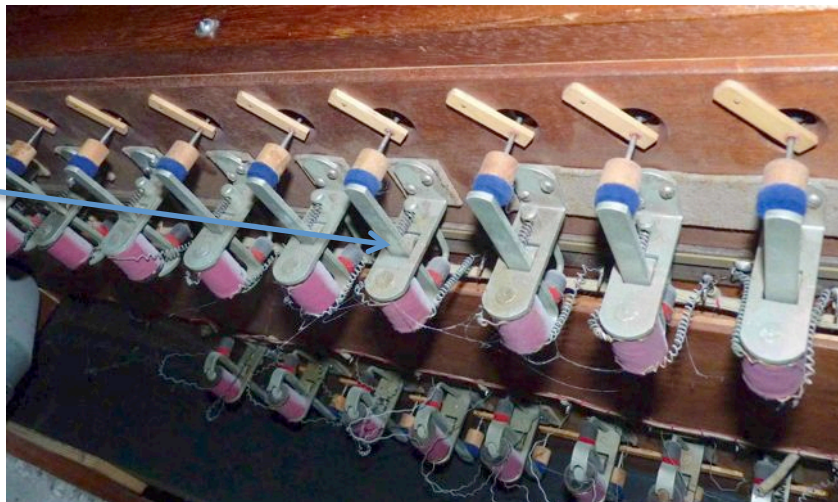


Tuning-slides on pipes – rusty

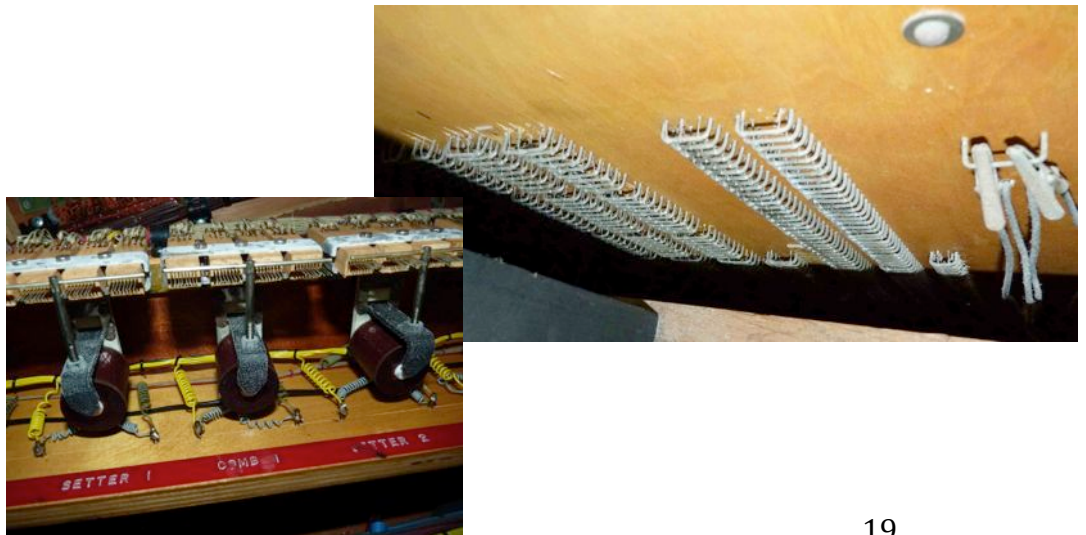


Electrical equipment & wiring (mainly 1966)

Soundboard lever-magnets – worn pivots



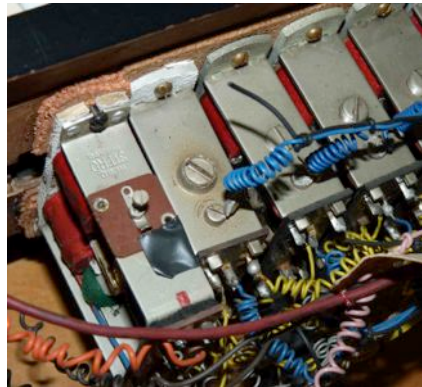
Relays & terminal-board in console



*(L & R)
cotton-
covered
wiring
in
console*



*mismatched
stop-key
solenoids
for 1976
additions*



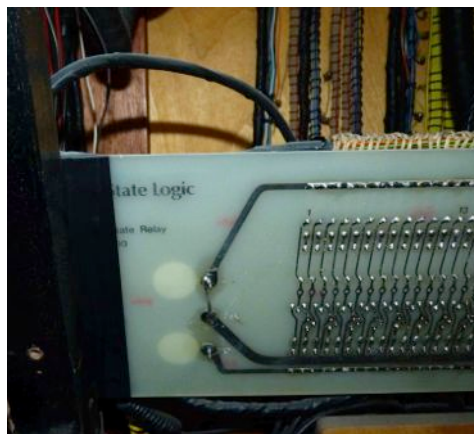
*(L) main
transformer-
rectifier
from 1966*



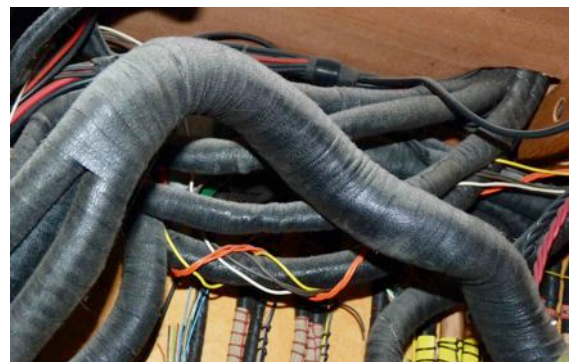
*(R) blower
relay
cabinet*



*(L) 1976
addition
piggy-
backed
onto old
wiring*



*(RH) console
wiring - tricky
to access*



*(L) toe pistons
mismatched*



*(R) stop keys
mismatched*



*console
relays
inaccessible*



Console structure

*Console –
general
view*



*keys,
pistons
and
stop-keys*



*worn
surfaces
and controls;
also note
the knee-
catching
projecting
key-bench
under the
lower
manual*



*console
closed –
note wear
to lid*



Wind system

(R) blower enclosure



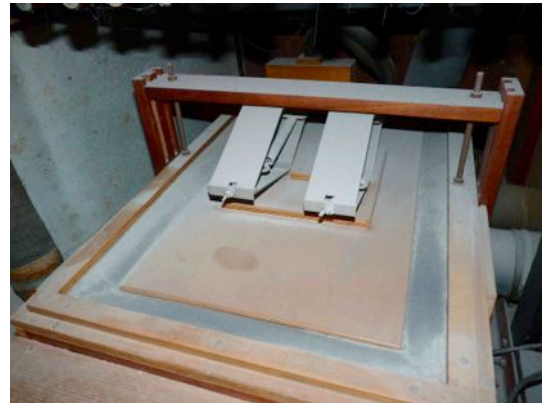
(L) original blower motor plus debris



(L) blower fan case and replacement motor



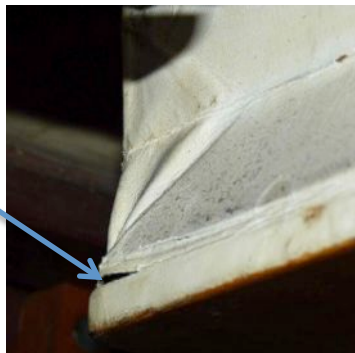
(R) Swell wind regulator



Great Schwimmer showing burst areas



(L) Great Tremulant motor burst showing

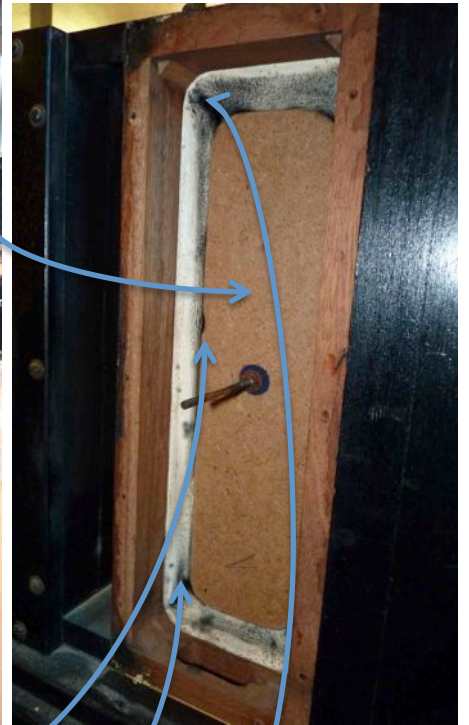


(R) Great Schwimmer altered



(L) Swell slider machine – worn out

(R) failed leather in one slider operating pan



failed leather on edges of one slider pan (they are all in a similar condition)



Soundboards

*Swell
soundboard
under-action
leather in
apparently
sound
condition*



*1976
Flöte chest –
poor
structural
support &
construction;
out of
character
with the
organ*



*distorted
foot of
bottom
note of Flöte
because of
poor
chest
construction*



Tone cabinets

*(L) Swell shutter seals
perished
and detached*

*(R) Grime on
the rear
of the Great
tone cabinet*



*Bowden-
cable
connection
to Swell
shutters*



Organ platform and surrounding area

*(L) heating
pipes / valves
under Great*

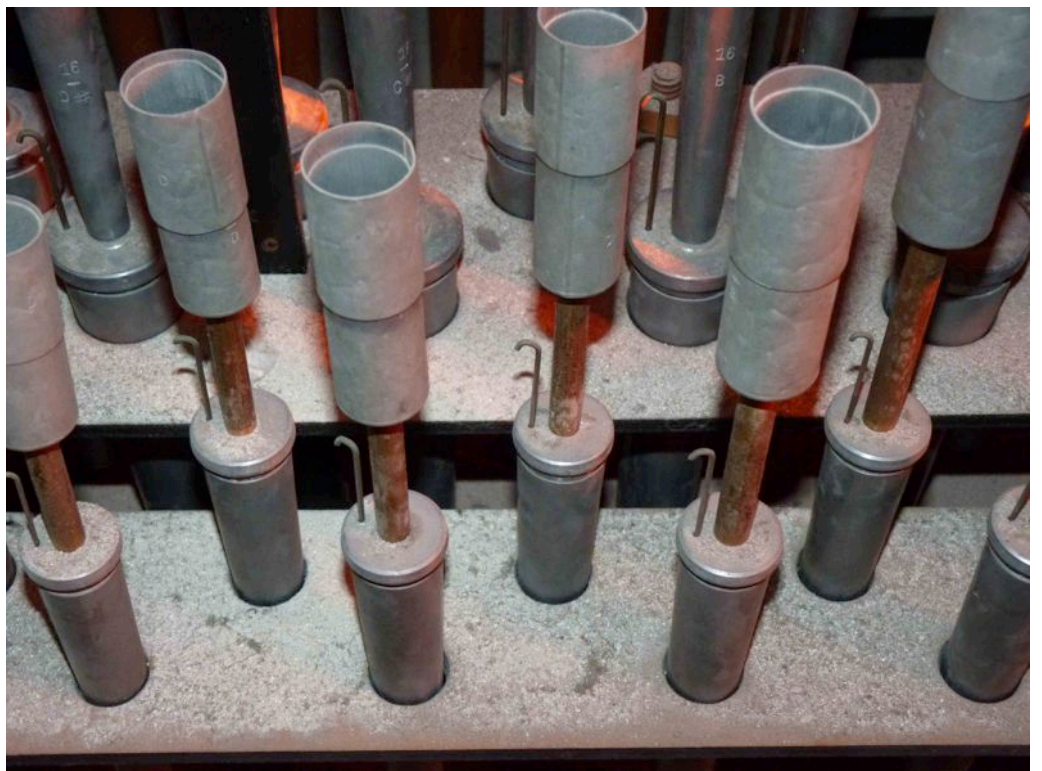
*(R) worn
connection
to a
Swell
slider*



Dirt, dust and debris around the organ



More serious invasive debris deposited in and around Pedal pipes



Pages from
Twenty-One Years of Organ-Building
 by Maurice Forsyth-Grant
 (Oxford, 1987)

at the Guildhall School. Frank Bradbeer designed a suitable tonal enclosure to fit around each division of the instrument in as near a *Werkprinzip* arrangement as was possible. The console, being all-electric, was moveable within the length of the connecting cable.

Such an installation, as in any teaching institution, is used far more than say, in a church, however the Guildhall School authorities were very pleased with it and shortly after its installation an unforgettable recital was given to a packed audience by Luigi Tagliavini.

The instrument remained in 'Room 44' until it was moved to its new home in the Barbican. It was dismantled and moved during the last week in July, 1977, being transported in conjunction with the general moving of fittings from John Carpenter Street. 'Room 593' was its new site but all its parts had to be stored whilst a raised blockboard floor was made and installed on which the organ was to be fixed. Electric underfloor heating made direct fixing to the floor impossible. The organ was cleaned and overhauled prior to installation and modifications were made to the console (which had been taken to the Northampton workshop) and to the winding to allow the instrument to stand, without alteration to many pedal pipes, under a large overhang in the room. This left some of the Pedal pipes exposed and thus a new protective panel was fitted. The console changes included the fitting of a new pedalboard and the replacement of the stop tablets with a more rugged type as the students had appeared to be very heavy handed, constantly breaking units which had seemingly given no problems in other installations. The cost of removal and modifications was £1,750.

The contract price for the organ was originally £4,000 but was reduced to £3,250 in view of the fact that it had already been used in the workshop for several months. The specification is as follows:

| GREAT | | POSITIV | | PEDAL | |
|------------|----|------------------|----|------------|----|
| Rohrflöte | 8 | Koppelflöte | 8 | Quintatön | 16 |
| Principal | 4 | Nason | 4 | Principal | 8 |
| Blockflöte | 2 | Principal | 2 | Bassflute | 8 |
| Mixture IV | 1½ | Quint | 1½ | Choralbass | 4 |
| | | <i>Tremulant</i> | | | |

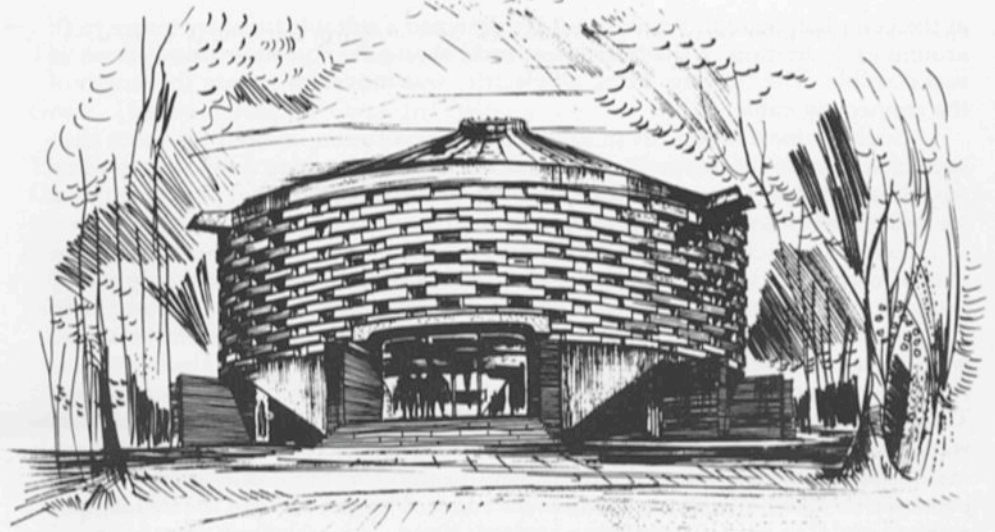
Couplers: Great to Pedal, *Positiv* to Pedal, *Positiv* to Great.
 One free combination.

The Meeting House, The University of Sussex

Grant, Degens & Rippin, Opus 17, 1966

During our well-remembered recital for two organs in the workshop in September 1965, two of those present, Peter Hurford and Dr. Caffyn, approached me asking what would be the price of a suitable organ for the Meeting House at the University of Sussex. My reply was "about £10,000", but in the end Dr. Caffyn was only prepared to donate £7,500 and unfortunately no other funds were available. Incidentally, the Meeting House was not only non-denominational but was also to be used as a Concert Hall when required.

Architect's drawing of the new Meeting House at the University of Sussex.



The architects for the whole University complex were Sir Basil Spence & Partners, of whom Anthony Blee, ARIBA, was assigned to the organ project with John Birch of Chichester Cathedral acting as Adviser.

Sir Basil Spence & Partners had very definite ideas of their own as to what the organ should look like within the building. It was to be totally encased in glass with aluminium framing. Even the Swell shutters were to be in glass and although we had seen these on the continent it was our first experience of this. Frank Bradbeer did spartan liaison work with the architects and it was his job to prepare all the detailed drawings, have them approved by the architects and then get them into production.

The acoustics of the building were very good in many respects but due to sound being inclined to 'go round and round' in a circular auditorium it was essential to focus the sound of the organ straight out into the building. In this respect the glass enclosures proved very satisfactory. The organist sits facing the Pedal organ, with the Great to the left and the Swell to the right. The action was electro-pneumatic. One lady organist, Susi Jeans, said she found it almost terrifying to play the organ sitting in the middle of it - which is certainly the case here!

As far as the firm were concerned this was a real 'prestige' contract and nothing was spared to make it our best to date. In the end it cost us about double the contract price of £7,500, but there it stands today - a unique organ in Britain.

The organ was dedicated by the Lord Bishop of Chichester on 30th October, 1966, followed by a recital by John Birch in which was played:

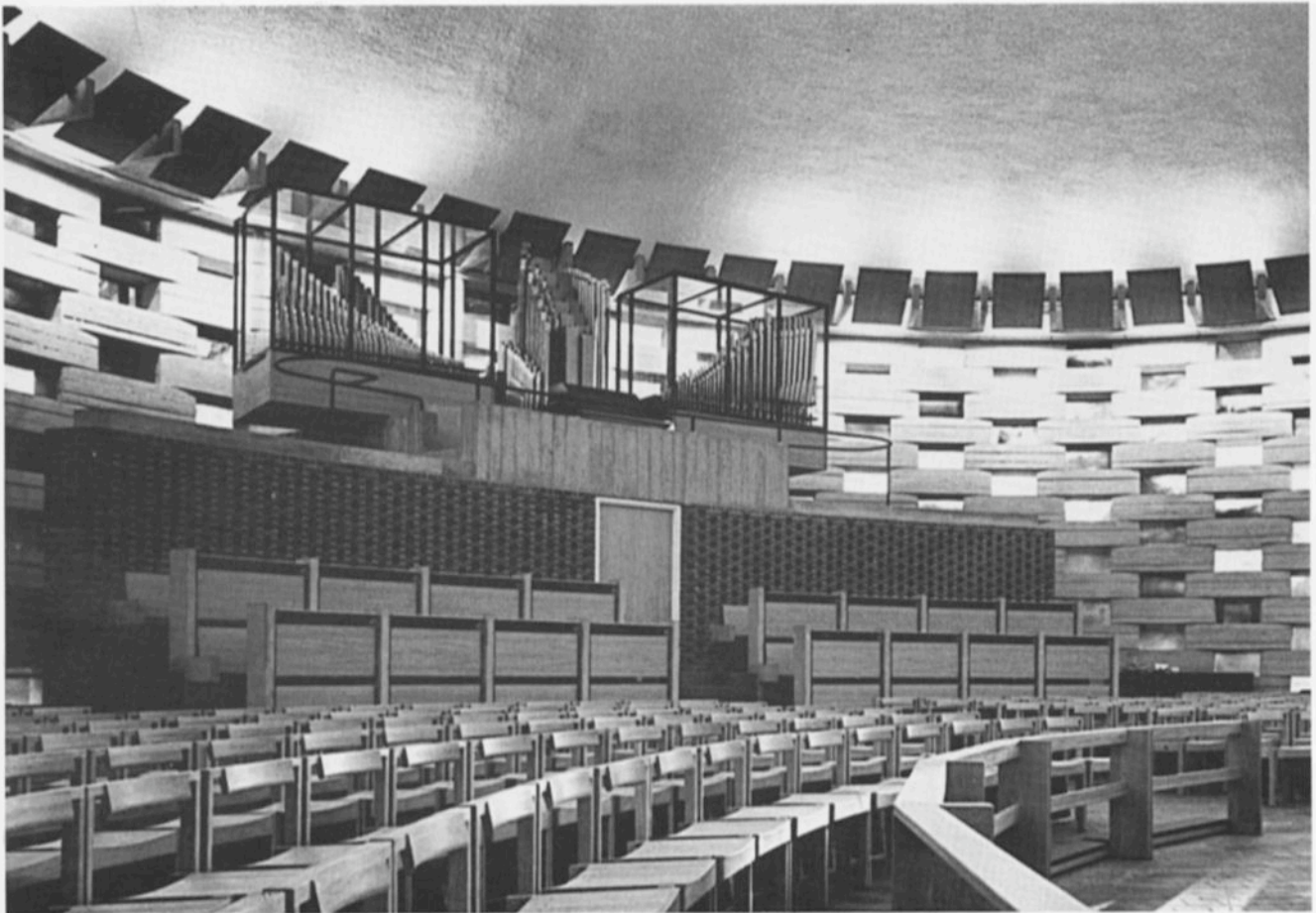
| | |
|--|--------------|
| Prelude and Fugue in E minor (The 'Wedge') | J.S. Bach |
| Voluntary XIII | M. Greene |
| Choral in A minor | C. Franck |
| Air and Gavotte | S. Wesley |
| Variations 'Mein junges Leben hat ein End' | J. Sweelinck |
| Aria | F. Peeters |
| Prelude, Toccata and Chaconne | B. Brockless |

The organ was later recorded by Jiri Ropek on Cathedral Records (CRMS 854).
The specification is as follows:

| GREAT | | SWELL | | PEDAL | |
|------------------|----|------------------|----|---------------|----|
| Quintadena | 16 | Rohrflöte | 8 | Subbass | 16 |
| Principal | 8 | Spitzgamba | 8 | Octave | 8 |
| Gedackt | 8 | Koppelflöte | 4 | Hohlflöte | 4 |
| Octave | 4 | Principal | 2 | Mixture III | 2 |
| Lieblich Flöte | 4 | Larigot | 1½ | Fagot | 16 |
| Blockflöte | 2 | Cymbale IV | ½ | Rohr Schalmey | 4 |
| Sesquialtera II | 2½ | Dulzian | 16 | | |
| Mixture IV | 1½ | Trompette | 8 | | |
| <i>Tremulant</i> | | <i>Tremulant</i> | | | |

Couplers: Great to Pedal, Swell to Pedal, Swell to Great.
Three general pistons, reversible pistons for manual to Pedal couplers.

Interior of the Meeting House showing the new organ.

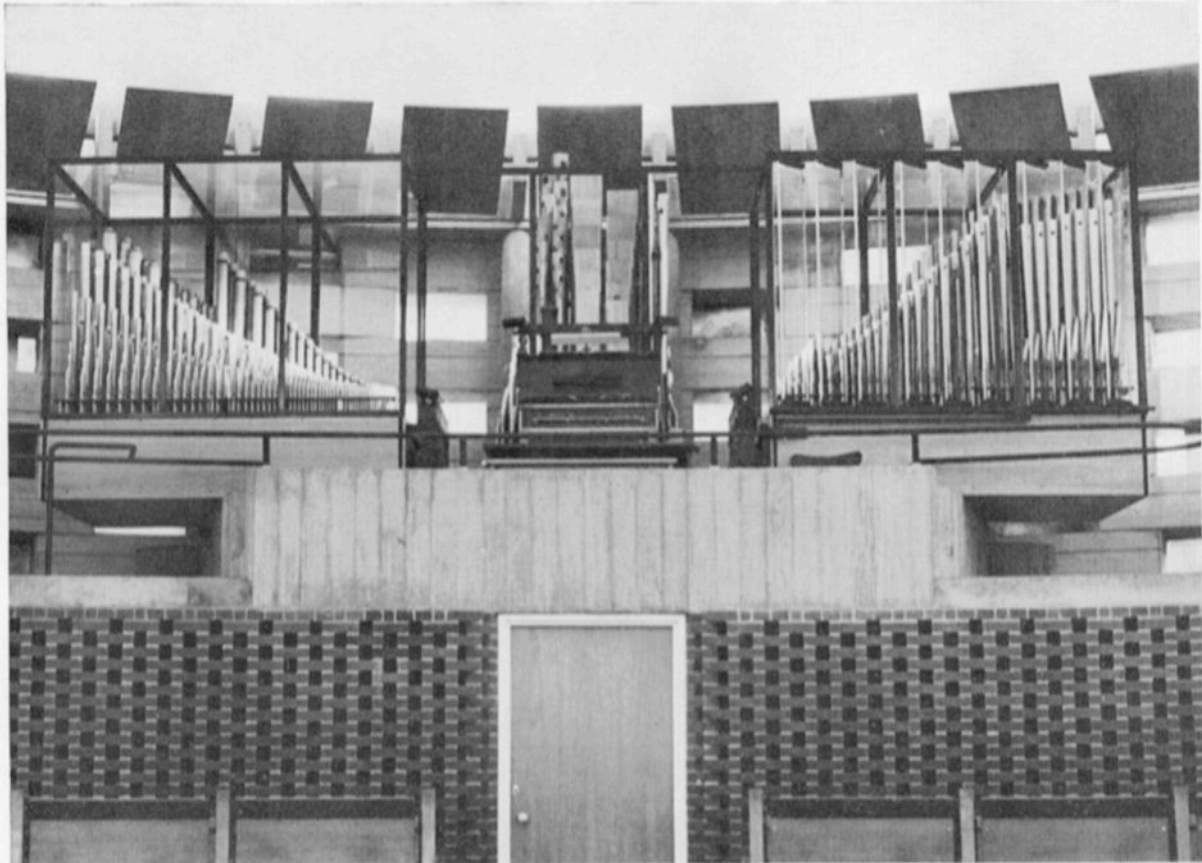




GRANT DEGENS & BRADBEER LTD

The Organ Works, Campbell Square, Northampton. NN1 3EB

Telephone: Northampton 33993



Pedal Organ

| | |
|---------------------|------------|
| Subbass | 16 ft |
| Octave | 8 ft |
| Hohlflöte | 4 ft |
| Mixture | 15, 19, 22 |
| Fagot | 16 ft |
| Rohr Schalmel | 4 ft |

Great to Pedal
Swell to Pedal

Swell Organ

| | |
|-------------------|----------------|
| Rohrflöte | 8 ft |
| Spitzgamba | 8 ft |
| Koppelflöte | 4 ft |
| Principal | 2 ft |
| Larigot | 1½ ft |
| Cymbale | 29, 33, 36, 40 |
| Dulzian | 16 ft |
| Trompette | 8 ft |

Tremulant

Great Organ

| | |
|----------------------|----------------|
| Quintadena | 16 ft |
| Principal | 8 ft |
| Gedackt | 8 ft |
| Octave | 4 ft |
| Lieblich Flöte | 4 ft |
| Blockflöte | 2 ft |
| Sesquialtera | 12, 17 |
| Mixture | 19, 22, 26, 29 |

Swell to Great
Tremulant

Three general pistons duplicated by toe pistons, instantly adjustable by a setter button.

Reversible toe piston Great to Pedal.

Reversible toe piston Swell to Pedal.

Toe Piston to Setter.

General Cancel.

Tonal boxes plate glass in black anodised aluminium frames.

UNIVERSITY OF SUSSEX

Architect: Sir Basil Spence,

*Consultant: John Birch, Organist & Master of the Choristers,
Chichester Cathedral*

1554 PIPES

PAUL HALE undertakes organ consultancies around Britain, advising clients on matters technical, contractual and musical. He is Midlands-based, at Southwell, Nottinghamshire, where he is Cathedral Organist.

After a liturgically rich upbringing and an education at Solihull School, Paul was from 1971-4 Organ Scholar at New College Oxford, obtaining an MA; he also holds the FRCO and ARCM for organ playing and has been elected a FRSA and awarded an Honorary FGCM and FRSCM. World-wide travel as a player / lecturer / consultant brings him into contact with the work of many organ builders. He has been much involved with the work of the Royal College of Organists as a diploma examiner and Trustee and was Editor of the international journal *Organists' Review* for fifteen years.

Paul is an internationally acknowledged writer, with much published on organ design and construction. On these subjects he frequently lectures, including to the Conference of Diocesan Organ Advisers, the Three Choirs Festival and the St Albans International Festival. He acts as Diocesan Organ Adviser for Southwell & Nottingham, and Lincoln (South) and is currently Secretary of the Diocesan Organ Advisers' annual national Conference.

New (or substantially new) pipe organs he has designed include the cathedrals of Rochester, Birmingham and Southwell, churches in Cambridge (University Church), Bridlington, Repton, Humberston, Nottingham, Platt, Edenbridge, Boxmoor, and schools such as Glenalmond College. A large new organ is being built for Merton College Oxford and another for Newcastle R.C. cathedral. Historically-informed restorations include Repton School, St Margaret's Priory King's Lynn, De Montfort Hall Leicester, Spridlington PC, Christ Church Coalville, Lancaster Town Hall and Our Lady & the English Martyrs RC (Cambridge); a restoration at Newcastle City Hall is under discussion, as are new organs for Manchester and Newcastle Anglican Cathedrals.

Other major restorations or remodellings include Leicester Cathedral, Glasgow University Memorial Chapel, Worksop College, Ashbourne Parish Church, Doncaster Minster and Selby Abbey (both in progress), Leek St Edward's, Solihull School, Auckland St Helen's, Beckenham St George's, the Ulster Hall and several organs seriously damaged by water or fire. Paul has also advised for minor but important work to such organs as Christ Church Cathedral Oxford, the City of London School, Beverley Minster and (currently) Ripon Cathedral.

No project is too large or too small, and up-to-date advice is also offered on digital organs.

Paul offers advice in an area bounded approximately by Dundee, Norwich, London, Exeter, Cardiff & Carlisle. References can be supplied.