

WAsc 2387

Diary of
Aubrey Thomas

15-10-1951 - 7-8-1952

A. J. Thomas

S.O. BOOK 136.

Code 28-73-0

Oct. 15th., 1951 - Aug 27th., 1952.

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**SUPPLIED
FOR THE
PUBLIC SERVICE**

Diary of
* Aubrey J. Thomas
550

Rescued from skip!

* "Smookey"

1951.

October 15th.

Writing report of T20F results for H. until 10.45 a.m.

T23/9 compressions at 20°C. for rest of day.

T32/1 impacts to be put in at -50°C. overnight.

October 16th.

Cordite received for T28 B (climatic trial). Made a note of the fact that it came off climatic trial on 28-9-51(b)

Refrigerator did not reach -50°C. last night. T32/1 impacts put back in refrigerator for a further fortnight of conditioning. Gave note to Mrs. Aubrey for servicing of refrigerator.

Larry Wright (S.C., W.A.) for catalogues, etc., of planimeters. He is sending.

Calculating comparison between unnotched ^{round} U.I.M. specimens and notched square P.I.M. specimens for T4 & T4/1 until 11.30 a.m.

Recd 2 thermoregulators back from I.C.P. Smith which were sent for repair on 21st. Sept.

Drawing graphs of all T20 results to date for rest of day.

October 17th.

Cutting out & sticking bits of typed T20F report for Tyler until 10.30 a.m.

Gave Mrs. Aubrey a note to order 50ft. x 6t.p.i. of bandsaw blading.

Rewriting manufacturer's instructions for bandsaw until lunch. New version passed to H. for approval. Sent for typing.

Calculations on "ready reckoner" for Young's modulus for rest of day.

October 18th.

T23/9 compressions at 50°C . and impacts at -20°C . all morning. Writing report of T23/9 for H. until 2.30 p.m.

Calculations on Young's modulus tables for rest of day.

October 19th.

Checking retyped manufacturer's instructions for bandsaw.

Circulated one copy to staff concerned: another copy to be framed & hung in prep. room. This until 10 a.m.

Bandsaw blades to be repaired & new ones to be made up.

Thorpe filled in order & took to ^{heavy} m/c. shop. to explain that they must be ground to original size.

Rest of morning occupied with visit of Litton & hiring from C.E.A.D. We are to test some 2" F478/148 charges from bursts ^{for} them.

Young's modulus tables until 2 p.m.

Started Baker shaping cordite for Litton's trial. Rang ~~Webster~~ Webster (i.e. Litton's hiring) at Fort Halstead. Apparently the whole of Bx 145 & 6 is under suspicion & therefore the results of T31 cannot be used as a comparison. He is sending a charge of an earlier lot for this purpose. Telling Baker about shaping until 2.30 p.m.

Writing report of T35 for H. until 3 p.m.

Had a ring from Dawson: he has pressed some cordite for impact tests & it has come out 0.301" dia. Low limit is 0.307". Referred to H. who said it must be re-pressed. (H. rang Dawson & told him himself).

H. asked me to order 2 "Thruator" units and 2 thermoregulators for new air thermostats, which are being ordered on G.W. priority. [See 3rd. October]. Hamann is finding out about a type of

thermoregulator in use at Miltam Abbey which is alleged to be very good.

October 22nd.

Gave ell's. clubrey a note to order two B.T.H. "Thrustor" units type TS 752 for new air thermostats, as requested by H. on 19th.

F 4/7 samples arrived in mech. testing sizes.

October 23rd.

Rang Dawson: F4/7 is for mechanical testing & was ordered by H.. Traced file (CPS 6/6) & found composition. This trial becomes T18/3.

Rang Wright (S.C., WA.) about planimeter catalogues (see 16th last). This cat. is out on loan, but will be sent to me when it returns.

Rang Hamann about thermoregulators (see 19th last). They are called "Adjustable contact thermometers". There are 2 types: 0-50°C. and 0-100°C. Straight stem, 6" immersion. From Electro methods, Ltd., 220, the Vale, N.W.11; or Verrolec (address not known). Suggested I ring down to find latter's address. Tried to ring him, but not there. Asked Tyler to ask him to ring me back. Rang back later & told me that Verrolec is a breakaway from Electro-methods. I shall just quote firm's name on the order.

T28 A impacts at -20°C. until 2.30 p.m.

H. gave me XR 2050/2: "Actions arising from E.R.D.E./R.P.D. working party on solid propellants", containing a piece of elexpress of which the Young's modulus is required at 20°C. and 50°C.

Writing report of T28 A results for H. for rest of afternoon, with odd jobs. No remarks about cracking of charge on T28 A report: these must

be added tomorrow.

October 24th.

Added note about cracking of "pulp-boiled N.C." charge to T28A report. Took report for typing to Ellis Ward.

Sharpening shaping tool until 10.45 a.m.

Booked seat on coach & lunch at W.A. for colloquium.

Preparing sample of "Neoprene" for Young's modulus experiments (see yesterday) until 2.45 p.m.

Received sample of British OVA (CPA180) for testing from Hannant. Becomes T40. Discussing with H. until 3 p.m.

Checking Thorpe's Y.M. calculations until 3.30 p.m.

Reading X²R² file on high rate of loading mesh. testing until 4 p.m.

Gave note to Mrs. Estrey to order "adjustable contact thermometers" (i.e. thermoregulators) for new air thermostats.

Looked at cracking trials for Elterdoga at 4.30 p.m.

October 25th.

Colloquium at Waltham Abbey until 3 p.m.

Finding Young's modulus of neoprene sample for rest of day (see yesterday).

Charge arrived for controls for T39.

October 26th.

Started shaping on T39 control charge.

Correcting typing on T28A report & putting in sketch of cracked charge until 9.45 a.m. Passed completed copies to H.

Spent rest of day working on Young's modulus of neoprene sample at 20°C.

Helicopter man serviced refrigerator. Not finished.

October 29th.

Doing computing for "Young's modulus" ready reckoner until 3 p.m.

Planimeter catalogue (Stanley) arrived from ~~St~~ S.C., W.A.

Kelvinator man pronounced refrigerator working correctly, but not gone below -49.5 all afternoon. Left on all night for Mt. Duke maths. section.

Discussing letter from Dennison re universal testing m/c. with H. until 4.10. p.m. Also mentioned my selection of planimeter (cat. arrived today). Agreed that I ring up Dennison tomorrow to find size of autographic recording chart (for size of planimeter).

Memo. Dennison's ref. L/17006. Model T42U testing m/c. no. 23032. Telephone no. Sloane 4628. Car file no. A22/11/3.

Checking Thorpe's "Young's modulus" calculations until 4.30 p.m.

Young's modulus "ready reckoner" for rest of day.

October 30th.

T36 compressions at 50°C . (Norwegian paper) until 10.45 a.m.

Rest of day doing Young's modulus of neoprene sample at 50°C .

Had telephone call from Evans (Australian?) at W.A. He wants some rate of burning samples cut. Told him to send cordite over with details of what he wants & we will get them cut for him.

October 31st.

Young's modulus of neoprene sample at 20°C (repeat) until 4.15 p.m.

Hammond (attached Australian scientist) arrived to work for 3 months. Gave him reports to read all day. Asked Roberts to arrange to get him Arsenal pass.

H. brought in copy of A.S.T.M. stds. which we have on long loan for me to see & return.

Also rec^d from H. reply to our letter asking for "Erols" airclump catalogue from Benton & Stone (see 20th. Sept. last). Catalogue is out of print but they send set of air cylinder prints.

Also rec^d from H. replies to enquiries about lathes from various firms (see 21st. Sept., last). Reading these for rest of day.

1st. November.

Refrigerator broke down overnight due to lack of dashpot oil. Baker mended by replacing with typewriter oil.

Doing calculations of Young's modulus of regreene until 2.45 p.m. Wrote report of results for H. & passed back with specimen & file XR 2050/2. (Calculations checked by Hammond). Discussed peculiar initial results with Mr. Jackson, who suggested a "work-softening" effect might be the explanation.

Read A.S.T.M. stds. & passed back to H. Informed Everton (matts. section) that it is available for reference. (until 3.30 p.m.)

Helping Mendoza with progress & planning until 4.10 p.m.

Dealing with a typescript of Hamann's until 4.50 p.m. 3 copies sent to Hamann at Waltham (of which 1 is for Walley) & 3 copies retained by H.

Checking Thorpe's Young's modulus calculations for rest of day.

2nd. November.

Showing Hammond shaping until 10 a.m. Gave him pieces to practice on, & passed him to Thorpe to learn impact tests.

Rang Jensonmeters (Hounsfield) to see if they can supply smaller pendulums for the impact m/c. Reserving his reply until they can

do some experiments. Told him to write to W.A. marked for my attention. [Tensometer: Addisoncombe 3696].

Rang Dennison [Sloane 4628] to find size of autographic recorder chart (for ordering planimeter). The size is 10" x 8". Gave Mrs. Atubrey note to order planimeter model U 2334A (calibrated in inch units) from W.F. Stanley. Stanley's catalogue returned to S.C., Waltham Abbey (see 29th. last).

Reading details of lathes until 4 p.m. (see 21st. October last). Made list of those most suitable & passed with literature back to H.

Reading Enots airclamp letter for rest of afternoon. Selected drawing of cylinder which appears most suitable & passed all back to H. with note.

5th. November.

Sent thermograph charts & key to Clifford.

Asked Mrs. Atubrey to chase 3rd. hand shaping m/c. which is on order, and to double order for 50 ft. of 6 t.p.i. bandsaw blading which was ordered on 17-10-51 (making 100 ft. in all).

Making out programme of work for next 12 months for H. until 2.30 p.m.

Discussing U.S. method of tensile testing with H. until 3 p.m. (drawing & description arrived from B.T.S.M., Washington).

Resumed making out programme. This lasted for rest of day: passed to H.

6th. November.

Filled up & despatched minor manufacture form to Dawson (propellants factory) for 3 ft. of 3" dia. SU (part for completion of SU steel's trial & rest for Hammonds' work on hardness tests) until 10.0
[10.0] [C 0349]

^B
T28 ~~A~~ hardness at 20°C. for rest of morning.

H. returned my note & Enots airclamp drawings (see 2nd. obs. last). Says I am to consult Morris, who is the Development Engineer in the A.R.E. drawing office. Apparently he is dealing with one of the cast double base m/c's. which has a pneumatic drive. I tried to ring Morris this afternoon but he was not in. Will try again tomorrow.

T39 hardness at 20°C. (2 lots out of a total of 3) all afternoon.

Read screed by Dr. Lawson on inadvisability of large climatic ballistic trials & recommending more mechanical testing, cracking trials, etc., and a little brainwork.

Passed back to H. & queried whether, as stated by Lawson, degradation of N.C. produces less elongation at break in tension.

7th. November.

Tried to ring Morris again 9.15 a.m. but he will not be in until 10 a.m., if at all. Will ring later.

H. asked me to look into safety precautions, limit switches, temperature cabinet, etc., for Dennison m/c.

Gave ~~copy~~ part of spec. of U.S. low rate tensile test to Johnson for copying. 1 copy for me & 1 for H.

Asked Mrs. Edulrey abt. position of 3rd shaping m/c. which is on order. She says it is to be off on 16th. next.

Ring Morris again 10.15 am. He was willing to see me so went up on 10.30 car. With him until lunch. He is willing to design pneumatic drive for shaping m/c's, his final product.

being a f'cap sketch of the components we will require with description, etc. for ordering which ~~we~~ we will do. Mentioned this to H. who agreed that this will be a good thing. We also agreed to use the compressor owned by the materials section, which gives 80 lbs.in.² pressure (but low delivery $\frac{1}{2}$; I am to let Morris know the approx. delivery when I know what it is); and that there should be a separate system for each shaping m/c.

Spent afternoon measuring delivery of matls. section's compressor by experiment.

8th. November.

Spent morning in conference with H. & Dr. Williams re project III (~~at~~ lathes, milling m/c's, etc.). H. is to consult development engineers at Waltham. No action required on my part.

Finished experiments to find delivery of air compressor by 2.30 p.m. Tried to ring Morris, but he is not in today. Will try again tomorrow. Writing up experiments, etc., until 3.30 p.m.

T31A sample received for mech. testing. Asked Ellis Williams for details of storage conditions, but she was unable to tell me more than that it was an alternating temperature going down to about -40° . She is going to find out and let me know. Rang Bush later to tell me conditions were 8 weeks at 120°F. (dry) to -40°F. , alternating.

Spent rest of day looking through list of apparatus on order. Will chase tomorrow.

9th. November.

Sharpening shaping m/c. tool until 9.10 a.m.

Preparing list of items on order until 10.30 a.m.

Hook (representative of Piqué, m/c. shops, Fort H.) rang up to say he has some queries on air thermostats which H. has apparently ordered, and could he come & see me this afternoon. I agreed, so he will arrive about 2 p.m. Arranged for our van to pick him up. (I thought quotation for trade supply in collaboration with I.C.I. was being awaited for these cabinets before we definitely decided Piqué was to supply. Certainly I.C.I. are to supply the modified drawings).

Rang Morris, A.R.E. ~~plumber~~ development engineer, & told him clear to proceed with design of pneumatic drive for shaping m/c's. (see 7th. Nov. last). 11 a.m.

Hook arrived 2 p.m. Settled his query which was on the table for the air thermostats only. He left again at 2.10 p.m.

Showing Mr. Hodges (Australian visitor from Westcott) mechanical testing until 2.30 p.m.

Re-drafting programmes of work to new format at H's request until 3.30 p.m. Panned to H.

Rang Andrews (stores, W.A.) because Thorne tells me somebody at the stores had a query about the planimeter I ordered on 2nd. last. Apparently it was Wright, who is not in today. I managed to settle the query, however, which was something to do with the inch units. It becomes clear on reading my order properly & referring to Stanley's catalogue, which they had apparently not troubled to do.

10th. June

Rany Dennison (Weare) to find out about limit switches. There is a limit knock-off switch which is not adjustable but which could be made so, which prevents the two platens being run together, but there is no overload cut-out. A solenoid overload device is available at £75.

Also considering safety shield & temperature cabinet, both for Dennison m/c. at H's request for rest of day.

12th. November.

Disc. with H. He has consulted development engineer at Wallham with the following results.

- (1) Lathe. One of the tenders that we received was very suitable. He recommended a "Ellyford" lathe with turret attachment. H. has asked stores to tender for 4 (one with specially long bed) with chucks, live centres, & steadies.
- (2) Hacksawing m/c. The one which we chose is too large & probably expensive. He has recommended another. H. has asked stores to tender.
- (3) Milling m/c. Our choice O.K. H. has passed to Brewin for approval to order.
- (4) Power shaping m/c. A's for (3).

In addition it was decided to order tools for these m/c's. after the m/c's. have definitely been ordered. I am to find stock size of "Perspex" sheets $\frac{1}{2}$ " thick for shields for m/c's.* Told H. about my enquiries with Dennison's about knock-off switches. The solenoid device not required. I am to ring them and tell them to adjust knock-off switch to $\frac{1}{2}$ " between heads.

* Also to find details of any apparatus available commercially which will deliver air at constant temperature.

H. had a query from I.C.I. about new air thermostats. Wanted to know various details of construction, lamps, & thermoregulators. Gave him note saying all I know.

T39: standard charge gave greater hardness than suspect charges (-ve Spl.) Really needs to have higher spring. Decided with H. to ~~report~~ continue with tests under same conditions (-ve Spl.) but to supplement with further tests later. Sorted out cordite in mag. to make sure we have enough.

Large quantity of cordite arrived in ~~not~~ mechanical testing sizes from factory. Rang factory, but Dawson not in.*

Sent hastener to Hook re "jo" & "no go" gauges (our requisition dated 12th. Sept. last).

* Probably sea slug compositions. These become T34/6-10.

Rang Dennison's to ask them to arrange testing m/c. so that knock-off switch works at 75% compression ~~of~~ on 2" specimen length (i.e. $\frac{1}{2}$ " clearance). No definite answer: going to ring me back.

Drawing of filing rack for Mr's. Aubrey until 4 p.m.

Setting air thermostat at 50°C. for rest of afternoon.

13th. November.

Doing 1 set of T39 hardness at 50°C. until 10 a.m.

Writing out T39 report for H. until 11 a.m. Pamed to H.

Examining & adjusting notching m/c. for P.I.M. specimens until 11.30 a.m. Position of tool will have to be adjusted each time ~~until~~ for round & sq. specs. Setting gauge on the m/c. for the tool gives correct setting for sq. specs. only.

H. asked me to abstract all useful information from

x2 430/51 (Cast double base propellant of U.S. manufacture sample for physical examination, etc.)

Spent afternoon writing out reports of T 32/1 & T 28B for H. ~~He~~ During the writing of T 32/1 discovered a mistake in T 32 (reported by Thorpe while I was on leave). H. told me to write a report on T 32/1 containing also a corrigendum on T 32 for Dr. Williams. Give H. T 28B report.

Morris, A.R.E. development engineer rang to say he has finished design of pneumatic drive for shaping m/c's & it has been approved by ~~Stow~~ Benton & Stone's representative. He is sending to H.

Told H. about faulty notching m/c. I am to get him file on which it was ordered & he will write letter to Jenometer's, presumably to ask for replacement.

Wrote report on T 36 & passed to H.

Kannan reported that flange on wheel of bandsaw is worn.

14th. November.

H. brought in Morris' diagram of pneumatic drive for shaping m/c's. with list of parts & asked me to order. He is very pleased with the promptness.

Rang Roberts to get H. file on P.I.M. [Order no. P1/11532].

Settling priority of T 34/6-10 until 10.15 a.m.

Wrote report of T 32/1 with corrigendum (see yesterday). One in file 6/27 & one to Dr. Williams.

Wrote note to S.C./W.A. asking for details of any

apparatus available commercially which will deliver air at constant temp. to an enclosure of approx. 6 cu. ft. This is for const. temp. cabinet on "Dennison" testing m/c. H. requested query on 12th. Nov. last.

Checking typing of T28B report & doing sketch for it until 11.40 a.m.

Asked Dukes (maths. section) what is the standard size of Perspex sheets. He referred me to stores (R.136). Tried to ring them 3 times unsuccessfully before lunch. Rang Wright (stores, W.A.) who said they are 2ft. square. Rather small: I don't believe it. ^{this aft.}

H. out at I.C.I. Kidderminster until Friday morning. I had his telephone calls for today & tomorrow put on my extension.

H. asked me to get XR no. for T39 report (new file). Rang Roberts, who said he is not allowed to start new files any more: referred me to Woolmer, tech. reg., W.A., who insisted on being sent a note. I agreed to & asked him to let me know new no. by 'phone. Sent the note.

Checking & sorting typed report of T36 until 2.30 p.m.

Checking Thorpe's compression calculations until 3.30 p.m.

Tried to ring Morris (A.R.E. des. engineer) about pneumatic drive for shaping ~~the~~ m/c's., but not in today.

Finally got into touch with Woolwich stores (research ext. 136). They informed me that stock size of sheet is approximately 4 ft. by 3 ft.

Had 'phone message from Bellman(?) C.I.A. / guided weapons division. He said he had rec'd a bracket for a convolute winding m/c. which he knew nothing about. Told him what the convolute winding m/c. was for & he seemed satisfied.

Spent rest of day abstracting useful information from XR 430/51 ("Cast double base propellant of U.S. manufacture sample for physical examination, etc.") for file CPS 7/3, as requested by H. (with a view to preparing a report similar to mine of the beginning of this year on extruded propellants. This latter report has never got beyond the draft stage).

15th. November.

Sharpening shaping tool until 9.20 a.m.

L.S.R. 13 (cooling coil for humidity cabinets) until 1.45 p.

Jyler arrived at 2 p.m. to discuss T28 (pulp-boiled W.C. trial). With him until 3 p.m. Asked me if I would be willing to saw up 3" round from this trial with cordite in, to see if cracked. Normal method of extracting charges is by freezing, which may cause cracks.

Discussing shaping of T40 with Thorpe until 3.20 p.m.

Sharpening shaping tool until 3.50 p.m.

Contacted Rainbird & asked if he could supply sk. of motor mounting for humidity cabinet. Said he might be able to supply actual mounting. Will ring back tomorrow.

16th. November

Received file (XR) from tech. reg. W.A. for T39 report. Title completely incorrect. Passed to H., who is going to complain.

Had a ring from S.C./W.A. re "Thruster" units ordered Oct 22nd. last. Cost £32-2-0d. each & 60 weeks delivery. Wanted to know if O.K. to proceed. Told H. who said all orders requiring steel must be on "defense order" & told me to ask S.C. if any reduction in delivery time can be effected by this means. Rang Wright, who is going to find out & let me know.

Rainbird rang about motor mounting (see yesterday) Lawson not in. Will ring on Monday.

Tyler rang up for a copy of T14 hardness results. Wrote them out for him & in doing so noticed that I gave him some erroneous information yesterday. Prepared a written statement of real position of T2&B. Tried to ring him 6 times, but no. engaged. Cycled up, gave him results & explained mistake. No inconvenience caused.

Put away information abstracted from XR 430/51 in CPS 7/3. (see 14th. last.)

Rainbird rang back again. No. of drawing of motor mounting is ARD 8186 (3 sheets). Title: "Fan unit for air thermostat".

File on impact m/c P1/11532 which I requested on 14th. last arrived. Passed to H. Passed back to me with request to draft letter re faulty notching m/c. Drafted letter, saying notch depth of round specimens is 0.010" oversize. Passed letter & file to H. for approval.

Checked typescript & did sketches for T39 report. Passed to H. for despatch.

Asked H. if willing to let me cut up 3" round for Tyler

(see yesterday). He agreed, provided round is made non-propulsive. Rang Tyler, who said he would try to get round delivered on Monday.

H. approved my L. S. K. 13. (see yesterday). Asked Mrs. Aubrey to order 4 sets.

More sea slug credits rec^d from Dawson for testing. Becomes T 34/11, /12, & /13.

H. approved letter to Tensometer re notching m/c., with modifications. Sent for typing.

Sent order for 3 sets of dog. ARD 8186 (see above) to A.R.E. D.O., Fort Halstead. Copy of order in CPS 11/5.

Rang Morris re pneumatic drive for shaping m/c's. (rec^d 14th last). Since H. wants a starting valve for each circuit the diagram will have to be redrawn. This he has promised to do. (N.B. Starting valve is additional to trip valves: does not replace one of them).

19th November.

Ordered (Mrs. Aubrey) 1 set of components for pneumatic drive for shaping m/c's.

Hook rang me. Go & not go gauges nearly finished. Should be delivered this week.

Ordered (Mrs. Aubrey) 3 sheets of $\frac{1}{2}$ " Perspex 4'x3' for safety screens. H. ~~to~~ to discuss with Hay the question of matl. for framework.

Message from Tyler via H. : Pulp-boiled N.S. round for cutting up (see 16th last) will arrive tomorrow morning. He is also sending some F478/148 cracking trial samples. These become

T41.

Decided (with H.) to retain remaining 3 small samples of F 478/148K from T39 (2" air/air burst) in case further tests required, but we do not intend to do any more until, or unless, requested. (See 12th. last).

Tyler rang: some queries about lot nos. of trials we have tested, no satisfaction: he is going to ask Ellis Williams to clarify. He also gave the no. of the batch to be used as a control for the F 478/148K (see above). This is only 1.66" dia. & is in magazine for Hendry. I must ask him if O.K. to use. Rang him later. I can have all except enough for 16 cubes (1"). Tyler rang again later to confirm that although these are a different size from the specimens on climatic storage (1.6" against 4") he wants them done as controls.

50/K rec'd from Dawson (factory) probably for mech. tests. Will ring tomorrow to confirm.

20th. November.

Samples arrived from Tyler for T41.

T39 file is XR 425/7 (see 16th. last).

Received copies of dgrs. of motor mounting ARD 8186 (see 18th. last). Examining with a view to altering until 10.15 a.m.

Gave H. typed letter to Jensoneter (about faulty notching m/c: ~~see~~ see 18th. last).

Took trunk call from Hay (I.C.I.). Queries about air thermostats. Managed to settle them for him (no. of holes req'd. in base ~~board~~, and whether wooden base for hardness m/c. is required).

Pulp boiled N.C. round not arrived for cutting up from Tyler (see yesterday). Panghim: he said it should have arrived first thing & that he would chase them up. (11 a.m.)

2 rolls of Utiles C.A. foil arrived for H. & samples of picrite for Mendoga. Signed receipts. Alf asked me later to send picrite to Lermitt.

Tyler's round arrived 3.40 p.m. Put in mag. 3 until tomorrow.

H. asked me to send 1/2 sample both of SU and of SU/1/2 standard (T24 & T25) to Hutchinson.

H. asked me to send list of mech. props of std cordites to Hodge. If not done, I am to give date of expected completion.

21st. November.

Spent morning cutting up round for Tyler. It was found to be cracked.

Received 2 further samples from Tyler for mech. testing, presumably for T41. Will ask him later. Panghim 2.30 p.m. Told him pulp-boiled round was cracked. Asked me to send up sample, which I did. He told me 2 samples rec'd. this morning were service N.C. & pulp-boiled N.C. Becomes T28/1.

Prepared 1/2 samples of std. SU & SU/1/2 to send to Hutchinson (see yesterday).

22nd. November.

Prepared list of std properties & sent to Hodge. Copy in quarter manifold II (see 20th. last). Until 10.30 a.m.

Sent samples of SU & SU/1/2 to Hutchinson (see yesterday). Measuring T23/6 & /7 compression specs. until lunch.

Had a ring from Jensoneter's. Notching m/c. must be adjusted each time by means of screw on cam follower.

Writing to H. (see 20-th. last).

Shaping m/c. arrived; ordered 20-6-51.

Had a ring from Welly. He has had samples of SV & SV/K. I sent up this morning, & he wants also 2g of F478/148 K. I rang Tyler to confirm this: he said any lot would do, so I shall use same as for T41 control (i.e. T41 A). Miss Williams is to call for it when required.

~~22nd.~~ T23/6 & /7 compressions at 20°C. all afternoon.

23rd. November.

T23/6 & /7 compressions repeat at 20°C. all morning.

Setting thermostats, etc., all afternoon.

Received a copy of order for planimeter, ~~to apparently~~ ~~delivered~~ see ~~the~~ 2nd. November. Also for adjustable contact thermometers (tender no W/T/6367), see October 24th.

26th. November.

M.M. CP349 received from factory (additional SV for T24) ordered on 6th. last. Entered date received in minor manufacture key & in CPS 4/7.

T23/6 & /7 compressions at 30°C. with interruptions until 3p.m.

Miss Williams called for a piece of T41A (see 22nd. above). This sample could not be found in the magazine (see also 19th above).

Spent rest of afternoon setting air thermostat at 50°C. and

refrigerator at -20°C . Put in specimens ready for tomorrow.

27th. November.

F478/148K found. ~~The~~ Piece delivered to Miss Williams (see yesterday).

Allen came to sort out apparatus^{*} for Hodge. H. asked me to do necessary paper work. Told Johnson to look after Allen & get him to make list so that I can identify it later.

T23/6 & /7 compressions all day until 3.15 p.m.

Spent rest of day sorting out junk enumerated by Allen. Confirmed with Mendoza that it can go on the W.A. van tomorrow if property pass is arranged. Paper transfer can be done later. [* Dudell oscillograph].

28th. November

Rewriting (& re-drafting) priority list until 10.30 a.m.

Writing reports of T23/5, /6, ~~7~~ & /7 for H. until 3.30 p.m.

Wrote requisition no. CPS/CF6/80 (at H's request) for a distributor board to replace existing electrical connections to air thermostat. Deferred sending it until I find James' correct title & address.

Sent viscosity samples of T28 to Hamann as requested by H. per W.A. powder van.

The same van refused to take Dudell oscillograph for Hodge because it was a clean van (see yesterday). It will now presumably hang around until Hodge arranges to have it collected.

29th. November.

Sent requisition to James (see yesterday).

1 set of go & not go gauges arrived (delivered to Mr. Jackson).

Rang Hook's office at F.H. & told them another 3 sets to come. They promised to "look into it" & ring me back.

Checking table of T18/ trials in CPS 6/6 for H. until 11 a.m.

Rang Dennison :-

(1.) Autographic recorder normally meant to work in tension only, but it has been redesigned during last few months & may work in both directions. Going to contact Leeds & let me know.

(2.) Asked about knock-off switch (see 12th last.) This can probably be arranged to work at $\frac{1}{2}$ " gap, but going to confirm with Leeds at same time as (1). He will discuss by telephone & then we can confirm by letter.

Spent afternoon overhauling & cleaning new shaping m/c. Selected site for it in prep. room & told Thorpe to install tomorrow.

30th. November.

Saw H. :-

(1) Got him to place order with Byrne for new light in prep. room for new shaping m/c. & to move existing one slightly.

(2.) Told him about go & not go gauges, about Dennison, (both yesterday). No action required on my part.

(3) I am to order motor mounting for humidity cabinets on ARD 8186 (see 20th. last). Did so, per Mrs. Atbey.

Did lab. sk. no. 14 for Hammond until 11 a.m.

Asked Mrs. Atbey to put new shaping m/c. on inventory

(WA 15813).

Ellis Williams informed me T28 (SU/K: pulp-boiler vs. service N.C.) completely finished. Note made in CPS 6/25.

Spent rest of day making delivery mechanism for P.I.M. specimens (refrigerator).

3rd. December.

Showing Hammond how to perform "Young's modulus" tests until 9.45 a.m.

Writing report of T31A for H. until 11 a.m.

Had ring from Hook's office, F.H. (see 29th. last).

As I thought, the fitters have misread "4 sets off" as "4 off" & have marked the order as complete. They will re-open without further action on my part, but this will mean delay due to fresh "tooling up".

Spent rest of day making delivery mechanism for impact specimens.

Had note from Dawson at last to cover T34/6. - /13 incl
4th. December.

Dealing with Dawson's note until 10 a.m. (arranging for reflex printing, new file nos, etc.).

Finishing delivery mechanism for impact spec. for rest of day.

Lensometer arrived.

5th. December.

Rung Andrews (W.A. stores) about missing motor drive for Lensometer. A package arrived at Waltham this morning, which is probably it. Asked him to have packing case collected.

Playing with Tensometer until 3 p.m.

Re-drafting Hamann's viscosity results on pulp-coated N.C. propellant samples (T28) until 3.15 p.m. for H.

Resumed playing with Tensometer for rest of day. Broke 6 SU/K spec. wh. gave average c. 400 lbs. in⁻². This low value probably due to very low rate of strain.

Received note from Dawson for SU/K from paper "A" cellulose received 19th. November (T 36 A).

6th. December.

Rang Tyler re. T41. He wants full tests done.

T40 compression tests all morning (20°C.)

Playing with Tensometer until 4 p.m.

Batch of cordite received from Dawson (Sea Slug). Becomes T 34/14 - /17 inclusive). Dealing with this & filing copies of Dawson's note for T 34/6 - /13 inclusive for rest of day.

7th. December

T40 compression tests at 30°C. all morning. Set thermostat at 50°C. Motor unit for Tensometer received.

10th. December.

Day's leave.

11th. December.

Playing with Tensometer all day (motor unit installed) measured rate of stress on inextensible specimen in both Tensometer & Goodbrand. Also measured rate of crosshead movement.

Checked Thorpe's Y.M. calculations.

Mendoza did conversion vouchers for Duddell oscillograph.

etc. (see 28th. Nov.) sent to Hodge.

12th. December.

More cordite arrived from Dawson: becomes T 34/18-21.
(confirmed that this is for "see slug" by 'phone).

Trying to get method of measuring extension on
Tensometer all day.

Cut up cracked S $\frac{1}{2}$ round for Tyler on bandsaw and
guillotine.

Checked Thorpe's Y.M. calculations.

13th. December.

Received cordite for T 31 B. Insufficient: asked
Ellis Williams for more. She arranged that Thorpe will
collect at lunch time from T.R.'s room.

Saw H. about priority of T 34/18-21 incl. & T 31 B.
He told me that cordite from climatic trials must be kept in
"unstable" magazine. Asked Thorpe to arrange.

Writing report of T 40 for H. until 11.30 a.m.

Reading paper entitled "Improvements in Accuracy of Hardness Testing
by J.R. Scott, reprinted from Transactions of the Institution of the
Rubber Industry vol. 27, no. 5. I.S. 23/35. Which was passed
to me by H. until lunch.

Trying to measure extension on Tensometer all afternoon:
concluded this is impossible to do simply.

Received distributor board ordered 28th. Nov.

14th. December.

Spent morning discussing T23/10-13 & T19/1 & 2 with H., writing up in progress book, copying nominal compositions into my file, queries with Brett, etc., etc.

Reading paper on accuracy of hardness testing (see yesterday). Wrote note to H. about it. He is ordering a copy of the report.

Told H. impossible to measure extension on Tensometer by recording. Agreed to have second operator to observe scale for this purpose.

Asked Andrews (stores, W.A.) to arrange to have packing case collected for return to Tensometer, Ltd.

17th. December.

Making cutter for tensile specimens all day.

Propellant received from factory for mechanical testing (F 478/166.)

18th. December.

Finished making tensile cutter all morning.

Visitors (Australians, Dr. Lawson, & Potter) until 4 p.m.

Checked Thorpe's compression calculations until 4.30 p.m.

Had a ~~ring~~ message to ring Mr. Harker of Tensometer, Ltd.

Experimenting with tensile cutter for rest of day.

19th. December.

Breaking tensile specs. on Goodbrand & Tensometer. Jaws of Goodbrand m/c. most unsatisfactory. Until 11 p.m.

Visit from Mr. Brewin until lunch.

Rang Dawson about cordite received on 17th last. Became

T42.

Rang Tensometer's (as requested yesterday). They have made a $\frac{1}{64}$ lb. tin for the impact m/c. and are despatching it. (See 2nd. Nov. last).

Spent afternoon working on Tensometer.

20th. December.

Spent morning making extension scale for Tensometer. This finished.

Young's modulus specimens (T24) at 50°C. all bowed, probably due to too long storage at 50°C. Fresh set of specimens must be prepared.

Baker (factory) asked me to do comparative hardness tests on 3 dummy compositions. Said I would; the samples arrived later.

F547/11 propellant received from factory for testing. Becomes T18/4.

Sent note to James (foreman electrician) to supply 1 doz. 15 amp. A.C. plugs. Countersigned by Jackson.

Helping Thorpe & shapers prepare second set of T24 specimens all afternoon (see above).

21st. December.

Doing hardness tests for Baker all morning (see yesterday).

Waltham Abbey van took empty packing case for return to Tensometer, Ltd.

Miscellaneous odd jobs all afternoon.

Saw H. about raising limit on no. of operators in prep. room to 6. He is consulting Tyler.

24th. December.

Filtered off some samples of ball powder & put out to dry.

H. wants swelling tests done on 4 samples. Put these samples in oven at c. 40°C. to dry.

Visitor (Mr. Morris from Westcott) from 3p.m. until 4.15p.m.

Doing T24 hardness (cylindrical specimens) at 20°C. all day.

28th. December.

Rec'd file XR 310/10 from H. with letter in it from Jensoneter's saying that they have despatched the special $\frac{1}{64}$ th. lb. lb. tup for impact m/c. under separate cover. H. asks me to test & report. Passed file to Ellis Ward for typing for H. & asked for its return to me.

T24 compressions (cylindrical specimens), P.I.M., & V.I.M., all at 20°C. all day (all extruded cylindrical specimens).

31st. December.

Copies of tenders for Perspex sheet & components for pneumatic drive for shaping m/c. received (both ordered 19th. Nov. last).

$\frac{1}{64}$ lb. lb. tup received from Jensoneter (see 28th. last).

T24 compressions at 20°C. (2nd. time) until 3p.m.

T40 impacts at 20°C. until 3.30p.m.

Rang Lermitt about I.P.C.S. diaries. Lermitt not available but Rogers says they were in the post this morning. Rogers also satisfactorily answered 2 queries about minor manufactures which H. wanted me to ask Lermitt.

Altered CP no. of reflex copies of Dawson's note in file nos.

CPS 6/34 - /41 incl. from 1121 to 1131 at Brett's request.

1952.

1st. January.

T24 compressions at 30°C . until 10.30 a.m. Work in my room suspended 10.30 a.m. to noon due to medical examination of industrial.

Enquired for 2 lab. coats sent to laundry two weeks ago: not available - may arrive Friday. Sent further lab. coat to laundry.

Took 4 samples of ball powder out of oven (see 27th. Dec.) & replaced with 2 others also filtered off on 24th. Dec.

Continued with T24 ~~hour~~ compressions at 30°C . after lunch until 3.15 p.m.

T40 & T24 impacts at -20°C . for rest of day.

2nd. January.

Continued with T40 impacts calculations until ~~2.45 p.m.~~ 7.30 a.m.

Wecker rang up from H.E.R. & asked for return of his microtome which Dr. Williams borrowed from him for me long ago. I caused the driver to deposit this & its accessories at "area 1" police gate.

T24 compressions at 50°C . until 2.45 p.m.

T24 impacts at -25°C . until 4.15 p.m.

Calculating tables for new $\frac{1}{24}$ ft.-lb. trip for impact m/c.
for rest of day.

Checked Mendy's progress & planning totals.

3rd. January

T24 impacts at -30°C . until 10.30 a.m.

Received XR 310/10 from Ellis Ward (see 28th Dec.)

Reported trip satisfactory in it & passed to H.

Writing report of additional T40 impact tests until 11.30 a.m. Passed to H.

Spent rest of morning making out list of values of breaking strength for new $\frac{1}{64}$ ft. lb. P.I.M. trip.

Rang Bayne to expedite installation of light over new shaping m/c. in prep. room. Asked him to add moving of existing light over old shaping m/c.

Took remaining 2 samples of ball powder out of oven (see 1st. last). Put in bottles & into no. 17 magazine.

T25 compression tests at 20°C . until 4 p.m.

Other work for remainder of afternoon.

4th. January.

T24 impacts at -35°C . & T25 compressions at 20°C . until 4 p.m.

H. gave me job of drawing curve surface area vs. amount burnt. Spent rest of aftn. in this.

7th. January.

Continued with drawing curve. Finished 4 p.m.

H. asked me to find charge supposed to come for N.g. migration tests on or about 29/11 last. Couldn't find it: concluded that it never came.

H. asked me to arrange for visual & microscopic examination for degree of gelatinisation of F547/11. Looks O.K. visually.

8th. January.

Interview with H. until 10 a.m. Discussed curve drawn for him yesterday. Decided it was not done correctly & is to be repeated. Also discussed large amount of work which will soon be put in hand on F478/148K with particular reference to the 2" air to air rocket. The present climatic trial on this (T31 series) will continue.

T24 P.I.M. impacts at -50°C . until 10.30 a.m.

Working on progressivity of 6" star centered charge (i.e. "curve" referred to above) for rest of day.

9th. January.

Working on progressivity of 6" charge until 11.15 a.m.

Other work until lunch. H. gave me second charge of which progressivity has to be checked. This is boost charge originally designed by Livemore.

Wrote out list of work to be done on F478/148K 2" air/air rocket until 2.45 p.m.

Reading through Livemore's calculations on boost charge until 3.30 p.m. Corrected two arithmetical errors.

Checking Thorp's compression calculations until 3.45 p.m.

Working on progressivity of Livemore charge rest of afternoon.

10th. January.

Checking Craig Nicol's dog. of new air thermostats, (their dog. no. R 17098) until 11 a.m. Made list of comments to discuss with H. on Monday.

Progressivity of Livemore charge rest of afternoon.

11th January.

Progressivity of Livemore charge all day.

14th January.

Dealing with Dawson's note for T 34/14 -/21 incl. until 10 a.m.

Interview with H. until 11.30 a.m. :-

(1) Decided I should try & borrow planimeter from S.B.R. Ring Amos in the first instance (research ext. 185).

(2). With regard to warping of SU & SU/K compression specimens at for T24 & T25 it was decided that the cause was deliberate deformation of the hot cordite as it came out of the (vertical) press. No action yet on my part. H. is to discuss with Dr. Williams.

(3). Discussed Craigie's dog. of air thermostats. Decided I should ring Hayes at J.C.I. Ardeer (Anderson-^{SALTCOATS}~~Saltcoats~~ 621 ext. 166), since he is the prime mover in placing the contract with this firm.

(4) H. asked me to check whether he has a copy of each lab. Sk. in his file & to supply copies of those missing.

(5) Mrs. Cantor rang to ask if she could resume work (she has been out ~~out~~ for a week): told her she could. A.O. rang H. just afterwards & mentioned that she had been discharged, so she will have to be headed off & sent to see the A.O. She may have to re-apply for her old job, but will almost certainly get it.

See item (4) above: Sorting out L. Sk.'s. required & gave to Brett for copying. Returned H's. L. Sk. file to H. Until lunch.

Rang Hayes at Ardeer (see (3) above). Agreed with most of my remarks. H. asked me to draft letter to Craigie's embodying these remarks, of which a copy will be sent to Hayes.

Rang Amos (see (1) above). He has never heard of anybody with a planimeter. Rang Mendoga to ask if he knew anybody in S.B.R. with one. He didn't, but suggested I rang the D.O. ~~How~~ I did so: they have one & I can borrow it. Arranged for Mrs. Cozens to call for it tomorrow morning.

Checked Thope's Y.M. calculations.

15th. January.

Drafting letter to Craig etiol until 10 a.m.

Rechecked figures for 6" R.M.F.A. star centred charge which ~~were~~ given to H. on 9th. last. Found them correct. Returned to H. with request to pass them on to Wally. (Until 2.45 p.m.)

Rest of day measuring areas for Livemore charge with planimeter borrowed from D.O.

16th. January.

Supplied H. with reflex copies of lab. sk's. mining from his file [see item 4, 14th. Jan., last].

Interview with H. until 11 a.m.:-

1. Further work required on 6" R.M.F.A. charge, viz:-
superimposition of firing record on theoretical curve.
2. Waring of 50 & 50/K compression specimens: new lot is to be pressed on 10½" press (H. disc with Dr. Williams).
H. has arranged with Trist.
3. Draft letter to Craig-etiol approved. I am to alter the print of their dog. ready for enclosure & then to have letter typed (with letter to Hayes, I.C.S.) & prepare paper templates.
4. Wearne (Saml. Denison) coming 10 a.m. on 21st. next to discuss my queries on universal testing a/c. (see 29th. Nov. last)

Visit from Tensometer representatives for no apparent reason.
Left at 11.15 a.m.

Filing copies of Dawson's note until 11.30 a.m.

Checking Thorpe's Y.M. calculations until 11.45 a.m.

Charges rec? for testing from Tyler. Spent aftn. on Livemore charge.

17th. January.

Fixing trial nos. for Tyler's charges. Become T28/1A & T36B.

— Until 9.45 a.m.

Working on progressivity of Livemore charge until 3.45 p.m.
Calculations all finished.

Planimeter ordered 2-11-51 arrived. Checked & found
acceptable (until 4 p.m.).

Working on item 1 (see 16th. last) until 5.35 p.m. Finished.

Dawson's note for F547/11 (T18/4) sent for Harding to see
(at H's. request) before filing.

Altered Craig-ethiol drawing of air thermostat ready for
despatch to firm with letter drafted yesterday (item 3).

18th. January.

Interview with H. until 11 a.m.

(1). I am to arrange microscopic examination of F547/11 (T18/4)
— speak ethendoga. Show propellant to Harding.

(2) Progressivity of Livemore charge: graph required to replace
Livemore's sketch.

(3) Craig ethiol drawing: all points in letter to be mentioned on
drawing.

(4) 6" R.M.F.A. Curve & superimposed curve to be re-drawn as
tracing with vertical scale halved & with pressure & time scales

added (transfer from experimental record).

(5) Priorities of T28/1A & T36B fixed (see yesterday).

(6) I am to ring Bayne about additional lighting requested for prep. room, but which has not been started.

Informed Mrs. Aubrey planimeter received.

Did (3) above by 11.20 a.m. sent letters to Miss Ward for typing.

Ring Bayne re (6) above. Bayne on leave. Sims looking into it. Going to ring back.

Making paper templates for holding down holes of compression & hardness apparatus. These completed by 1.40 p.m.

Working on item (4) ~~until~~ rest of afternoon.

21st. January.

Finished item (4) (see 18th Jan.) by 10 a.m. Passed to Brett for printing 8 copies.

Interview with Wearne (of S. Dennison) until 10.45 a.m.

Points about autographic recorder working in tension & compression, & knock-off switch, both settled.

Plotting graph of Livemore charge until 2.45 p.m. Finished, & passed to H. Made alteration: put in limits of platonisation. Passed to Brett for photo copying. Passed Livemore's report on this charge to Miss Ward for typing. Asked Brett to do 5 more copies of drawing of cross-section of this charge. Until 3.35 p.m.

Harding returned Dawson's note for F547/11 which was sent to him on 17th. last. Put away in CPS 6/6.

Spoke Mendoza re microscopic examination of F547/11. He agreed to do it.

Filled in order for padlock, etc. for drawer, to be obtained tomorrow.

22nd. January.

T25 impact tests at -20°C . until 9.45 a.m.

Asked Johnson to print graph of Livemore charge, & 5 more prints of Livemore's diag. of charge cross section. ~~Until 10.20 am.~~

Sent sample of F547/11 to Mendga for microscopic examination.

Received padlock &c. ordered yesterday for drawer.

Consulting H. about S.C.D.18, which has been run by Thorpe, until 11.30 a.m. No swelling: decided to abandon test. ~~Mr~~ Rang Miller to find nominal composition of samples & wrote out report for H. He asked me to check what Brett is going to do on the remaining 15 or so samples of ball powder (densities, etc.)

Sorting out T24 results ~~all afternoon~~ until 4.25 p.m.

Checking Thorpe's compression calculations for rest of afternoon.

Had all prints back from Johnson (see earlier today).

23rd. January.

T25 impact tests at -20°C . until 10.25 a.m.

Tensile tests on Tensometer (CPA 201) until 2.15 p.m.

Compilation of T24 results until 3 p.m.

H. asked for small casting of ball powder used for S.C.D.18.

Checking Thorpe's compression results until 3.40 p.m.

(Made out leave rota during lunch hour).

Passed on casting job to Brett with offer of assistance if required.

24th. January.

Comparing Tensometer results with Goodbrand results until 9.45 a.m. Decided to repeat using more accurately prepared specimens.

JP&JPV
Reading U.S. report "Processing of rocket propellants"
(double base extruded propellants) IS 37/52.

all day, with calculations on JPV rates of burning.

then arrived to put ducting in prep room.

Passed U.S. report back to H. with comments 4.35 p.m.

Passed other U.S. report on charge design to Brett 4.05 p.m.

(A.B.L. Progress Report "Design of high performance rockets using
C.D.B. propellant". April 1949. IS. 32/40).

Working out Thorpe's compression results (T25, 1st. set, \perp , 30°C .)
for rest of afternoon.

25th. January.

Rang D.O. for Jackson (on leave) & told them address of
Crenall mfg. Co., who make heater mats.

T25 impact tests until 10.30 a.m.

Sorting out good pieces of propellant for supplementary impact
tests for T25. About 50% of our stock is over size & bowed. Will
have to be re-pressed. (Until lunch).

Klaxon motor ordered by Hamann for new humidity
cabinets received.

Reading article on high speed testing for rest of day.

28th. January.

T31B impact tests at 20°C . & calculations on other impact
tests (done by Thorpe) until 11 a.m.

Reading article on high speed testing until 2.45 p.m.

Reading article on "crazing" of high polymers passed to me by H. until
4 p.m. Passed to Wally (in person).

Checking Thorpe's compression calculations until 4.30 p.m.

Odd jobs rest of day.

29th. January.

Visit of Dr. Johnson until 11 a.m.

T 25 V.I.M. impacts at -50°C . until lunch.

H. & I decided on 25th. last that Mrs. Howe will perform new "short" impact tests on wood from factory. Told Hannant this today, but he pointed out that she cannot read a micrometer. Suggested tentatively that Mrs. Cousins should take this job over. Must consult H.

Experimenting with densometer until 3.45 p.m.

Checking Thorpe's compression calculations until 4 p.m.

Odd jobs rest of day.

30th. January.

Arrived in work 10 a.m. $\frac{1}{2}$ day red leave.

T 25 V.I.M. impacts at -50°C . until lunch.

Received cordite yesterday for work to be done on effect of solvents used to affix restrictive coating to F478/148K, on rate of burning. Discussed programme with H. this morning & spent until 3.30 p.m. getting ready for tests. Filled in stores order for glassware, signed by Jackson, for Thorpe to get tomorrow. Checking Thorpe's compression calculations until 4.10 p.m.

Odd jobs rest of day.

31st. January.

Impact tests P.I.M., T 25, -20°C . until 11.30 a.m.

Prog. & planning return (to Ekondya) until lunch.

Thorpe obtained glassware for restrictive coating (of 2" air/air rocket, F478/148K) investigation.

Finishing impact test calculations 1.30 p.m. - 2 p.m.

Mrs. Cousins delivered rate of burning samples she was asked to cut on 3th. last. This is part of 2" air/air rocket restrictive coating investigation.

Preparing for experiments on variation of rate of burning with solvent content (2" air/air rocket) until 3.15 p.m. Shewed Thorpe how to use balance.

Working out T25 compression results (30°C.) rest of afternoon.

1st. February.

T25 impacts at -25°C. until 10 a.m.

Weighings & getting apparatus ready for expts. on variation of rate of burning of F478/148K with solvent content. Until 3 p.m.

Rang Corbin (Progress dept., Fort Halstead) about table for thermostat cabinet. We have had no receipt for this job. It has apparently been sent to Cook (Carpenter's shop, Woodwich) yesterday - our requisition dated 24-10-51! Wrote note on our copy of requisition (CPS/CF6/76) & panned back to H.

4th. February.

Calculated results of T25 cylindrical specimens at 50°C. which were done by Thorpe on Friday. Until 9.30 a.m.

Work on variation of rate of burning of F478/148K with solvent content until 10.30 a.m.

Writing report on T31B for H. until lunch.

Suggested to H. that we have a fitter down to look at bandsaw the blades of which are always breaking. He agreed. Put order thro' Mrs. Aubrey to light m/c. shop for overhaul & adjustment of bandsaw.

Resumed working coils for humidity cabinets ordered
odd jobs for rest of day.

Had telephone call from Hammond's shop to collect cooling
coils for air thermostats ordered 16-11-51. Collected by Mrs. Cantor.

Sent chaser to S.C. Waltham re my query about apparatus
commercially available for delivering thermostatically controlled
air. Original note sent 14th. November last.

5th. February.

Told H. rate of burning samples prepared from T47
(8 weeks sample) are ready. He wants them sent to Hodge
with form, which is to be filled in by me. This until 9.30 a.m.

T25 impacts at -30°C . until 10 a.m.

Work on variation of rate of burning of F478/148K
with solvent content until from 10.50 a.m. until lunch.

Discussing preparation of non-standard T47A specimens with
Thorne until 10.50 a.m.

Wrote note to send with rate of burning samples (above). H.
found they are to go to Thomas, S.B.R., & not to Hodge.

Work on variation of rate of burning of F478/148K all
afternoon.

6th. February.

T25 impacts at -35°C . until 10.30 a.m.

Showing Mrs. Cantor how to read micrometer until 11.10 a.m.

(It was decided yesterday by with H. that she will do tensile testing,
including the new short tensile test).

Work on variation of r. of b. of F478/148K until ~~lunch~~ 11.30 a.m.

Finished working out impact results until lunch.

Work on variation of r. of b. of F478/148K all afternoon.

7th. February.

T25 impacts at -50°C . until 11 a.m.

Filled in work order on carpenter's shop for piece of picture glass to put in top of balance case (original piece broken by persons unknown). Until 11.20 a.m.

Work on variation of r. of b. of F478/148K until 2 p.m.

Took over tensile testing today. Planning system for rest of day, (dealing with cordite for "short" tensile test T51).

2 men arrived to look at bandsaw (see 4th. last).

& Planning new system for tensile tests rest of day.

8th. February.

Dealing with stencils of minutes of one of H's. meetings until 9.40 a.m. Forged his signature on covering note (at his request).

elton overhauling bandsaw. No shaping being done.

Preliminary measurements for effect of spring pressure & plunger diameter on hardness tests (F478/148K) for rest of day.

11th. February.

Bandsaw broke 3 blades today (after overhaul on 8th.)

Continued with preliminary measurements for effect of spring pressure & plunger dia. on hardness tests (F478/148K) until 10 a.m.

Work on variation of rate of burring of F478/148K with solvent content until 3 p.m.

Tensile tests T51 for rest of afternoon.

12th. February.

Interview with H. until 10.30 a.m. Discussed various small items.

Checking Thorpe's compression calculations until 11 a.m.

Asked Douglas to let me have nominal compositions of T43.

He requires hardness tests done also.

Teaching Mrs. Cantor to do short tensile tests for rest of day (& getting out scheme for tensile test records.)

13th. February.

Checking Thorpe's compression calculations until 9.45 a.m.

Work on rate of burning of F478/148K: variation with solvent content, until 11 a.m.

Rang Hammond about bandsaw (see 11th.). Apparently the men who came last week were not his, but from G.M.E.D. He will ~~try~~ get them to come back.

Teaching Mrs. Cantor tensile testing further, including use of calculating m.p. for evaluation of means for rest of day (evaluation of U.T.S. myself). This TSI.

14th. February.

Tensile test calculations (TSI) until 10.20 a.m.

M.E.D. millwrights & charge hand arrived to see bandsaw.

He agreed that trouble is probably due to bad joining of blades & is going to try to get a blade joined by others. This until 11 a.m.

Wrote out report of TSI for E.G. Lewis & left on H's. table (he is not in until 18th.) Tried to telephone results to Douglas, but no reply.

Saw M.E.D. charge hand again at lunch (he is Mr. Bailey, eat 10/15)

He asked me to send raw matt. for bandsaw to his place (F 71 C). Sent Mrs. Cousens & asked her to find out who exactly will do them.

Had telephone call from H (at Waltham). He wants C.D.B. film prepared for exhibition tomorrow morning. Told Thorne Mrs. Cousens returned & asked me to ring Bailey. Did so, he wanted to know length of blade (8' 4"). Agreed to have one blade made now & if satisfactory rest of roll to be made up. Thorne to take next lot to him & he will introduce him to the one who will join the blades.

Spent afternoon on preliminary measurements for effect of spring pressure & plunger dia. on hardness tests ~~for~~ (F 478/148 K) for rest of aftn. See 8th. last.

15th. February

Bandsaw blade delivered by Bailey. Will try out & let him know result.

~~Spent~~ Spent whole day on preliminary measurements of effect of spring pressure & plunger dia. on hardness tests. ~~at~~

Shewed testing to Cdr. Ismay & Dr. Williams for a short while this afternoon.

18th. February.

Checking Thorne's compression calculations until 9.45 a.m.

T41 impact results until 10.30 a.m.

Work on F 478/148 K rate of burning: variation with solvent content, until 11.15 a.m.

Received nominal compositions & sizes of T43 from Douglas (see 12th. last).

Paper work for T43 (new files, etc.) until lunch.

Teaching Thorpe to do tensile tests until 4.30 p.m.

Re-filing tensile m/c. jaws with rubber for rest of afternoon.

19th. February.

Working out compression results until 10.45 a.m.

H. informs me that Freeman wants to borrow the old impact m/c. (V.I.M.) temporarily. Rang him to confirm this & to get a few other details of what he wants. Agreed to send in next available van. Had apparatus packed.

Ordered another roll of 6 t.p.i. bandsaw blading per Mrs. Aubrey.

H. produced Craig et al drawings of hot air cabinets revised in accordance with our letter (see 18th Jan. last). Looked over these & gave back to H. with note saying new dogs. O.K. & answering one small query.

Calculation for ethendga (weight of C.A. container) until 4.15 p.m.

Odd jobs for rest of day (T43 filing, mending rescued balance, etc.)

20th. February.

Investigating applicability of Nutting's equation to SU until 10 a.m. It does not apply without modification.

Writing out T209 results & report for H. until 11 a.m.

Spent rest of morning & afternoon until 3.30 p.m. on Nutting's equation. More promising.

Checking Thorpe's Young's mod. calculations until 4 p.m.

Adjustable contact thermometers received & tested (ordered

24-10-51). Approval note passed to H. for signature & despatch. (Tested & found to function satisfactorily).

Putting's equation for rest of day.
N.B. - V.I.M. despatched to Freeman at today's van.
21st. February

Work on variation of rate of burning of F478/148K with solvent content until 10.45 p.m.

Took over T41 compressions from Thorne as he was required to show film to visitor & assist generally (Hannant not in).

Visitor from I.C.I. Ardeer for rest of day. Demonstrated impact testing by doing T25 impacts at -50°C .

22nd. February

Told Mrs. Aubrey to tell library that I returned BS 974: "symbols for use in chemical plant" some 2 years ago. (H. accused me of having this yesterday).

Sent typed T209 reports to Tyler, signed by me.

Spent morning working on variation of r. of b. of F478/148K with solvent content.

Putting's equation in afternoon until 3 p.m.

Variation in r. of b. as this morning for rest of afternoon.

25th. February

Work on variation of r. of b. of F478/148K with solvent content until 9.45 a.m.

Hammond left us (on Friday) to commence his period of duty at the E.G. Lewis Research Laboratories.

Replacing broken glass in balance case in optical room & overhauling balance until 11 a.m.

Setting up & repairing old balance discovered in cupboard until 2.30 p.m.

Tabulating T25 results, drawing graphs, etc., & comparing with T24 for rest of afternoon.

26th. February.

Dealing with H's. mail until 9.45 a.m.

T41 hardness tests at 50°C. until 2 p.m.

Checking Thorpe's compression calculations until 2.45 p.m.

Had reply from S.C. Waltham re my chase of 4th. last. There is no apparatus commercially available. He suggests building air thermostat ourselves, or drawing up a detailed specification and tendering to ventilation engineering firms. Left his reply for H. to see; with covering note suggesting that we let the matter rest for a while, and that we eventually build one ourselves.

Prog. & planning return for Mendoga until 3.40 p.m.

Planning work until 4.15 p.m.

Dummy interview with H. in conference room, E146, for rest of afternoon (simulating C.S.C. interview next Friday).

27th. February.

Planning work to be done soon until 10 a.m.

T41 hardness at 20°C. until 2 p.m.

Mendoga told me he took telephone call for me yesterday. 2 tables for air thermostats are awaiting collection at carpenter's shop.

Arranged with A.R.E. transport to do it tomorrow, since they can't do it today.

Part of Enots Air damp order arrived (see 19th Nov., 1951). 9

am not sure it's all there: must contact Morris (A.R.E. development engineer).

28th. February.

Received cordite for T28C. Sorting out, entering in progress book, etc. until 10 a.m.

(Letter from Mr. Brewin re. housing. Replied.)

Variation of r. of b. of F478/148K with solvent content until 2 p.m.

Revision for interview tomorrow for rest of day.

29th. February.

T41 impacts at -20°C . until 10.20 a.m.

Left c. 11 a.m. for C.S.C. interview.

Tables for air thermostats received.

3rd. March.

Talking to Jackson about his vibrating strips until 9.45 a.m.

Checking Thorpe's compression results until 10.30 a.m., with other odd jobs (note to S.P.R.I about success in interview on 29th. last, casually form for not signing off same day, paper work in connection with tables received on same day, etc.).

Letter from Mr. Brewin to say he will probably be able to formally offer me a house in a few weeks, the house to be ready at the end of August.

Saw XR 413/12, dealing with service life & storage of 2" air/air rocket. This relates to work recently done on ^{variation of} r. of b. of F478/148K with solvent content.

Drafting serial on methods of tensile testing until lunch.

Spent afternoon on rough swelling test on F560/94 WACX 375

submitted by Mr. Walley (S.C.D. 19).

4th. March.

S.C.D. 19 until 9.30 a.m.

T41 hardened at 50°C. until 2 p.m.

Checking calculation for Mr. Jackson until 2.15 p.m.

Tried to ring Morris, A.R.E. development engineer, about components for pneumatic drive ^{see 27th Feb. last.} & for shaping m.c.s., but it transpires that he has left. H. is out today, but must tell him tomorrow. 2.15 p.m.

Passed screed on tensile testing (written yesterday) to H. for approval.

Briefing Thorpe for his "leading B" interview tomorrow until 4 p.m.

Calculating swelling ρ for S.C.D. 19 until 4.20 p.m.

Had ring from Williams: as a result I gave T18/2-1/4 top priority (!)

5th March.

S.C.D. 19 until 9.15 a.m.

Interviewed H :-

- ① Arranged priority of T28C.
- ② F547/11 impact specimens oversize. I am to ring Dawson to see if possible to re-press. If not, we can either turn them down or omit the impacts. (T18/4).
- ③ F478/148 K r. of b. samples. (variation of r. of b. with solvent content). $\frac{1}{2}$ of each group to be sent for storage at 60°C. Those coated with cement can be burnt from the ends.
- ④ Told H. about departure of Morris. I am to ring Duggs, DABBS, his superior. If he is unable to help, a telephone call to Benton

& Stone is justified.

All this until 9.45 a.m.

T41 A compressions at 20°C. until lunch.

Checking calculation for Mr. Jackson until 2.15 p.m.

Saw Miss Williams about item ③ above. I am to deliver the samples to her next Tuesday (11th). Spent until 3.40 p.m. packing them suitably.

Rang Dawson re. item ② above. He agreed to re-press if we can supply 1½ lbs of various sizes. I said that we could. Will send it to him tomorrow.

Sorting out tensile tests to be done on whole T18 series. Eventually boiled down to TN1 & TN2. Put in humidity cabinet. (Rest of afternoon).

6th. March.

Knight rang H. wanting to know if we still want 24 SV/K/x/11 charges which he is holding for us. These are probably the charges for T14, done some two years ago. I am to ring Tyler to see if A.D. wants them: if not, they can be sent for disposal. Tried to ring Tyler, but he is out until Monday.

Started to make up parcel of F547/11 (see item ② yesterday) for re-pressing, but found that parcels marked 1 lb. contain only ½ lb. of samples, so there is not enough. Told H. who said we will not do impacts at this stage. If the propellant is promising we will have it made in engine starter sizes & will do impact tests then. (~~11/11~~). This until 10.50 a.m.

Hannant supplied CPA 180 for Tensometer tests.

H. informed me that some samples of I.C.I. propellant arriving

today from Dr. Lawson for very quick compression tests at 20°C. The material is hygroscopic & so will have to be shaped extremely quickly. Our thermostat will not be running at 20°C. until the 6th, so I will telephone the results to Dr. Lawson the same day.

Writing report of S.C.D. 19 for Wally until 11.30 a.m. sent it to him.

Making spacing gauge for P.I.M. for sub-standard T41A specimens until 2 p.m.

Dealing with queries by thought about ① 24 50/14/2/11 charges: rang him to tell him I would ask Tyler if A.D. wants them - he said he had already contacted Tyler, so I told him to dump them. ② Three cast charges. These have been x-rayed by Mendoza, so he has been given the job of getting them cut up. Told Knight to send them to him.

Samples of I.C.I. propellant R.C.2. received from Dr. Lawson.

H. asked me to contact Jebby to elucidate dog. of mods. to centrifugal casting m/c.

Checking Thorpe's compression calculations until 2.40 p.m.

Tried to ring Jebby re centrifugal casting m/c, but he is not in today. Spoke to Mr. Rigby who did the drawing (A.R.E. sk. no. 16255). Made appointment to see him 11 a.m. tomorrow.

Designing new end shaping m/c. for rest of afternoon.

7th March.

Shaping Lawson's R.C.2 (I.C.I.) propellant specimen until 9.45 a.m.

Mixed car to go to D.O. this morning to see Rigby, so

discussed on the telephone with Tebby. The modification dwg. 16255 does not shew the answer to my query, but it will be shewn on the finished dws, so I let it pass. Sent the mod. dws. & approval note signed by H. back to Tebby. He will send H. a form for ordering a complete set of the working drawings (ARE 8400) when they are modified. This until 11.30 a.m.

Tried to ring Dabbs re Morris & pneumatic drive for shaping m/c's, etc. (R.L. 292), but I was informed that he has not been available for 3 days. Said I would ring again on Monday.

7th. April.

Returned to work after being sick with sprained ankle.

Sent my copy of report IS 5/174 back to Miss Christian. I no longer require it, since H. has supplied me with a copy of table I, which is all I am interested in. Asked her to acknowledge receipt.

See item ③ for 5th. March & following notes same day. This was never done, so I arranged with Miss Williams for them to be sent for storage at 60°C. for 2 weeks this afternoon. These sent per Mrs. Cousins & Miss Williams informed me later that they have been put on trial today.

H. asked me to inspect some lathes which are available if we require them at Fort Halstead. I have to contact Mr. Lutman, Principal Foreman, F.H. ext. 67. I have also to have a look at some others in the light m/c. shop, which H. has already seen.

8th. April.

Writing up notes on F 478/148 rate of burning samples until 9.40 a.m.

Spoke Mr. Lutman re lathes (see yesterday). Arranged to go & see them at Fort Halstead tomorrow. Asked Mr. Aubrey to arrange transport.

Received 2 trip values from Benton & Stone: part of order received on 27th. February. This order may now be complete; will try to contact Dabbs about it tomorrow at Fort Halstead.

Reading British Ceramic Research Association's paper "The Electric Strain Gauge as a means of Determining the Elastic Constants of Ceramic Materials" R.P. 142.

I.S. 81/23. (by R.W. Batchelor). This until 2.30 p.m.

Received samples of FS/2 from factory for mechanical testing: Cool propellant for fuel ejector (rang Dawson). Becomes T18/6, with tensile tests TN3.

H. rang to say he is coming in some time after 5 p.m. tomorrow (not in all day). Warned T.R. Told AEF any message for him can be left on top of his tray.

9th. April.

Went to Fort Halstead to see lathes available in A.R.E. workshops. Returned 2 p.m. Wrote report for H. for him to see on his return on 15th. next.

While at the Fort I contacted Mr. Phillips (senior draughtsman, A.R.E. D.O) re the work undertaken for us by Morris (pneumatic drive for shaping m/c.s.). See 27th. February & yesterday.

He is willing to undertake the scheme where it was left off (see 18th. November last). He proposes to have a G.A. drawn, the job being inspected by draughtsman. For this he requires a

requisition with a high priority allocated by the Superintendent.
He will also check the order of components received from
Benton & Stone.

10th. April.

Visit from Rainbird to consult Ward's reports.

Had ring from Dabbs re lathes (see yesterday). Wanted to know if the ones that I saw yesterday were suitable. I said they probably were of the type, so he is sending a letter to H. with his suggestions; I told him that H. would probably ring him on Tuesday.

Had receipt from Ellis Christian for report IS 5/174 (see 7th. last).

Impact tests with Thorne for rest of morning.

Establishment closed at midday (Easter holiday).

15th. April.

H. told me that there is a sale of lathes at Melton Mowbray. I am to go on the 17th. to select those for preparation of mechanical testing specimens & also one for E.G. Lewis.

Also saw H. about pneumatic drive for shaping m/c's. (see 3th last). He agreed to my proposals; i.e. Phillips is to prepare G.A. of the scheme & we will assemble. Filled in requisition for S.P.R.1 to countersign & forward to Phillips, together with photographic copies of Morris' original work. The components will be sent to Phillips per Stores Woolwich.
Inspected lathes at light m/c. shop (already seen by H.)

for the sake of completeness. Asked Hammond about nods. to dising m/c. for H., but he knew nothing. Told H. Hammond asked me to ask H. to tell him how the collapsible former is going & that there are 4 more ready for collection.

Rang Whithead (coming to Elletton ~~at~~ Elbowray with me) at H.'s request to tell him that lunch is laid on for us there and that I have a letter of introduction.

H. asked me to look into getting cutters for "Centec" milling m/c. which has just been officially ordered (12th. March, probably). I shall ring contractors tomorrow.

16th. April.

Checking Thorpe's compression calculations until 9.15 a.m.

H. read my screed on tensile testing & suggested rewriting. (see 4th. March last).

H. told me that Clifford wants Tensometer at Waltham Abbey; agreed to send it because any tests that I want to do can be done over there. Packing parts & emptying mercury & oil until 2.30 p.m.

H. told me Hamann wants humidity cabinet. I agreed to send him all components & let him build it at Waltham.

Clifford is arranging for a van to call on Monday for Tensometer, so suggested to Hamann that he gets it to collect cabinet too.

Checked T 18/3 report (written by Thorpe) & passed to H.

Rang Stedall m/c. Tool Co. about milling cutters (Cladwell 10/10; m/c. Buckingham). They have a selection in stock which we can see. Told H. & he said I had better go up & see them. I will

go up next week (ring Buckingham first) & take some PQ with me in case I have a chance to try it on the milling m/c.

Sent Benton & Stone pneumatic drive components to Phillips (A.R.E. drawing office, Fort Halstead: see 15th. last) with covering note. The D.O. requisitions plus a photographic copy of Morris original scheme sent to Phillips via S.P.R.I. for countersignature.

17th. April.

Inspecting lathes at Melton Elbowhay.

18th. April.

Reporting to H. until 10 a.m. on lathes at Melton. Decided to accept those for disposal at light m/c. shop Woolwich as being in the best condition.

Checking Thorpe's compression calculations until 10.10 a.m.

Getting Sensometer ready for sending to Clifford on Monday, likewise humidity cabinet for Hamann, for rest of morning.

Drawing on tracing cloth for H. for rest of day.

21st. April.

Finishing drawing for H. until 10 a.m.

Lorry called for Sensometer, box of accessories, & humidity cabinet (see 16th. last). Rang Clifford & arranged to go over to Waltham & demonstrate Sensometer on 23rd. next. Asked Mrs. Aubrey to book seats & lunch.

Spent rest of day weighing F 478/148 & r. of G. samples (see 7th. April last).

22nd. April.

Checking H's. table of T18/results until 10 a.m.

Writing report on treatment of F 478/148K rate of burning samples which were weighed yesterday, until lunch. Packing these rate of burning samples until 4 p.m. ready for Thorpe to put on Waltham Abbey van tomorrow.

23rd. April.

At Waltham Abbey all day assembling Jenometer & demonstrating to Clifford.

24th. April.

Rang Phillips (A.R.E. drawing office, Hatfield) to check whether he has received the Benton & Stone components sent on 16th. last. He has, & he promised to start work on them a.s.a.p.

Had note from C.C.(F.) requesting casualty form for duty on 17th. last. Sent him this, also casualty for yesterday with subsistence claim.

Rang up Mr. Buckingham, of the Stedall m/c. tool Co. (Clerkenwell 1010) about milling cutters. Made appointment to see him tomorrow morning.

Worked out results for Thorpe's impact tests until 2.10 p.m. & checked Thorpe's compression calculations until 2.30 p.m.

Started Thorpe working out exactly what we have to test in the way of cast double base propellant.

Re-drafted screed on tensile test procedure as requested by H. on 16th. last. Passed to H. for approval.

25th. April.

Visited Stedall M/c. Tool Co. this morning (Mr. Buckingham; Clerkenwell 1010) about milling cutters. Obtained catalogues &c.

Drawing graphs for Dr. Williams all afternoon.

Had visit from A.O., Waltham Abbey re A.E.O. competition.

28th. April.

Reporting to H. on visit to Stedall's until 10 a.m. I am to make out a provisional list of milling cutters as a basis for discussion.

Also submitted list of cast double base charges which I have been told at various times that he needs testing & got him to revise it, deleting some. I am now to make out new priority list & submit for approval.

Checked Thorpe's compression calculations until 11.15 a.m.

≠ Progress & planning return for Ekandga until 11.30 a.m.

Redrafting whole priority list following discussion with H. this morning until 2.30 p.m. Passed to him for approval.

Made out travelling claim & passed to H. for signature (for 25th)

Spent rest of afternoon making out provisional list of milling cutters.

29th. April.

Finished sorting out a selection of milling cutters. Discussed with H. & order agreed to. Gave Mrs. Stubey a note to order with spare arbor & set of spacers. This until lunch.

Received 50 ft x 6 t.p.i. bandsaw blading ordered

19th Feb. last.

Sorting out H's file of lab. sketches until 2.30 p.m.

Drafted pro forma form for short tensile test. H. approved: gave to Ellis Ward for cutting of dispersive stencil. (Until 3.15 p.m.)

Received back draft of priority list (see 28th. last). Made working copies & sent Dr. Williams draft copy with note from H. asking for comments.

30th. April.

Sorting out cast charges to be tested, in conjunction with new priority lists, until 5.30 a.m.

Tensile tests (CRA 230 // & L) rest of morning. Utter failure owing to specimens slipping out of jaws (very high U.T.S.) Spent afternoon making shackles to hold ends of specimen & replacing portion of vice jaws of which I stripped the thread this morning.

1st. May.

Tensile tests on C.D.B. samples until 4 p.m.

Checking Thorpe's compression results until 4.30 p.m.

Reading V.S. report on high rate compression testing for rest of day (reference see tomorrow).

2nd. May.

Impacts at -20°C . with Thorpe until 10 a.m.

Tensile tests until 4 p.m.

Received cordite from Tyler; controls for new climatic trial. Will give T-no. on Monday.

REF.:- "Development of Equipment for the

Compressive testing of Solid Rocket Propellant Samples with High Constant Rates of Deformation". NAVORD report no. 1230 (26 May, 1950). IS 88/30. This report is available in H's filing cabinet, drawer 4.5.

5th. May.

Gave propellant received from Tyler on 2nd. last a w. Entered in progress book. Becomes T45.

Writing report of Coniule tests on CPA 230, 228, 179, 223, 267 until 10 a.m. Passed to H.

Impact tests until 11.15 a.m.

Writing report of T18/4 for H. for rest of morning. Passed to him.

Writing report of T36 B for H. until 2.30 p.m. Passed to him.

Drawing L.S.K. 22 (plungers for hardness apparatus) until 4 p.m. Filled in work order ready for H. to sign tomorrow.

6th. May.

Impact tests with Thorne until 9.30 p.m.

Sent work order for 2 sets of plungers for hardness apparatus to D.E.'s office, Fort Halstead, with copy of L.S.K. 22

Sent casualty form to C.C.(F), Waltham Abbey, to cover my not signing on on Friday, 25th. April.

Spent rest of morning helping Thorne to finish hardness tests on T28/1 at 50°C.

Applied for leave (S.P.R.I.) for 20-6-52 to 4-7-52 inclusive, taking 5 days as special marriage leave.

Spent afternoon on experiments with "Verolac"

adjustable contact thermometer (thermoregulator).

7th. May.

Altered priority list according to Dr. Williams' request (see 29th. ult.).

Continued experiments with adjustable contact thermometer, investigating temperature gradients in air thermostat.

Spent afternoon calibrating thermometers which are normally in use in the air thermostat. This done in a water thermostat. Grade A thermometer used as standard. Both thermometers found to be $< \frac{1}{10}^{\circ}\text{C}$. out.

8th. May.

Sent injury report of my sprained ankle to A.O., Waltham Abbey.

Borrowed stiff regs. & W.O. travelling regs. from H. & sent them to Clifford (he rang up & asked me for them yesterday).

Altered priority list device to hang on wall. (Until 11 a.m.)

Had screed on tensile testing bar from H. (see 24th. April). Rewrote several times & passed to Ellis Ward for typing.

Clifford m/c. arrived. WA 16735. Spent afternoon assembling & checking.

9th. May.

Altered requisition no. on L.Six. 21 tracing cloth "negative". Until 9.30 p.m.

Wrote to Chard, stating my case re rents of staff houses.

Writing report of T 28/1 until 10.40 a.m.

Rest of day until 2.30 p.m. dealing with results of Thorpe scouring the magazine for tensile test specimens which had been dumped & forgotten before we took over.

Writing report of T18/4 (TN2) tensiles until 2.45 p.m.

Checked items received with milling m/c. yesterday.

Quick-action vice, item 5, shown on inspection note, but not received. Rang W.A. stores, ext. 221. They are going to ring me back. Item 10, lighting set, also not received but this is not shown on the inspection note, so I presume it is to follow. Left note for H. with copy of order & inspection note. They rang back later to say that everything received from the firm was sent on to us: in other words the firm have not sent the vice.

12th. May.

Told H. about vice: I am to ask stores to take the matter up with the firm (including item 10, the lighting set). Tried to ring stores chemist, but not in yet. Rang Andrews later. They will take up with firm.

Drafted letter to send to firms enquiring whether they would undertake design & construction of thermostatic enclosure for Division universal testing m/c. Embodied this letter in requisition to stores.

Altering L. SK. 21 for H. until 2.30 p.m. Passed to ellendoga for printing & return to H.

Had Baker varnish insides of 2 new humidity cabinets.

Had tensile testing record book from Ellis Ward typed. (see 8th. last). Checked typescript & passed to H.

Thinking about new tensile cutter & extension indicator for tensometer for rest of afternoon.

(Checking Thorpe's compression calculations until 4.45 p.m.)

13th. May.

Impact tests T28/1A at 20°C. until 11 a.m.

Correcting mistake that I made to L.S.K. 21 yesterday until 11.30 a.m.

Received stencil of short tensile testing form from Ellis Ward (see 29th. April). H. sent with note to Mr. Roberts asking for 500 copies.

Finished writing requisition embodying letter enquiring about design & manufacture of thermostatic enclosure for Dedison. (see 12th. last). list of firms:-

Arthur Heaton & Co., Ltd.

Heating & Ventilating division,

Valley Works, Liversedge, Leeds.

J. & E. Hall, Dartford, Kent.

Kelvinators.

English Electric.

Craig Nicol, Glasgow.

Samuel Denison.

Sent requisition to C.C.(S.P.), Waltham Abbey.

Checking Thorpe's compression calculations until 2 p.m.

Discussed Tensometer with H. Agreed to measure extension by timing (correction for movement of "fixed" jaw) and to adopt B.S. specimen profile [B.S. 18-1938 + Test piece A]. I am to make jaws to suit.

H. gave me 2 copies of tensile testing screed (see yesterday). Gave Thorne one to hang on m/c. & put other in my file.

Checked calculation for Mr. Jackson.

Spent afternoon on ~~new~~ design of new jaws for Tensometer. Not finished.

14th. May.

T28/1A impacts at -20°C . until 10.30 a.m.

Designing new jaws for Tensometer until 11.30 a.m.

Received screed about various cracking trials from Tyler.

Trying to sort this out until lunch.

Interviewed Mr. Tyler after lunch & clarified the situation. Left note for H. suggesting what he can do with Tyler's screed (!)

Spent rest of day drawing new jaws for Tensometer.

15th. May.

Working out Thorne's tensile results until 10 a.m.

Gave H. a piece of F478/167 ERDE 3556 which was found to have a piece of metal embedded in it. (From T45 controls). He has returned it to the factory.

H. agreed to my suggestions re Tyler's screed (yesterday). Gave to Ellendya for reflex copying.

Spent morning ~~up to~~ from 10.30 a.m. until lunch at

the E.G. Lewis Research Laboratories getting some measurements of their Tensometer for my design of new jaws.

H. consulted Gray yesterday about cutter for Tensometer specimens. Gray suggested some form of press cutter made by Desoutter. Will discuss it further with H. next Tuesday (20th)

Finished design of new jaws for Tensometer 3.30 p.m.

Dry-mounted tensile testing instructions.
Checked Thorpe's compression calculations.

16th. Ellay

Received "F478/148 ERDE 3593" from Tyler. Rang him to ask if this should not be F478/148 K. Didn't know (!) agreed provisionally to call it F478/148 K.

Assisting Thorpe with T24 & T25 compressions at 50°C. and T28/1A hardness at 50°C. ~~with~~ all day.

Asked H. if Ellis Howe could work on mech. testing full time. Agreed. Started work after tea.

19th. Ellay

Writing report of T28/1A until 10 a.m.

Wrote Brewin accepting provisional allocation of house D30, to be ready at end of September.

Spent whole day working out mean deviations of all T24 & T25 compressions.

20th. Ellay

Spent day on T24 & T25 report.

Received quick-acting vice for milling m/c. (see 12th. last)

21st. May.

Received list of items deficient (recent stocktaking) addressed to Hernandez. H. asked me to deal with. Located some in lab. Rang Kemp (Wick. common) & Dr. Rosser (H.E.R.) for others. Failed to locate the rest.

Checked bursting discs received yesterday for H.

Shewing Australian mechanical testing until 2.45 p.m.

H. asked for 3 copies off CP 1034 & 1035 (refer negs.)

Sorted out negatives & gave to Johnson.

Wrote note to C.C.(S) W. saying I have located 4 items on his list of deficiencies (see above) and that the search for the rest continues. "If we cannot locate them we shall have to ask for them to be written off." Put new inventory back in cps 11/7.

H. asked for bursting discs to be made for Hodge.

Received 500 copies of short tensile test forms (see 13th. last).

22nd. May.

Sent 50 short tensile testing forms to Dawson, propellants factory.

Refrigerator fan motor seized last night. Spent morning lubricating bearings. Running again at midday. Fan jammed again after lunch.

Made list of m/c's. ordered for project TU, & found that no note has been made of whether shaping m/c. has been ordered or not. Tried to ring H. at W.A., but he won't be back until 4 p.m.

Sent T28/PA report to Tyler, signed p.p. W.N.G.

Had Mr. Osans make 3 bursting discs for Hodge out of s.t.d. SV used for T24. Parcelled & awaiting despatch.

Had a call from stores at Waltham (E.R.D.E. W.A. 4) asking about clearing Benton & Stone components for pneumatic drive for shaping m/c's. (see 24th. April last). Apparently the firm wants payment. Promised to ring Phillips. Rang him. Job has just been allocated in the D.O. & he promised to check the order within the next few days. I asked Mr. Aubrey to b.f. in 1 week.

Phillips rang back later. Items missing: item (5) throttle valve AC. III 2 off, not received; item (7) trunnion mounting AC 158 1 pair ordered - 1 only received. The inspection notes agree with the items actually received, so left a note for H. to sign them, & wrote note to go with them to C.C. (S.P.) asking for necessary action.

Spoke Hewson:-

- ① Get electrician to look at Kelvinator motor.
 - ② Write C.C. (S.P.) immediately re missing Benton & Stone components.
 - ③ Get copy of shaping m/c. order (we have nothing to show that it has been ordered). I asked Mr. Aubrey to do this.
- Wrote C.C. (S.P.) about Benton & Stone components.

23rd. May.

Rang James (foreman electrician) who promised to send a man to see Kelvinator motor & repair it if possible. Filled in a work order & sent to him thro' mail.

Sent note to C.C.(S.P.) asking him to have
m/c's. for specimen preparation delivered to :-
Building N562, project 2, South Site, Waltham Abbey.
The list of machines is :-

"Progress" no. 1. Bench drilling m/c. PI/16133.

Kelvinator mk. II testing cabinet. DO/HQ/PI/82.

ellmetal sawing m/c. Demand no. W/T 6199

(stores requisition no. CPS 1342).

Denison universal testing m/c. Shadow order PI/14375.

High speed shaping m/c.

(stores requisition no. CPS 1343).

Checking Thorpe's compression calculations until 10 a.m.

Mr. Day (from A.R.E. D.O. Fort Halstead) arrived to
see shaping m/c's. He will be doing presumatic drive scheme
given to Phillips on 16th April.

Electricians arrived to see Kelvinator fan motor (see
earlier today). Took it away with them & promised not
to keep it long.

Sent electric clock RDC 36146 to ellmaterials section.

Receipt from Mr. Bryant in inventory file CPS 11/7.

located further deficient item in inventory, viz: -

RD 32087, Regulator hydrogen, w/gauge, BOC 3/127513,
sheet 36. Sent note to C.C.(S.) Woolwich, Inventory
section, advising him of this. See 21st. Last.

26th. May.

Spent morning making new jaws for tensometer.

Electricians returned & reinstalled fan motor in Kelvinator.

This now works O.K.

Had call from Cuzhill (? Cudhill) wanting to know if any stability tests have ever been done on propellant containing sucrose octo acetate. H. rang me later, said he didn't know of any, but suggested I asked Hutchinson or Tyler. Rang Tyler, who didn't know of any. Hutchinson out. Will ring him tomorrow.

Mr. Hammond (light m/c. shop) rang, wanting to know if it would be convenient to send 2 men to assemble cutter gear & reduction drive (3:1) to convolute winding m/c. Said I would ask H. when he rings up from Waltham Abbey & let him know. Did so. H said O.K. left message for Hammond to this effect.

Call from Williams, C.I.A., Red Barracks, ext. 13. Wanting to know contract no. for 40,000 lbs. of casting powder. He says contract branch told him inspection by I.C.I. Tld H. this, which he says is wrong. We have copy of contract (authority Amn. P(x). 12655 & 12632) which says inspection by C.I.A. or his authorized representatives.

Spent rest of day on making new jaws for Yersoneter.

27th. May.

H. at Woolwich for short time this morning. Dealing with accumulated mail together until 10 a.m.

Rang Williams, C.I.A. (see yesterday) & told him contract no. 6/Exptl. / 1727 / CB 33A. Inspection definitely by C.I.A.

Tried to ring Hutchinson about sucrose octo acetate

N.B. Bursting dies sent to Hooper - see 22nd Oct.

(see yesterday). Not in this morning.

Hammond (light m/c. shop) rang. He has had difficulty in booking transport for his two engineers to W.A. tomorrow (see yesterday). Did it for him per Ellis. I told him they will have to make own arrangements for transport back, book lunches, & obtain passes.

Reading A.R.E list of reports received week ending May 9th. 1952 & compiling "short list" for H. left in his tray.

Received F 488/406 & /407 from Dawson (prop^t factory) for short tensile tests. Become TS 5.

Call from Ellis, Patents Branch, etl. of S. wanting to know if H. can supply G.A. ~~form~~ and description of vacuum casting technique. Said I would find out and ring him back (Temple Bar 7733, ext. 41).

Checked Thorpe's compression calculations until 3p.m.

Hickman phoned from W.A. He has had trouble with 547 building: the danger building officer had doubts about whether explosives could be put in. It is in now, but he wants to know what to do in future. Told H. soon afterwards. etl's further action on my part.

Asked H. about G.A. & description of vacuum casting technique. He said that they are actually on their way now. Rang Ellis' no. (see above) & told him this (left message). Also told him that our information section are sending him some extracts from branch progress reports for which he asked.

28th. May.

Sent small supply of short tensile testing forms to Douglas, at the E. G. Lewis Research Laboratories.

Had reply from C.C.(S.P.) to my note of 22nd. last re Benton & Stone components - order no. P1/15135. Throttle valve AC 111 (2 off ordered) was, according to them, received at main stores on 4-4-52. "R.V. 103 refers". Trunion mounting AC 158 (1 pair ordered, 1 received). They are confirming that this has been wrongly booked in by stores acceptance, then they will hasten. Rang C.C.(S.P.) about Throttle valves & told him they were not on the receipt vouchers. He has made a note & is checking up. C.C.(S.P.)'s note attached to copy of order in CPS 11/1.

Distributed copies of various reflex prints.

Had short tensile test forms from Dawson for TSS - propellant received yesterday.

Away from Hunt, S.R.R.: He has a note for radiological examination of charges 271-287. & wants to know if the propellant has been sent to him. Said I would ring him back (R.L. 96).

Tried to ring Hutchinson about stability tests on sucrose octo acetate propellant (see yesterday). Will be in this afternoon.

Hayes rang from I.C.I. & Arder re. the sucrose octo acetate. He wants H. to ring Cooke at & Ordeur extension 223 to discuss. Promised to give H. message.

100 lbs. S.B. casting powder carried from Howard. H. wants it sent to W. Atham. I think to do this.

~~H. rang. Gave him all messages.~~

Williams C.I.A. rang wanting to borrow originals of docs. ARD 4171 & 3664D (3 sh.) and also to tell H. he is deleting a sentence in appendix 2 beginning, "The principle of the method..." & ending with a reference to J. Sci. Inst. of 1926.

H. rang. Gave him all messages. He asked me to ring Hutchinson about the sucrose octo acetate before he rings Cooke at esdeer (see above). Tried to ring Hutch twice this afternoon, but still not in.

Hunt's query this morning (S.R.R.) can be dealt with by Hamant tomorrow.

Rang Williams at C.I.A. & told him to ask Phillips, Fort Halstead, for the drawings & that H. agrees to his deletion (q.v.)

Ran refrigerator all afternoon. Only reached -33°C . Electricians must have tampered with it on 26th last. Will ring & ask them tomorrow.

Freeman rang to ask if R.A.E./ERDE joint progress report has been published yet. He has a contribution to make for the next issue & wants to know what he wrote for the last.

~~Had~~ 29th. elec.

Glad copy of shipping inf. order requested per Elton Aubrey on 22nd. last. Order no PI/15037.

Rang Hutchinson re sucrose octo acetate. Doesn't know of any stability tests, but is going to find out & ring me back.

Spoke Hamant about charges for X-ray (Hunt's query yesterday) They are here waiting to be sent. Found that Goulding could deliver them to S.R.R. but could not store them. Said I would ring him back

Tried to ring S.R.Z. to see if they could accept them today, but no reply (twice). Asked Flannant to get these charges delivered next week.

Hutchinson rang back re sucrose octo acetate. Apparently one of the U.S. cast propellants O10, O6K, etc., contained this ingredient & stability tests were done. X R430/51 refers.

3rd June

Rang James about Helvator (on at 7.30 this morning - went up to 18°C. by 9.15 a.m. - switched off). He is sending the electrician down who mended the fan motor. They arrived later, but the fault is ^{NOT} on the electrical side, probably loss of refrigerant. Electricians ~~departed~~ departed. Will send for Helvator man later.

H. rang from W.A. Told him about Glated's remarks re one of the U.S. cast propellants containing sucrose octo acetate (see 29th. essay above). He asked me to look up stability (silvered vessel) figures in CPS 7/3 & ring Cook at Ardcer & let him know them.

Tried to ring Freeman about his query on 28th essay above. He was on leave, but spoke Dr. Lawson who said that query had been settled. (My answer was that Dr. Lawson had spare copy).

Rang Ardcer & left message for Cook that U.S. cast prop. containing sucrose octo acetate (i.e. OIP) gives 4500 hrs. on silvered vessel test as compared with 3000 for SV (see above).

Sent 2 boxes of C.A. discs 15" dia. to Walley at Waltham at H's request.

Wrote report of T55 & sent to Dawson.

Wrote reports for TN4, TN3, TN8, TN7, TN6, TNS₄
All passed to H.

4th June.

Letter from H. requesting reflex prints. Gave to Johnson after allocating CP nos.

Dr. Martin ^{CHAMBERS INSPECTORATE} rang to ask if we want inspection notes for some C.A. foil or other. Mentioned this to H. when he rang later, who said we don't. Rang Martin (ext. 845 H.L.) later still & left message to this effect for him.

Had call from Hayes at Aardeer about Wallace who is visiting me for a week commencing the 9th. sent to learn mechanical testing. Wants him to spend a day on vented vessel, interrupted burning, etc.

Ring from Hollins (Trojan 1000 ext. 1423) wanting to know position of ISTR post 8. Told H.

Had letter from Lemmit asking for I.P.C.S. subscription. Wrote back & told him I paid this on 23rd. April, when I was at Waltham.

H. asked for some convolute wound container labels to be typed. I had Ellis Ward do these & left in H's tray.

Asked Jim about mass x-ray forms. Mrs. Aubrey has sent in list to Roberts.

Had message asking H. to ring Errington, presumably at Westcott.

5th June.

Told H. to ring Errington at Westcott.

Told Jackson job waiting his collection in carpenter's shop.

Rang elheadza at store, W.A. & asked him to get Kelvinator man to look at refrigerator. Told him formal requisition for this is on its way. Asked Ellis Ashby to make out this requisition.

Filled in form for man X-ray. Rang elheadza, who is on leave, & filled in his for him. Left message with Clifford for Brett to ring me from W.A., when I will fill in his for him.

Ordering X-ray prints requested by H. all morning.

Drafted memo. to A.O. Waltham, at H's suggestion, suggesting schedule of maintenance for all Kelvinators in the establishment. Passed to H. for approval & despatch.

Progress & planning return all afternoon.

H. gave me 2 lists of reports to read & make recommendations from.

Call from Day - see 23rd of May - can he make stroke of shaping of 3" - 5" required. Told him no - 5" required occasionally.

6th June.

Checking Thorpe's compression calculations until 9.30 a.m.

Telephone from Kelvinator wanting to know where refrigerator is. Told him our address at F107A. He will come "very shortly".

Progress & planning with H. until 11.30 a.m. Return for essay sent to S.T.R.I's. P.A. at Waltham.

Had Brett's subsistence form signed by H. & sent to C.C.(F) for him.

Gave Brett's & elheadza's forms for man X-ray (duly completed) to Ellis Ashby for despatch.

Helvator man arrived 11.35 a.m. to mend refrigerator.
Memo to A.O., Waltham, re schedule of maintenance for
Helvators despatched.

Altered reflex prints for H. (see yesterday) & gave them to
him.

9th June.

Spoke Damon re his typed notes for short tensiles. Agreed
that these are unnecessary: all we need are our own short
tensile forms.

Mr. Wallace arrived from I.C.I. & Ardeer. Shewed him
around 10.30 a.m. - 11.30 a.m.

Compiling "short list" from large list of reports for H. for
rest of morning. Did another this afternoon.

Showing Wallace testing technique for rest of afternoon.

Re-arranged graph (home lettering) drawn by Dupree & got
ready for Johnson to reflex print tomorrow.

10th June.

Checking Thorpe's compression calculations until 9.30 a.m.

Supervising Johnson printing Dupree's two graphs until 9.45 a.m.

Discussing mechanical testing with Mr. Wallace until 10.20 a.m.

Writing reports of T28C & T18/6 for rest of morning. Left
in H's tray.

Received I.P.C.S. membership card from Lermitt yesterday
(see 4th. last). Sent him a note today asking him to
resume my supply of "State Service".

Showing Wallace cast double base film until 3 p.m.

Showing Wallace shaping, etc., of specimens until 4.15 p.m.

Further supervision of Johnson printing Dupree's two graphs until 4.30 p.m.

11th June

Discovered flexible cassettes for elendya arrived several days ago. Packed & labelled them & asked Hannant to put them on the next Wallham van.

Received propellant for T31C from Tyler's men.

Had file W/T/7302 containing replies from all firms written to (see 13th May - thermostatic enclosure for Denison Universal testing m/c). H. asked me to get out specification & ask for quotations.

At H's request rang Hodge & arranged for Wallace to spend all day tomorrow with him. Rang Verchyle's section & arranged for him to spend Friday morning with Keungig.

Rang Tyler & asked for more material for T31C. None available. Agreed to cut no. of specimens.

Arranged for transport from Turpike Lane tomorrow & Friday for Wallace (elvis Edwards). Temporary names will be supplied by elvis Edwards on arrival.

Reflex printing from H. (CP 1226). Passed to Johnson. Asked elvis Aubrey to get me Denison shadow order file P1/14375 (drawings, etc., for spec. of thermostatic enclosure - see above).

Checking Thorpe's compression calculations until 2.45 p.m.

Skewed Wallace magazines, etc., until 3.30 p.m.

Dupree's graph reflex prints complete. Delivered to H.

Planning thermostatic enclosure for Denison for rest of day.

12th June.

Checking Thorpe's compression calculations until 9.20 a.m.
Filled in Brett's leave form, had it signed by H., & sent it to C.C.(F.).

H. requested 2 more copies of Dupree's graphs. Passed on message to Johnson.

Reflex copy CP 1226 complete. Passed to H.

Planning work on compression measurements (pilot experiments), for next week until 10.30 a.m.

Planning record system for shaping for rest of morning.

Took trunk call from Cudhill, Andeer, wanting to know what information is available on C.A. foil - degree of substitution tried, - higher or lower than normal (whatever that may mean). Told H. message for H. to get in touch with Dr. Warren tomorrow. Told him.

Sent Clifford 500 gr $\text{Ca}(\text{NO}_3)_2$ per mail at his request.

Spoke H. re bowing of S.C. specimens for T45 when tested at 50%. Agreed to omit results. etc fresh specimens.

H. told me of impending work on mechanical properties of ~~6-inch~~ alternative materials for charge tabs (failures of 5" charges on prolonged high temp. storage in Ceylon due to extrusion of tabs caused by swelling of charge).

Inaugurated record system for shaping output w.e.f.

16th June. Explaining to Mrs. Cosans until 4 p.m.

Passed completed 2 extra copies of Dupree's graphs to H.
(see above).

Discussing next week's pilot tests with Thorpe for rest of day.

13th June

Filled in Clifford's leave form for 1 day's leave on 16th June at his request. Left in H's tray for his signature.

Johnson doing prints of "Devison" picture (CP 1227) for me to add proposed thermastatic enclosure to. This, with approximate specification, will be sent to firms willing to undertake, with request for quotation & time of delivery.

Message for H. from Stonehewer, of C.E.A.D. about bakelite bursting discs. 45° chamfer not suitable in all cases - await further instructions. Stopped Hannant starting work on these.

Message from Dr. Williams: 6ft. C.A. foil to be sent to Mr James, S.U.W.R., Chca 2, H.E.R., with covering note giving composition.

Had ring from Anderson wanting to know about bandraw. Told them all I could - seemed satisfied.

Had shadow order P1/14375 (see 11th June). No drawings in it. Returned it to C.C.(S.P.). & asked Ellis. Aubrey to get registry file A 22/11/38.

Sent sample bandraw blade to Hayes, I.C.I., Anders, at H's request (note to Roberts in manifold). Ref. XR 174/7, Pad 1.

Told H. about Williams request to send foil to James (see above). He said send him 6 to 10 feet of Monsanto foil 10" wide. Asked Hannant to get it cut.

Spoke Dawson re T45. The ERDE 3593 supplied is F478/148 K.

Received propellant for short tensiles from factory
F478/178 & /180. Recome TSG (short tensile tests).

Sent foil to James, Area 2, H.E.R., with covering
note (copy in manifold). See above.

16 ~~14~~th June.

Made note in file XR 174/7 Part 1. that I have sent
sample Condor blade to Hayes, Alder. (see 13th) at
Robert's request.

Spoke stores receipts about I-note for low voltage lighting
set. Set not yet received by us. Has apparently been delivered
to South Site, Waltham. Gave H. note & asked him to
check with Wally when he spoke to him next.

H. asked for reflex prints. Told Johnson.

H. wants tracing done of vacuum corset. Spent whole
afternoon on this.

17th June.

edited for VN 299/52. Writing out application
form until 10.10 a.m. left in H's tray for completion of
part 1 & forwarding to Establishments Branch, D.A.T. En. (P).
Risley, near Warrington, Lancs.

Did H's reflex printing for him (lettering & typing on
finished prints by Johnson).

Preparing specification for enclosure for Denison until
4.20 p.m. See 11th. last.

Examining Thorpe's compression results for rest of afternoon
(pilot tests).

Received F547/18 from factory for testing.

18th June.

Assessing Thorpe's compression pilot tests all morning.
Gave F547/18 received yesterday as T18/7.

Odd jobs for rest of day.

19th June.

Clearing up in preparation for leave.

Annual leave until

7th July.

Putting myself back in the picture all day.
Received part order for milling cutters ordered 29th
April last. Left inspection note for signature in H's. tray.
Received 2" charge from Ellis Williams. Becomes T31/1.
Rang Dawson for 3 notes for short tensile tests. Promised
to send them this afternoon.

8th July.

Ellis radiography all morning.
Short tensile tests TS 7 & 8 until 3.15 p.m.
Calculations on pilot compression tests for rest of
afternoon.

9th July.

Reporting TS 7 to Dawson (forms arrived this
morning). Started shaping T47 at his request. TS 7
forms to H. for signature & despatch.
Found propellant for T47 for Ellis. Cosmos.
Spent afternoon doing pilot tests on compression of SV

for long periods.

10th July.

Sent note to Ellis Christian to say I have the 2 reports for which they were searching while I was on leave.
(Copy in manifold).

Setting air thermostat at 20°C . until 10 a.m.

Pilot tests (3) for rest of day.

11th July.

Pilot tests (3) all morning. PA arrived from factory for cutting up: Cameron. Elements wants to see.
Holiday this afternoon (Easter day).

14th July.

Reported TSB to Dawson.

Had note from Ellis Christian thanking me for letting her know I have the 2 missing reports (see 10th. last). She wants to know if I have copy 87 of ERDE 11/M/50: "ERDE Techn. Publications: their nature & treatment". Sent a note to say I haven't got it.

Writing reports of trials T31C, T45, T23/14, T34/7, until 3.30 p.m. Passed to H.

Ellis. Howe collected fan unit for air thermostat (order 30-11-51). Item @, bearing nut, missing. Rang light m/c. shop, who said they were not asked to make it. Probably mistake in filling in our original order. Our copy of the order cannot be found. Will have to send in fresh order for the nut. Probably another 8 months!

15th July.

T43 (F488/350) impacts at 20°C. until 9.25 a.m.

Overhauling T43 (F488/347) compression specimens, working out required load, & adjusting thermostat, until 10.30 a.m.

Overhauling shaping m/c. for Mrs. Cosans until 10.45 a.m.

Saw H. about cutting up PQ for factory. Agreed to do it this afternoon. Rang Clements who is coming down to see the cutting up. Informed Mrs. Cosans.

Cold jobs rest of morning.

Clements arrived this afternoon, sent him up to prep. room where Mrs. Cosans cut up the PQ for him. Told her to keep a piece for compression tests (these become T48). She is to cut up the rest of the PQ in sizes suitable for re-pressing.

Asked Mrs. Tabrey to order (from D.E.'s office, Fort Halstead) bearing nut, item ④, ARD 8186 (1 off). This is the item missing from the fan unit for the air thermostat (see yesterday).

Discussing cutting up of PQ with Mrs. Cosans until 4.30 p.m.

Reading U.S. report NCTS TM 1030* "Solid Propellant Progress 1/1/52 - 31/1/52." U.S. Naval Ordnance Test Station, Inyokern, China Lake, Calif., for rest of afternoon.

* IS 10/822.

16th July.

T43 (F488/347) compressions at 20°C. until 10 a.m.

Helping Mrs. Cosans cut up PQ for factory until noon.

T43 compressions (F488/347) at 20°C. until 3 p.m.

Finished - set thermostat at 30°C.

Ellis Stubrey produced order for fan unit for air thermostat (see 14th. last). The order was correct, so mistake must have been made at D.E.'s office.

Finished reading NOTS report mentioned yesterday. Returned to H. with note. 3.30 p.m.

Brought summaries of CP3 results up to date in CPS 7/2 & sent copy to Walley at H's request. 4.20 p.m.

Two tensile cutters (1.3" parallel length) received from good news knows where.

Day (A.R.E. draughtsman who is doing scheme of pneumatic drive for shaping m/c's.) rang to ask if he could come to have a look at shaping m/c's. tomorrow morning. Told him he could.

17th July.

Day arrived 9 a.m. Shewed him shaping m/c. & left him to his own devices. He left at 10 a.m.

Spoke H. re tensile cutters. They have been made to Day's improved design. One to be kept & the other to be put into use. Ciled both, as they are not rustproof. 9.30 a.m.

T 43 (F488/347) compressions at 30°C. until 11.30 a.m. Thermostat set at 50°C.

Reading journals until lunch.

Examining file A/22/11/38 for H. Found that query addressed to him should have been sent to Harding.

Devison says testing m/c. will be delivered in September.

Left note with file in H's tray.

Wrote note to S.A.O. charing previous note of Aug 23. a

Plot test ③ 4.15 p.m. rest of afternoon.

18th July.

Parcels of cords F478/181, /182, /183. arrived, probably from factory (no note). Probably for short tensile tests. This time they will be left until the note arrives.

T43 compressions (F488/347) at 50°C. all morning.
Pilot tests (3) all afternoon.

21st. July

Received tender no. W/T 7302 (enclosure for Denison), see 17th. June. Craig-Obel's tender is the only one completed, the others having withdrawn. H. replied to stores recommending that tender be accepted (£398).

Until 10.30 a.m. checking typing of mechanical testing reports, reading library lists & dealing with above file.

Received "short tensile test" forms for the 3 compositions received on 18th. last. Becomes TS9.

Checking more typing until 11 a.m.

Trying new tensile cutter until 3.15 p.m. (Cut full set of specimens for CPA 201).

T43 (F488/348) compressions at 20°C. for rest of afternoon.

H. asked me to let him know dimensions of Denison

22nd. July.

Asked Mrs. Aubrey for file A22/11/38. - to find dimensions of Denison.

T43 (F488/349 & /350) compressions at 20°C.

all day.

Asked Dawson to collect P&Q which we cut up for them & which is now finished. Arranged that Fletcher collects a box from Goulding for it. G. will then transport to factory.

SU/K ERDE 3982, 0.7981" dia. arrived. Rate of burning samples for H. Sent to mag. 17 & left note on H's table.

Had phone message from H. A registered package should arrive for him from Westcott tomorrow or the next day. Johnson is to take it to his house on the way home. Roberts is to let me know when it arrives.

Received message via Brett. I am to send back to CB 16 B file no. 6/Inst./8122, which is contained in our file no. A22/11/38 (which I asked for this morning).

Checking, sorting, & labelling typewritten copies of T45 report. Wrote note of explanation for H. & left all in his tray.

23.d. July.

Received file no. A22/11/38 (see yesterday). Asked Ellertson to have reflex printed a copy of the shipping dimensions of the Denison.

T43 (F488/348, /349, & /350) at 30°C. all day. (compressions).

Left message at propellants factory for Smith to have 2 boxes of P&Q collected from us (this is what we have been cutting up for him).

ellendoga had the negative of my reflex print made, so I returned the file A 22/11/38 to Roberts with a request that he send the enclosed file (6/Inst/8122) back to CB 16 (C).

Registered envelope arrived for H. (see yesterday).
Asked ellendoga to send Johnson to H's house with it, as requested. ~~(see yesterday)~~

24th July.

T43 (F488/348, /349, & /350) compression tests at 50°C. all day. Also T43 (F488/350) impact tests at -20°C. Also T59 (F478/181, /182, & /183) short tensile tests.

25th July.

Calculating results for T59 (tests done yesterday), writing reports, etc., until 11 a.m.

Re-lining jaws of tensile testing m/c. with rubber until noon.

Sorting out 4 packets of tensile specimens found in magazine until 2.30 p.m. (become TN 11, 12, 13, 14, & 15).

Pilot tests for rest of day.

28th July.

Signed T45 report & sent to Tyler (H. on leave).

Filed other copies of this report (until 9.30 a.m.).

Writing report of T43 results until 11.20 a.m. Passed to Ellis Ward for typing.

Interview with Mr. Brewin until 12.30.

Spent afternoon cutting tensile & ~~also~~ impact specimens out

of ethyl cellulose tubing for Harding.

29th July Checking minutes of ~~test~~ rocket progress & co-ordination meeting. Passed copies to Mrs. Aubrey for assembly & despatch. Checking Thorpe's compression calculations of T19/1, T23/16, & T23/10 until 10 a.m.

Progress & planning until 11.30 a.m.

Work on E.C. tubes for Mr. Harding until 3 p.m.

Tensile & impact specimens cut out.

Calculation for Mr. Jackson until 4.15 p.m.

Filing & distributing typewritten copies of T43 report ~~until~~ for rest of afternoon.

30th July.

Calculation for Mr. Jackson (with Mr. Hendon) all morning.

General odd jobs all afternoon.

31st July.

Impact tests on ethyl cellulose tube specimens for Mr. Harding until 10 a.m. Wrote report & sent to him (copy in manifold - quarto vol. II).

Discussing trials to be done with Thorpe for rest of morning.

Pilot tests (4) [half-hour intervals, compressions] all afternoon.

Additional calculations on this morning's impact figures for Harding.

1st August.

Checking Thorpe's compression calculations until 9.30 a.m.

Pilot tests (6) until 11 a.m.

T44/1 compressions at 20°C until noon.

Had telephone call from Smith, propellant's factory. Lending

some propellant on which short tensiles are to be done (absolute priority - Dr. Williams). These will be stamped short tensiles, an original combination. Asked him to send down a couple of short tensile test forms with it.

Repeat of T48 compressions at 20°C . until 3 p.m.
miscellaneous work all afternoon.

5th. August.

Cutting specimens for TS10 with Thorpe all day.

6th. August.

Paper work for TS10 until 9.45 a.m.

Compressions all morning (pilot tests).

T 23/10 compressions all afternoon (30°C .)

7th. August.

Compressions at 30°C . all day. (T48, T23/10, T23/16, T19/1, T44/1.)

8th. August.

Compressions at 50°C . (T48, T23/10, T23/16, T19/1, T44/1)

2 boxes of PQ which we cut up for Smith returned to factory (see 22nd. July).

Compressions finished by 3 p.m. Spent rest of afternoon checking and correcting T24 & T25 typewritten reports. Passed to H.

11th. August.

TS10 (8 sets) short tensile tests with Thorpe until lunch.

Compressions on E.C. tubing all afternoon for Harding.

12th. August.

Compressions on E.C. tubing all morning for Harding.

Writing report of T510 until 3.30 p.m. sent to B.D. Smith at propellants factory. Copy in H's tray.

~~By~~ Compressions for Harding rest of day. Finished tests, wrote report & passed it to H. for perusal & forwarding to Harding. Later changed this by sending direct to Harding, since H. will not be in Woolwich for a few days, with a request that he lets H. see the results on his return.

13th. August.

Waltham Abbey all day.

14th. August

Spent morning writing reports for T23/10, T23/16, T44/1, T19/1, T31/1, T48. All placed in H's tray.

Designing new hardness apparatus all afternoon.

15th. August.

Cutting E.C. tensile specimens all morning for Harding. Retained approximately half at Clifford's request. Remainder passed to Hamann.

Had telephone request for 2 travel vouchers to be made out for Kendall & Brett for journey Euston - Preston on the 18th. next. To be delivered to Brett's house. Filled them in & asked Baker to deliver at lunch time.

H. asked me to look after Baker & his erosion test pieces in the absence of Brett.

Sent spare tensile test cutter to Hay at Waltham to put in "exit" taper for test pieces.

Checking Thorpe's compression calculations until 3.30 p.m.

H. asked me to ask propellants factory to supply large piece of PQ for Walley to try out new bandsaw by the 20th. Rang Dawson who said he would ring me back. Rang him again later. He said they had found a piece & it has been sent to Walley. Rang Walley & told him.

18th. August.

T19/3 hardness at 20°C. until 11 a.m.

Calculations for rest of day.

19th. August.

Writing copy of T48 compression results for file CPS5/12 (PQ) until 9.20 a.m.

Filing in subsistence claim of 6/6d. for 13th. last until 9.40 a.m. Sent to C.C.(F).

Calculating results of impact tests for Thorpe for rest of morning.

Saw Baker about turning of erosion test pieces. Sharpened tool & re-adjusted its height (this apparently wrong before). Supervising this job while Brett is away at H's request. Trial of new set-up until 3 p.m. Appears satisfactory.

20th. August.

C.S.C. interview for A.E.O. all morning.

Sent mechanical testing results to Walley (to see & return for filing) CPA 201 & CPA 290.

Spent rest of afternoon checking Thorpe's compression calculations.

21st. August.

T23/17, T19/3, T46, & T47 headmen at 50°C. with Thorpe all day.

22nd. August.

Long compression test on SV specimen all day (5 kg. cm² at 20°C)

Gene Johnson reflex printing for H.

Benton & Stone component received. Inspection note says it is "AC 158 spindle AC 208". In fact it appears to be spindle AC 2. If this is so, then it is not one of the missing items (see 22nd. May last). Rang Day, the draughtsman who is dealing with it, but he is on leave until Monday (spoke Phillips). Will ring Day again on Monday, Fort Halstead, extension 151.

25th. August.

Long compression tests all day.

26th. August.

Sent radiography monitor to Waltham at Alf's request (trunk call from Chorley).

Distributing reflex prints done by Johnson at H's request (C.P. 1253, 1254, & 1255).

Sorting out pressure gauge for H. until 10.30 a.m. Gave to Thorpe to send to Waltham, where H. is.

Sorting out grey from Rogers on MM. 365. until 10.40 a.m.

Found no. of cracking trial incubator for Bayne: BDC 18439.

Tried to ring Day about Benton & Stone component (see 22nd. last). Couldn't get through.

Waltham van called to collect "coating n/c." & 3 metal drums for delivery to Walley at Waltham. Nobody here knew anything

about it. Tried to ring H. at Waltham, but not available.
Van left without taking anything.

Finally got through to Day at Fort Halstead. My suspicions confirmed - spindle AC 208 has already been delivered. Sent back to C.C. (S.P.) & asked him to return it to Benton & Stone. Told him again what was missing & asked him to hasten. Asked Ellis Cluskey to attach a note to our copy of the order (PI/15135) to this effect & pass to H. for information.

Writing reports of T47, T23/17, TN15, TN14, TN13, for rest of day. Passed to H.

27th. August.

H. rang Hannant last night about Waltham lorry which called yesterday for coating m/c. & 3 metal drums. Coating m/c. already delivered. 3 metal drums should be at A.R.E. stores from C.I.A. "Frog Island". Told Hannant I would deal with. Rang Hodgson (Z.L. 37) - stores receipts. No drums received.

Checking Thorpe's compression calculations until 9.30 a.m.

Reading lists of reports until 9.50 a.m.

Compiling results & writing reports for H. of T46, TN10, CPA 298, & copying ~~or~~ short tensile tests TS1-4 into results file. All until 11.30 a.m.

Got in touch with H. at Waltham re 3 metal drums (above). Wanted me to ring Williams, C.I.A., Red Barracks, to find out what had happened. Williams rang me later. Told him no drums & he promised to chase & ring back later. Did not do so.



