

2) out again abt 10 1/2 to 12. A rest in tomb, trying photo of two plates with a new 1/16 inch stop, which should need 2 or 3 sec exposure. Tried these exposures on a half cloudy distance. Then out about 2, till 5 1/2; when returned with men, & set down to supper (or second meal) & writing this.

The work to day has been clearing both ends of N. trench. Delimiting pavement (basalt) on S.E. side. Searching fruitlessly for limit of Δ paving on W, NE, & E. Finishing hole on E side Δ<sup>1</sup> to rock; beginning new hole in mid of face. Clearing parts of NNE trench. Enlarging hole on S. face Δ<sup>1</sup>, which is very troublesome as most of it is through rubbish disturbed a few years ago, & therefore all loose & running.

Old Δ rubbish may be left for many years in an overhanging cliff without falling. On this side a piece of inscribed casing was found; the largest piece yet known, as only single letters have been hitherto seen.

It reads

W T	- this is probably a name because
MAPKOC	- this is almost certainly CWTHP
MAPKOC	- this is a later name MAPKOC probably.

Now in top line is an O in the name; this is very rare in Roman names, & not one of the Roman Emperors will fit to I I O. But the second I is a long way from the O, & therefore probably T; & if we have I T O it looks much like ΠΤΟΛΕΜΑΙΟΣ but I do not think that the round Σ (C) was used so early as Ptolemy Soter, & it is not by the bottom stroke - not. I only hope we may get more of it perhaps, unless Ptolemy VIII (to 81 BC) did not yet use C, I should be inclined to put it to him.

out again abt 10 1/2 to 12. A rest in tomb, trying photo of two plates with a new 1/16 inch stop, which should need 2 or 3 sec exposure. Tried these exposures on a half cloudy distance. [☒] Then out about 2, till 5 1/2; when returned with men, & sat down to supper (or second-meal) & writing this.

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On the W. side paving was at least found, & casing in situ (52) upon it, but much decayed; I went down the hole (13 ft deep) with ladder (as the sides were too loose to bear clambering) & examined the stones well as far as uncovered, & satisfied myself that they were casing. Then I ordered them to clear away a good deal more stuff, so as to uncover along the foot of the stones; to uncover <sup>all</sup> the faces of the stones would cost over 1/- a foot run, & though "very nice" to see, I think the money & time better spent on other shafts; especially as the stones seem so decayed that the angle could not probably be well measured. To extend the cutting far on any side would run into deeper mounds. I measured roughly the alignment of the stones (by plumb line, sighting, holding rods vertical, &c.) & find them 33 ins (say  $\pm 3$ ) within the line that I had set out from the sockets by theod. over the mounds. Thus it agrees roughly with N. side in its alignment. Clearing was also carried on in the chambers by  $\Delta^2$ ; having cleared & cut up a good bit of the floor, I stopped that, & set them to clear out the sand to within 1/2 ft or so of the floor, & then I intend to go up there for a day or two after other things are done with a large party & clear out floors when I am by to look after things. It is a print that interests me very much.

The photo of bright distance with  $\frac{1}{16}$  stop & 3 seconds exposure is very good, & appears very slightly better than with 2 secs; hence I suppose this to be about the right thing. The great advantage of such a minute diaphragm is that while focused on the distance, the edge of my doorway is sharp to  $\frac{1}{500}$  inch on the plate (i.e. from full dark to full light, including irradiation) though only 6 ft distant; hence I practically overcome the difficulty of all the field not being in focus at once; & with these instantaneous plates, it is far easier

On the W. side paving was at last found, & casing in situ upon it, but much decayed; I went down the hole (1.3 ft deep) with ladder (as the sides were too loose to bear clambering) & examined the stones well as far as uncovered, & satisfied myself that they were casing. Then I ordered them to clear away a good deal more stuff, so as to uncover along the foot of the stones; to uncover <all> the faces of the stones would cost over 1/- a foot run, & though "very nice" to see, I think the money & time better spent on other shafts; especially as the stones seem so decayed that the angle could not probably be well measured. To extend the cutting far on any side would run into deeper mounds. I measured roughly the alignment of the stones (by plumb line, sighting, holding rods vertical, &c.) & find them 33 ins (say  $\pm 3$ ) within the line that I had set out from the sockets by theod. over the mounds. Thus it agrees roughly with N. side in its alignment. Clearing was also carried on in the chambers by  $\Delta^2$ ; having cleared & cut up a good bit of this floor, I stopped that, & set them to clear out the sand to within 1 1/2 ft or so of the floor, & then I intend to go up there for a day or two after other things are done with a large party & clear out floors when I am by to look after things. It is a print that interests me very much!

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to expose rightly with 3 secs or so, than with taking the cap off & replacing it in  $\frac{1}{4}$  sec. So, for all but moving objects, this small aperture is best apparently. The total haze of distant objects from full dark to full light is  $\frac{1}{800}$  or  $\frac{1}{1000}$  of an inch which of course means that much smaller details than this are visible as traces. I cannot perceive any haze or distortion suggestive of the aperture being too small. Wrote this up, & to bed about 10. It was a most lovely afternoon, cloudy with rifts lighting the valley all over with drifting gleams; & at sunset a bright crimson glow shone, beneath all the heavy cloud over head, onto the villages with their bright green surroundings in the midst of the water, & the cliffs of Mokattam & Turra opposite, which shone with a rich crimson-brown, picked out with heavy shadows. But after I had done supper I looked out & saw a tawny orange ball of the moon just rising over Cairo, with its gleaming reflection shining on the broad waters of the Nile between; thinking I saw something on the disk, I took the telescope, & then I saw Mehemet Ali's mosque, with its needle-like minarets all displayed on the moon's disc as it rose; it was a wonderfully curious sight. As the moon rose higher, the broad sheen of its yellow light on the waters was brighter & brighter, until it became the usual moonlight-over-water scene which I have been admiring every night for some time past.

Wednesday Nov 9 15 men & 2 boys again. Out directly before breakfast, 7 $\frac{1}{2}$  to 9. Then again 10 $\frac{1}{2}$  to 11 $\frac{1}{2}$ . Then again at 1 $\frac{1}{2}$ , & measuring steps of  $\Delta^1$  at NE corner; continuing from 36 up to 100. Then round men before sunset. Home then, supper, adding up step heights, writing this, & to bed abt 9 $\frac{1}{2}$ . The method I adopt for course heights is with vertical staff held, & a horizontal staff

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resting at one end on the step, & held at the other to the vertical; <sup>54</sup> 2  
 the horizontal having a course level fixed to it, shewing just  
 about 1/10 inch rise at one end. Then one complete link of the  
 measurement is to set the vertical staff <sup>(holding it vertical on the horizontal)</sup> on the spot where the  
 end of the level rod had <sup>previously</sup> rested, then roughly read off height of one  
 step, & then more carefully read height of next step, reversing <sup>level</sup>  
 rod, & taking mean of readings to avoid level error, & get two  
 observations: thus the alternate steps are accurately determined  
 for cumulative values; & the intermediate less carefully done,  
 merely for their own sakes. I always go on from the same point  
 of the stone if possible, or else level along to another point, in order  
 to avoid a decayed step. At every 10<sup>th</sup> step I score across to shew  
 what part was observed, in order to check by theod. levelling  
 afterwards. I suppose that my  $\pm$  prob. error is not 1/10 inch on a  
 pair of steps, most likely 1/20. Hence on 200 steps, or 100 pairs, it ought  
 to be only 1/2 inch. This is far more accurate way than the French  
 or C.P.S., as they only used a rod with slider & believe, & the  
 steps are so encumbered that it is difficult to get near the faces  
 of them; Hence it would be most likely that they the  
 previous measurers would be too short.



The sums to 50<sup>th</sup> (true) & 100<sup>th</sup> (true) corrected for zero errors are

	mine	Gonard	Le Pere (best)	C.P.S.	Inglis
49 <sup>th</sup>	1679.0	1660	1676	1666	1682
50 <sup>th</sup>	1707.1	1689	1703	1694	
100 <sup>th</sup>	3072.1	3057	3065	3066	

I hope to do this up every corner to top; & check each 10<sup>th</sup> course  
 by levelling.

The work done to day is clearing inner end of N. trench. Clearing  
 parts of NNE trench; the outer end goes under the kiosk ground, & so  
 cannot be found; but the inner end we trace by sinking holes  
 right up to the former edge of the basalt paving, underneath the  
 heap of broken stones marked by C.P.S. It narrows from 2 1/4 ins at

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 steps are so encumbered that it is difficult to get near the faces  
 of them; [☞]

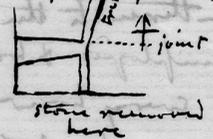
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 cannot be found; but the inner end we traced by sinking holes  
 right up to the former edge of the basalt paving, underneath the  
 heap of broken stones marked by C.P.S. It narrows 2/4 > 1 ins at

its outer end to 39 & 30, then at the heap it is only about 22,  
 & cut in built stones; then S. of the heap it is 8, 7, & finally  
 only 5; only about 3 or 4 ins deep, & cut into built stones  
 But, strangest of all, on reaching <sup>near</sup> the basalt pavement it forks  
 thus  . Now can such an arrangement  
 have anything to do with setting  
 out or marking azimuths?  
 What use in such a case could it be to fork it, without the  
 possibility of ever seeing along it? It has a fall apparently  
 all the way from the pavement to its outer end; & some  
 people would see in it a very nice drain to carry off the  
 water when the basalt pavement was swilled down clean,  
 in whatever temple or building it was situated. Scraps of finely  
 polished dark grey granite were found; & yesterday a piece  
 of a statue in red granite. If this trench is not of angular  
 importance, how will the others fare? Of course I shall fix  
 it, as well as the others, to less than  $\frac{1}{4}$  inch so as to be more  
 accurate than the dressing of the rock. Beside this the  
 E. limit of the basalt paving, - or rather the rock cutting that once  
 held it, - was tracked farther, & the rock cutting for the pavement  
 of one of the little  $\Delta$ s uncovered close to it. On  $\Delta^1$  E face, the  
 hole in the mid. of face was continued: on S. face the hole (abt  
 $\frac{1}{3}$  from E to W) was finished to rock, about 23 or 24 <sup>ins</sup> under  
 paving level; & a fresh hole begun in mid. of face, which will  
 be about 15 ft deep, they only cleared the loose stuff around  
 the place to day. On W. side the hole to the casing has been  
 much enlarged at top to remove loose stuff, making a platform  
 on harder stuff below, & a retaining wall for loose stones: of

3)

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course the hole is filled by what has run into it, & will be much enlarged when it is cleared which will be tomorrow. The chambers up by the  $\Delta^2$  were farther cleared, to half depth.

I should like to get on quicker, but not more than two men can be usefully put to most holes, or three to the shafts; & I could hardly keep more men well employed & looked after, for in many cases they need attention every hour, & it is only the deep shafts that I can feel easy about for a whole day. So I should risk some of them being idle, or going wrong, if I was to take many more on hand. And they need not merely supervision, but at every turn it is necessary to take in a fresh state of affairs, guess at what should next be done; & above all, decide where the rubbish shall be shot, so as not to be in the way in any future contingency. Happily I am better to day, & have dropped my diet of soup & tapioca, venturing on cucumbers (only the insides) & lemonade. With cucumbers so plentiful here one can slice off all the opaque part, & just eat the watery centre to get the flavour.

Thursday Nov 10 <sup>15 men & 2 boys as before.</sup> Out by 7 $\frac{1}{2}$ , mending a pick handle, & then directing men for the day. Back by 10 to breakfast; another short run out before they went to dinner; then back to tomb & making a drop shutter for instantaneous exposures in camera (out of blind lattice & milk tin); it will give me  $\frac{1}{25}$  second minimum, & this with <sup>from the light</sup> stop in will be right for bright objects; by not lifting it so high, I can double the exposure for darker things. Then out again by 3 & looking after men; only had time for a short job, so measured 1<sup>st</sup> 30 courses of N.W. corner. Then back to supper, writing, & to bed about 9. The work done to day has been tracking the E. edge of <sup>rock cutting which held the</sup> basalt paving, & finding S. edge & following it. Clearing in our end of N. trench a little more, & sinking a hole in bottom of it, through 7 ft of sand, without any end

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yet. Sinking other holes along the NNE trench to find the spot<sup>(57)</sup>  
 where it ~~narrows~~ <sup>widens</sup>; possibly another drain(?) may join it. On E-face  
 $\Delta^1$  ~~is~~ clearing loose stuff around the shaft; the Arabs never  
 will do this at first, though I supposed their self-preservation  
 would lead them to do it, working by the day. But no, & so  
 this morning having gone nearly to the bottom, Ali got  
 frightened at the loose stuff, tons of which were ready to pour  
 in with a touch; & then they began clearing it round the  
mouth! Of course this brought it all into the shaft with a  
 run; & I stopped them immediately, & set them to cut it  
 away on the flank of the slope, so as run it down away  
 from the shaft. Clearing this stuff took all the day. On S.  
 side <sup>mid-face</sup> having cleared loose stuff yesterday sinking was begun  
 today. On W. side mid-face, the hole was cleared out after  
 enlarging; the loose part has been cut away so as to leave  
 a platform halfway down, & then the large stones built  
 into a rough steining to keep it back. This simple point of  
 steining the loose stuff they were going to omit, until I told  
 them expressly to do it. They cleared out all the rubbish  
 & uncovered the casing again, tunnelling partly so as to  
 expose about 5 ft length of its bottom edge, & 2 or 2 1/2 ft  
 slope of the face. It is wretchedly decayed, apparently from  
 1 to 5 inches off all over it, in deep holes & much flaked:  
 so it is no good to clear it, but the trace of its former  
 extent on the paving is clear within 1/10 inch, the paving  
 being much more weathered just outside it. I then directed  
 them to lengthen the hole with a narrow cut N. & S. so as to  
 hang two plumb lines as far apart as possible to take the  
 exact azimuth as well as position of the edge. ~~At the~~

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chambers by  $\Delta^2$  the one I selected is being further emptied  
 of sand, to about half its depth; the rest can be turned over  
 I think in the chamber <sup>by spade</sup> so as to clear the floor in sections  
 successively all along it. I hope soon to finish all the  
 miscellaneous  $\Delta^1$  work (trenches, &c) & put men on to  $\Delta^2$ .  
 I wanted eggs, so a basket was brought up with 56! I remonstrated  
 with Ali on the impossibility of my getting through them all while  
 good, & concluded by taking only 32, which will last me a week  
 probably. The old man who brought them struck me much;  
 he was very fine looking, with a more frank & cheerful face  
 than the Pyramid Arabs, who look as if their ceaseless squabbles  
 over the cash had sharpened them ever since their birth. He  
 belonged to the Delta, was a Bedawi <sup>family</sup>, & had had a good  
 education at the university-mosque of El Azhar at Cairo; he  
 had travelled much as a merchant in Lower Egypt, & now  
 was settled in this village having married here. I told Ali I  
 should like to have a photo. of him, which he repeated; & the old  
 fellow immediately assented, & offered to take me out to  
 Bedawin encampments for photos; but I declined for  
 want of time. I intend when I get my stock of plates (for  
 which please rub up Houghton quickly, if he ~~has~~ has not  
 sent them) to go down to the village & get a lot of the  
 best examples I can find of the inhabitants.

Friday Nov 11 Out at 7½ to 9, 11 to 12, 1½ to 5½ as usual.  
 I tried the instantaneous drop shutter, 1/25<sup>th</sup> second, & it answered  
 fully, giving a fully exposed plate; with a boy dashing down a  
 basket of sand, which is just falling from his shoulder to the  
 ground. I tried measuring up the SE corner but was  
 checked by the great amount of quarrying, which has left it almost  
 vertical there. Two men did not come today, so we had  
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 belonged to the Delta, was <of> a Bedawi <family> & had had a good  
 education at the university-mosque of El Azhar at Cairo; he  
 had travelled much as a merchant in Lower Egypt, & now  
 was settled in this village having married here. I told Ali I  
 should like to have a photo. of him, which he repeated; & the old  
 fellow immediately assented, & offered to take me out to  
 Bedawin Encampments for photos; but I declined for  
 want of time. I intend when I get my stock of plates (for  
 which please rub up Houghton quickly, if he ~~had~~ has not  
 sent them) to go down to the village, & get a lot of the  
 best examples I can find of the inhabitants.

Friday Nov 11

Out at 7½ to 9, 11 to 12, 1½ to 5½ as usual.

I tried the instantaneous drop shutter, 1/25<sup>th</sup> second, & it answered  
 fully, giving a fully exposed plate; with a boy dashing down a  
 basket of sand, which is just falling from his shoulder to the  
 ground [📷]. I tried measuring up the SE corner but was  
 checked by the great amount of quarrying, which has left it almost  
 vertical there. Two men did not come today, so we had  
 15 13 & 2 boys. The work done was carrying on the

pit in N trench to 9 ft deep down the side; the men were then  
 afraid of the sides caving, & as no bottom was reached, &  
 big stones were in the way I left it for the present.  
 Clearing farther along the NNE trench; I find the broad  
 part cut in the rock, ends with an irregular surface  
 at the inner end; & then there has been built, on the  
 surface of the rock, & very slightly cut into it, the  
 narrower channel in continuation of it. Of course  
 C.P.S. may say that the basalt paving was later than the  
 $\Delta$ , & the trench was utilized for a drain then. The S. side  
 of the basalt pavement was traced farther, & connected  
 with the <sup>little</sup> narrow trench cut from the inner end of the S.  
 trench. The big hole on mid. E. face was enlarged & steined  
 in upper part. The hole on mid. S. face was carried down, but  
 just at last a big stone dropped in & others threaten; so we  
 shall have to enlarge & stein it as well. The W. hole was  
 cleaned a little at ends, so as to take plumb lines, & I hope  
 to survey it tomorrow. The chamber by  $\Delta^2$  was farther  
 cleared of sand, but no door into it has yet been found.

I have much thought for wooden tubbing for these shafts;  
 but each shaft would need <sup>at least</sup> about  $1\frac{1}{2}$  squares of board,  
 beside struts, to do it; & as I want, for saving time,  
 to open three shafts at once, I should need 4 or 5 squares  
 of board; also I should need to personally arrange it in  
 all details, & on the whole I think one gets the work done  
 quicker & cheaper by spending an extra days delay &  
 two or three shillings in wages to enlarge & stein <sup>the dangerous part of</sup> each shaft;  
 beside then leaving the shaft probably open in the future,

(4)

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 two or three shillings in wages to enlarge & stein <the dangerous part of>  
 each shaft; beside then leaving the shaft probably open in the future,

instead of its caving in on removing boarding. Also wood is <sup>(60)</sup> so valuable here, that I should fear the tubbing being stolen out of the shaft at night.

Saturday Nov 12 Up at 6, & getting instruments out & off by Ali to W. side of  $\Delta^1$ , as I wanted to get that fixed before the sun came on there at 10. Put up signals & observed them from a point close to the shaft, by 10 inch theod; it was impossible, owing to the ground, to get the big theod to any place where it could see (at less than  $14^\circ$  dip) the plumb lines, that I hung down the shaft. Hence I was obliged to piece the work thus, fixing a point on ground within  $\frac{1}{10}$  inch or so ~~from~~ by observ<sup>ns</sup> on 4 <sup>known stations</sup> ~~fixed points~~ (one a check); I then set the 5 inch theod between the fixed point & the plumb lines; then observing on two of the known stations & to fix azimuth of theod, I then observed the fixed point & the plumb lines & a known length of rod at each of them to fix their distances lineally. Thus the whole is fixed. The two plumb lines are 6 ft apart. Then I went down the shaft & stretching a line along the traces of the casing edge, in order to take the mean of them, I measured off distance of plumbs from the assumed casing edge. This finished the job, & I got back to tomb, & had my bath & breakfast about 2. I found the two 140 inch round rods (divided to 10 ins) very useful for laying across shaft, to carry plumb lines. Then after breakfast out by 3 $\frac{1}{2}$  & going over the excavations. Back by 5 $\frac{1}{2}$ , paying men, supper, writing this, & to bed about 9 $\frac{1}{2}$ .

The work done today is <sup>finishing</sup> cleaning a long piece of NNE trench to shew junction of its built & hewn parts, its expansion, clearing more of S. limit of basalt paving, & searching again fruitlessly for <sup>rock cut</sup> edge of  $\Delta$  pavement on E. side; it has never been found except on the western half of N. face. Clearing one side of Howard Vyse's East-cut on N. face; went below

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paving level, but no paving there. In the East shaft in mid<sup>(6)</sup> face  $\Delta^1$  they reached a flat stone, & I went down & saw it to be a block of pavement, but none on W. or S. of it & therefore displaced; on levelling, it proved to be 26 ins over paving level, & therefore ~~displaced~~ lifted up; but as it is flat slope we may find paving beneath it; at least there is no casing there. Just after they examined it, while standing in a recess halfway up the shaft, some hundred weights of loose rubbish came pouring down, quite unprovokedly; it would have fared badly with me or an excavator, for it ~~occurred~~ & almost broke my measuring rod, jamming it tight across the shaft. The men wanted to haul me out instantly, but I saw it could not cover me at the worst, so I stuck to my place. The Arabs can hardly be persuaded to work in that hole again, though we are going to have a quantity more rubbish cleared away. On the S. side the shaft is continued, the bad part being mainly stoned, but more clearing is required before going deeper, we must go 10 feet farther to reach paving.

This is all working in the dark, for we may just miss any casing stones, as likely as hit them; for though I fix the alignment of the hole well, yet one can see on the N. face how easily a shaft might be sunk in the middle, & yet go just to the E. of the remaining stones. Still this is the only thing to do at present. The next method would be to tub all the shafts, & run tunnels between the holes, lined with wood; & all this wood would need very strong strutting & supporting if the rubble gave way & threw any weight on it. This, if only three shafts <sup>in a line</sup> were kept open at any one

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time, would need at least 15 squares of boarding, & a proportionate amount of logs for struts &c. This is a big job beyond my present resources here, & would need preparation both of method, materials, & Arabs. So on the whole I must stick to shafts & steining; these shafts take about 5 days each, (the W. took this, & the E. also till this fall to day) using 3 men on an average. This is a cost of about 12/-, or say 15/- including bad cases; & by trying three or four holes on a side one would most probably hit casing if there was any; for in the very first deep shaft<sup>(W.)</sup> we found casing, & there may be paving with alignment in the second hole when we get down to it; for the present depth is still 26<sup>ins</sup> over its level. The chamber out by  $\Delta^2$  was farther cleared; but they do not get on quickly, as it is too out of the way for much superintendance; the cost on a week's work comes to 10 cub.ft. of sand carried out for 1<sup>d</sup>, or a chamber 10 ft by 40, & 6 ft deep, half emptied, for 10/- turning over the rest of the sand, should cost less than this. As to searching for casing, I am only trying these deep shafts after trying pits near the corners first, & then medium shafts about 10 ft deep; so they are necessary if we intend to find the paving & casing.

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8.-  
Cairo.

"Cher Lecteur

Amiable Lectrice,

Et vous aussi qui ne savez pas lire"

So, begins a photographer's notice posted in Ezbekiyeh inviting people to "mon Etablissement restauré "avec le bon goût que me caractérise"!!!

Letters rec<sup>d</sup> to Nov 3 & 4: but thanks hence, M<sup>ss</sup> B-

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Sunday 13 Nov

Sleepy after yesterday, & was woke at 7 ¼ by Ali calling me, as I had arranged to go to Cairo. After a brief breakfast off on donkey to town; got in a little after 10 ½, but found service not yet begun at church. Dean Butcher is back again, & I liked him rather better than before. Mrs Grant was there, but I did not see her. Saw Corbett on coming out, & Miss Machlean & her sister in law Mrs M., whom I had guided at the Δ's last year; they have just come out. Then to post got letters of two weeks & paper; went into Ezbekiyeh, & sat reading letters, till near one, when I went to Dr G. There I staid lunch, & had a talk to Mrs G., & also Miss Schultz their German governess, who though speaking excellent English had never been in England till this trip: also saw little Jessie who is as bonny as ever. Mrs G's luggage, including our box has not come yet, as it was stowed in the bottom of the hold, contrary to repeated requests. They had a bad voyage; three gales, a death & burial, 11 stowaways, & 46 hours waiting outside the bar at Alexandria. The Dr was much interested in the progress of excavation here, & after a talk with him, on the site for the new hospital, &c, I left. Posted letter, got some fruit; met Hooker, & a friend who seems connected with the antiquities dept here, & then back to here about 6. After supper, <re-reading letters> & putting some quinces to stew all night, I wrote this, & to bed about 11. I heard that Mr & Mrs Loftie have arrived.

Monday 14 Nov

Up by 7¼ & out arranging the work. Back by 9 to breakfast. Out 10½ to 12½, & 2 to 5½. In afternoon I measured three of the socket trench ends into relation with station marks.

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The work done today is cleaning out some of the small (64) rock trenches at the N.E. corner of  $\Delta^1$ , which have never been surveyed; unfortunately the carriage road goes over them, but as it is a wide plateau I shall uncover half at a time, so as not to be at all obstructive.

A second shaft was made in Howard Vyse's E. hole on N. face, but nothing but rock under paving level was found. A cut was made beside the N trench to see if the rock was levelled or if there was any step: It is all levelled & smooth, between <sup>from trench toward pyramid.</sup> step of trench & pyramid. The shaft on E. side  $\Delta^1$  was made safer by carrying a quantity of stuff away from it, & begun to be cleaned out again. The shaft on S. side was continued. The chamber by  $\Delta^2$  was further cleared of sand. A cut was made in  $\Delta^2$  rubbish (where previously cut by Howard Vyse) at N. end, W. side, to find casing to connect to N.W. socket. In all 15 men & 2 boys employed.

On Saturday I saw a curious traveller, a lady, accompanied by an <sup>English</sup> gentleman; she was riding on donkey, in a light blue full gown, with a large black straw hat on, & a thick brown veil <sup>over her face & neck</sup>; hugging in front of her on the donkey a pug dog in her arms. Could "insular eccentricity" go farther?

Wednesday Nov. 15 Unhappily a sample supper of boiled egg & tapioca, upset me altogether, & I had a very disturbed night. Out by 7 ¼ to the men. In by 9 ½ to 11 ½: then out, rested a bit in shade at midday, & in aft was planning part of the complex small rock cutting N.E. of  $\Delta^1$ ; beside looking after men. In by 5 ½ supper, going over obs<sup>ns</sup>, wrote this, & to bed about 8 ½. Work done today was going on with shaft on E. face; it was cleared down as far as before, but enlarged; I then went down, & directed the shifting of a big block,

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 was continued. Both of these take 4 men each, one to dig,  
 two stationed to lift, & a surface man to throw away.  
 The small trenches N.E. of  $\Delta^1$  were cleared up much more; they are  
 partly structural, & partly merely remains of cutting down the  
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 there is quite different to  $\Delta^1$ , casing being thus 
  
 so that there is a flat surface, ending at a joint  
 at edge of paving, & a broken surface of destroyed pavement  
 outside it. This was found well defined, & as I can measure  
 the height of footing of granite  on the shifted blocks, &  
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 observing how liable  $\Delta^1$  stones with a thin edge   
 were to break by chance blows on the ground level on pavement;  
 & also from the thin edge being very risky to work in granite. The  
 level of this paving under casing is  $12\frac{1}{2}$  over NW socket, which + 8  
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that  $\Delta^2$  has no bearing on the arrangement of  $\Delta^1$  socket & casing, <sup>(166)</sup> as it is certainly made differently. The chamber by  $\Delta^2$  was cleared farther, 85/6 feet of wall being more or less exposed by midday today, & yet no door, turning, or cross wall; yet it is a chamber, as it is only 9 ft wide between sides. I do not yet understand it.

I am sorry to say the poor old black dog has come to his end, apparently from starvation, not understanding how to pick up a living, like many other gentlemen in reduced circumstances. ~~It probably~~ <sup>probably</sup> the children had dragged him up, & laid him across my door; I shovelled him over the rock to some tomb beneath; but the little wretches brought him up again; so I sent for one of the men, & had him decently interred (for the sake of my nose) between two big stones, some 50 ft or so away.

Wednesday Nov 16 Out by 7 $\frac{1}{2}$  examined hole on E of  $\Delta^1$ , & found that there were fragments of casing edge lying on a rotten pavement stone; they were merely bits of the edge which stuck behind when the casing stone had been dragged out from the sand which covered it; the sand being hard & concreted for some feet deep outside the fragments & slightly over them, & then the rest of the space up to  $\Delta$  full of loose chips of stone. I did not dare to enlarge the hole at bottom, as there were two ominous cracks in the only bit of hardened sand that upheld ~~one~~ <sup>the S.</sup> side of the hole, & on the N. the line of casing was covered by a large fallen block, that could not be safely stirred. The bits of casing were much scaled so that no angle could be measured, & the paving also much scaled, both being bad stone: the steepest bit of casing being only 37°. Still it was casing, because the pavement under it was fresh, & outside it much weathered; & there was a <sup>vertical</sup> joint in it. Also it is just at right level, & its line is 25 or 30 ins inside socket line like N & W sides. Then to setting men to other holes. On S. hole they said they had got sloping stone, & on going down I found casing, also much decayed, but with a close <sup>vertical</sup> joint & two 2 ft or so over paving level, they had

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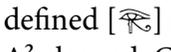
I am sorry to say the poor old black dog has come to his end, apparently from starvation; not understanding how to pick up a living, like many other gentlemen in reduced circumstances. To prevent that The children had dragged him up, & laid him across my door; I shovelled him over the rock to some tomb beneath; but the little wretches brought him up again; so I sent for one of the men, & had him decently interred (for the sake of my nose) between two big stones, some 50 ft or so away.

Wednesday Nov 16

Out by 7 $\frac{1}{2}$  examined hole on E. of  $\Delta^1$ , & found that there were fragments of casing edge lying on a rotten pavement stone; they were merely bits of the edge which stuck behind when the casing stone had been dragged out from the sand which covered it; the sand being hard & concreted for some feet deep outside the fragments & slightly over them, & then the rest of the space up to  $\Delta$  full of loose chips of stone. I did not dare to enlarge the hole at bottom, as there were two ominous cracks in the only bit of hardened sand that upheld ~~one~~ <the S.> side of the hole, & on the N. the line of casing was covered by a large fallen block, that could not be safely stirred. The bits of casing were much scaled so that no angle could be measured, & the paving being only 37°. Still it was casing, because the pavement under it was fresh, & outside it much weathered; & there was a <vertical> joint in it. In Also it is just at right level, & its line is 25 or 30 ins inside socket line like N & W sides. Then to setting men to other holes. On S. hole they said they had got sloping stone, & on going down I found casing, also much decayed, but with a close <vertical> joint & two 2 ft or so over paving level, they had

run the hole slanting in towards  $\Delta$ , & so got off the line I had set them on, & hit on stones about 2 ft inside the edge. I told them to enlarge the hole outwards, & go to the edge. But they hardly did anything all day, each disliking to work at the bottom for fear of falls. The other work done was clearing the rock edge (apparently cut for basalt pavement, near small  $\Delta$  by  $\Delta^1$ ). Searching for pavement at SSE  $\Delta^2$ . Paving found, & former edge of casing defined  at NNE  $\Delta^2$ , hole enlarged. Rock cuttings N. of  $\Delta^2$  cleaned. Cuts made in the big wall of rubbish heaped against a cyclopean wall N. of  $\Delta^2$ ; shewing retaining walls to hold up the rubbish; also beside the cyclopean wall to see if it is better jointed, or cased, where undisturbed. A fresh chamber wall opened NW of  $\Delta^2$ , the former being untraceable beyond 86 feet. My own work was taking a plate (unhappily over exposed) of rock cuttings NE of  $\Delta^1$  from the 70<sup>th</sup> course. Also going along S face of  $\Delta$  to see a hollow part of it. Fixing position of casing on E. side by hanging a plumb bob down the hole, setting 5 inch theod. 30 ft from it, fixing place by obs. on 4 stations, & fixing plumb by obs. on it, & on lengths of rod supporting it. I tried shifting the circle between each round of obs<sup>ns</sup>, moving it 120° between the three sets; the mean error of reading (including pointing to two bad stations) is then shewn to be 8" on one obs. of two verniers. Then in by 5 1/2, supper, reducing some obs<sup>ns</sup>, developing plates, writing this, & to bed by 11. Corbett sent up a card to know if he could sleep here tomorrow night, to get some early shooting on Friday (Muslim Sunday & so always a holiday to him); I sent back saying I should be at home.

Thursday 17 Nov but by 7 1/2 fixing men. Went down S. hole  $\Delta^1$  & found casing & paving, but paving broken away sloping, & no good edge to casing; still it is well worth having, & so I told them to clean it farther. It is about 30 ins inside socket line like other sides. In by 9 1/2 to breakfast; then out till noon looking

run the hole slanting in towards  $\Delta$ , & so got off the line I had set them on, & hit on stones about 2 ft inside the edge. I told them to enlarge the hole outwards, & go to the edge. But they hardly did anything all day, each disliking to work at the bottom for fear of falls. The other work done was clearing the rock edge (apparently cut for basalt pavement, near small  $\Delta$  by  $\Delta^1$ ). Searching for pavement at SSE  $\Delta^2$ . Paving found, & former edge of casing defined  at NNE  $\Delta^2$ , hole enlarged. Rock cutting N. of  $\Delta^2$  cleaned. Cuts made in the big well of rubbish heaped against a cyclopean wall N of  $\Delta^2$ ; shewing retaining walls to hold up the rubbish; also beside the cyclopean wall to see if it is better jointed, or cased, where undisturbed. Ch A fresh chamber wall opened NW of  $\Delta^2$ , the former being untraceable beyond 85/6 feet. My own work was taking a plate (unhappily over exposed) of rock cuttings NE of  $\Delta^1$ , from 70<sup>th</sup> course. Also going along S face of  $\Delta$  to see a hollow part of it. Fixing position of casing on E. side by hanging a plumb bob down the hole, setting 5 inch theod. 30 ft from it, fixing place by obs. on 4 stations, & fixing plumb by obs. on it, & on lengths of rod supporting it. I tried shifting the circle between each round of obs<sup>ns</sup>, measuring 120° between the three sets; the mean error of reading (including pointing to two bad <lighted> stations) is then shewn to be 8" on one obs. of two verniers. Then in by 5 1/2, supper, reading some obs<sup>ns</sup>, developing photos, writing this, & to bed by 11. Corbett sent up a card to know if he could sleep here tomorrow night, to get some early shooting on Friday (Muslim Sunday & so always a holiday to him); I sent back saying I should be at home.

Thursday 17 Nov

Out by 7 1/2 fixing men. Went down S. hole  $\Delta^1$  & found casing & paving, but paving broken away sloping, & no good edge to casing; still it is well worth having, & so I told them to clear it farther. It is about 30 ins inside socket line like other sides. In by 9 1/2 to breakfast; then out till noon looking

after men; then laying down chain with Ali, & finishing measuring (688)  
 the exposed NE trenches; then taking two plates to shew working, &  
 then ordered them to be filled up again, in order to cut up  
 the rest of them. Then got out 5 inch theod & took a  
 set of obs<sup>ns</sup> on plumb bob hung in S hole to fix the casing  
 there, finished by sunset. Back to supper. Corbett came in  
 by dark, having heard him shooting for some time. We  
 then had supper & a talk. I then developed my plates, which came  
 up very well. Then wrote this, & reduced obs<sup>ns</sup> partly, & to bed  
 about 11. Work done today was finishing S. shaft.  
 clearing farther a hole for paving edge on S side & finding the rock  
 to be only natural; so no trace of paving edge can be found in rock  
 cutting at 588 out, anywhere but on N side. A hole in rock by  
 S trench was cleared out partly. Trenches NE of  $\Delta$  were filled up.  
 Two parties were clearing the side of the big wall some way N.  
 of  $\Delta^2$  to shew its face & construction. Also a party clearing  
 faces of stone wall W of  $\Delta^2$ , shewing that what has always been  
 called "heaped stone rubbish", is really a fine wall of rough  
 stones buried in blown sand. Another chamber wall was  
 begun to be traced out. A hole finished on SSE  $\Delta^1$  finding what I  
 believe to be substructure of casing shewing the edge; ~~but~~ another  
 hole sunk on ESE to a similar edge, & extended to shew more of it.  
 I now feel happily anchored, in having got & fixed casing  
 on each side of  $\Delta^1$ ; & finding marks of casing on each  
 side of  $\Delta^2$ . Perhaps I shall try an easy hole on the S & E  
 of  $\Delta^1$  to see if I can find better casing; but it is not worth  
 a bad hole like these, as Ali could hardly get the men to  
 work in ~~the~~ <sup>the E & S</sup> for fear of the sides caving, or stones dropping down.  
 Friday 18 Nov. Corbett began to stir up by 5<sup>1/2</sup> (had put the  
 spare bed up in my tomb for him) & after some cold porridge &

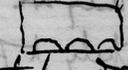
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 hole sunk on ESE to a similar edge, & extended to shew more of it.  
 I now feel happily anchored, in having got & fixed casing  
 on each side of  $\Delta^1$ ; & finding marks of casing on each  
 side of  $\Delta^2$ . Perhaps I shall try an easy hole on W S & E  
 of  $\Delta^1$  to see if I can find better casing; but it is not worth  
 a bad hole like these, as Ali could hardly get the men to  
 work in Ch <the E & S> for fear of the sides caving, or stones dropping  
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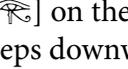
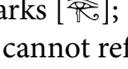
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he went off. I got an hours sleep more, & then up & out <sup>(69)</sup>  
 to the men. Back for bath & breakfast. Out again to see them  
 all before noon. Then found the circular level that I lost  
 last year <sup>season</sup>, lying bottom up on the sand, out by the most desert-ward  
 Lussy station: so brought it in, refilled it, & then before  
 screwing it up tight I heated it to near boiling spirit heat, &  
 closed it hot, so that the bubble is a vacuum; also rubbing  
 wax on the joints of it while hot. Then out in aft = roughly  
 levelling, to an inch or so, the paving found on E. S. & W. sides  
 of  $\Delta^1$ : the results being E. +1.8, S. -2.7, & W. +1.7 N being 0,  
 but these may possibly be <sup>as much as</sup> these amounts in error; my object  
 mainly being to put beyond dispute the point of its being  
 really paving that was found at each place, as the casing  
 is so much disfigured. Then round works with Ali by dusk,  
 to see what is done, & fix work for tomorrow; as I must go to  
 Cairo, to bank, &c. The usual 15 men & 3 boys were  
 employed. A new hole was begun on E. side  $\Delta^1$  & another  
 on S. side; these are in parts where the rubbish is only 10 or 12  
 ft deep (not 20 & 20 like the others) & where it is hard & good  
 to work, they are not ~~so~~ so near the middles of the sides, & therefore  
 not so likely to find casing; but as casing is very poor &  
 ill defined, <sup>in deep shafts</sup> on E. & S. I think it worth trying an easy hole  
 on each side, for the chance of finding it better. Four parties  
 were clearing various parts of the walls N.W. of  $\Delta^2$ . I now  
 see that what I thought to be chambers are all long  
 galleries, about 100 ft long & 9 wide, <sup>(same at both</sup> only open at one  
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40 or 50 such parallel walls that exist all along the W side<sup>(70)</sup> of  $\Delta^2$ . I thought them to be places for dressing stones, as they were always called "heaps of stone rubbish"; but they are really all walls, about 4 or 6 ft high even more, & filled with drifted sand. As they are all well made, of rough stones arranged with a smooth face, & mud plastered; & exactly similar to retaining walls for stone rubbish which are certainly of  $\Delta$  date; I now think them still to be of  $\Delta$  date, & intended for some rough, but rather permanent purpose: and I can only suppose that they were the workmens barracks; 9 ft wide would just allow passage & length for one man to lie; if 100 ft long each they might hold 40 men; & about 60 such galleries would thus house 2 or 3000 men which would not be at all too many for building  $\Delta^2$ . The style of the walls in roughness & in permanence would be just suitable for such a purpose. In one cutting many fragments of diorite & alabaster statues were found; some alabaster painted, & one piece of a forehead & half the eyes crowned with crown of Upper Egypt, about half life size; these have been brought out of some tomb & smashed, in Ali's opinion, & he is probably right. Also a wall clearance was made on N side of the cyclopean wall some way N. of  $\Delta^2$ . It shows the blocks to have heaving holes  on the lower edges, & that the wall increases by steps downward; both of these points, & the general rudeness of it, make me think that it has been cased. In the cut made on the S side of it yesterday, I see on two stones cubit marks  $\Delta''$ , but the stone is 90 ins long, so the 2 cubit cannot refer to the length of it. A hole was also made on ENE of  $\Delta^2$ , but came to rock about 18 ins under the proper level for paving. That wretched Whitey went & dragged up part of the black dog, buried three days ago, making a fearful smell; so he was removed, & buried more securely farther off.

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Saturday 19 Nov.

4 Saturday 19 Nov. Off about 8 to Cairo. Got to Museum <sup>(71)</sup>  
 by 10 1/2, & saw Maspero, who was as polite & pleasant as  
 before. I told him what had been done & found, & then  
 asked to have my permission extended to the other Pyramids here,  
 which he immediately granted; saying "We thought it better  
 to give a order for the two large pyramids first" shewing I think  
 that it was Brugsch's doing, as Maspero's written order to B. (as  
 I saw) was to give me permit for everything in my letter, &  
 keep my letter as evidence of what was permitted. I also mentioned  
 about the Museum man being of no use, & Maspero did  
 not even know who he was, but asked B., who falsely told him  
 that he was bro. of the shekh (he is really a son of a reis) & so then  
 M. said if that was the case perhaps it would make too much  
 ill feeling to displace him now. Ali tells me that only a  
 portion of the 10 piastres a day goes to <sup>the man</sup> ~~him~~ & he has to hand over  
 the lion's share to Brugsch or his people, under whom he is.  
 Brugsch said that the sphinx was not exactly oriented, & in proof  
 brought out a plan (in pencil, unfinished, & very poorly done) in which  
 he had the granite temple also skew: I demurred to that, as I  
 remembered C.P.S. pole star obs<sup>ns</sup> on it which shew it to be  
 very nearly true, & I asked what observations there were for it.  
 "Oh, instrumental observations"; by sun or polestar? I enquired,  
 "Oh dear no nothing so crude, instrumental observations"; &  
 at last the "bussole" came out as the means!!! I informed  
 him gently of C.P.S. obs<sup>ns</sup>, & of the general verification by looking  
 at it under a noon day sun; but he said that he had observed it  
 about 6'0 & that some friends of his had found even a larger difference in  
 its orientation; so of course I said no more, after offering during  
 the conversation to verify it again by polestar, which Maspero  
 accepted. They kept me so long for my order, as the

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regular scribe was away, that by no hurrying could I  
 get up to Bank before its closing at 12. So I went to  
 Post, finding after a hard walk that it was past 12 already;  
 got letters & paper, & then to Hotel du Nil. Saw Mr Loftie  
 who has had a sharp high fever, besides his gout & rheumatism,  
 & is only just moving again. He noticed that one of my eyes  
 was inflamed, as I had felt it to be, & insisted on going & getting  
 me a little Eau de Cologne & water to bathe it, as he said that  
 always checked such a thing or incipient <sup>of much eyes it</sup> Ophthalmia. I had a  
 talk to him, & staid lunch; seeing Mr L. who has been ill also,  
 & Beaman & Corbett. I hear that a Mr Ellis a friend of B's  
 who is just coming out, & going to join dahabyeh, & has nothing  
 to do here apparently, is a surveying engineer, & it is  
 most probable that he would come out & stay at A,  
 to do the levelling with me. They expect to start up the Nile  
 in about three weeks, & so I must push on with matters  
 here. Saw the Loftie collection of antiques, which is considerable  
 already; & then looked at Beaman's photo apparatus, which is  
 of the usual type, rather cumbersome, but all workable.  
 Then to Dr G., who was seeing patients at the time; so had  
 a talk to Miss Schultz, who was at Bulak Museum this  
 morn in a party of Mrs Grant, Miss Mullock, Miss Maclean,  
 &c; so I must have nearly run over them. Strange to say  
 I have never yet found an hour to see the new mummies  
 &c; though I have been three times to the museum to see  
 Maspero; at least above visit the Mus. was not open. Soon the  
 Dr came in & had a talk about the books: the 3<sup>rd</sup> vol of the Annotata  
 was already lying by his <sup>He noticed my eye, & gave me some zinc wash for it.</sup> bed side for reading. He heard of all the

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doing here with great interest. I have found it necessary to  
 give some people an idea of general results, in saying that the  
 Pyramid base is now found to be about 5 ft less than was  
 supposed, before the casing had been found on all sides. Mr L.  
 strongly urges me to send a letter of outline to Athen<sup>a</sup> as soon  
 as excav<sup>n</sup> is over, to anticipate anything else that may be  
 said, & "to save some body perhaps from becoming a Piazzite";  
 I think I shall do so. Then, from the D<sup>r</sup>, I went to the Bank,  
 returned after 3, & got £15; got some change, & some grocery,  
 & then back to tomb, not getting in till past 6. Supper,  
 Pub. Op. writing this & to bed about 11. I am sorry not to  
 find in the packet of ~~papers~~ papers in D<sup>r</sup> G's box my notes of what had to  
 be re-examined here, &c, which I particularly wanted, I  
 just find them in my portfolio, I thought they were on foolscap.  
 I was delayed some time at Hotel du Nil today by a considerable  
 shower; I ran against Hooker again in Muski, who says  
 that he has had a great deal to do, what I do not know.

Sunday 20 Nov Putting various things to rights in morn, & enjoying  
 the general feeling of having nothing to do; going to Cairo is all very well  
 on Sundays, but I want sometimes a days rest, & getting up at  
 6½ riding 17 miles is not that. In aft<sup>n</sup> went for a stroll  
 all round the hill; the sky was fine, thick masses of dark  
 clouds with rifts of sunshine between, which could be seen out  
 twenty miles away on the desert & the Delta; & at sunset  
 the cliffs of Turra glowing with a deep crimson under a heavy  
 cloud, while the Indian ink masses overhead were flecked with  
 crimson on the under side. I now hear thunder, & have seen much

doings here with great interest. I have found it necessary to  
 give some people an idea of general results, in saying that the  
 Pyramid base is now found to be about 5 ft less than was  
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 be re-examined here, &c, which I particularly wanted; I  
 just find them in my portfolio, I thought they were on foolscap.  
 I was delayed some time at Hotel du Nil today by a considerable  
 shower; I ran against Hooker again in Muski, who says  
 that he has had a great deal to do, what I do not know.

Sunday 20 Nov

Putting various things to rights in morn, & enjoying  
 the general feeling of having nothing to do; going to Cairo is all very well  
 on Sundays, but I want sometimes a days rest, & getting up at  
 6½ & riding 17 miles is not that. In aft<sup>n</sup> went for a stroll  
 all round the hill; the sky was fine, thick masses of dark  
 clouds with rifts of sunshine between, which could be seen out  
 twenty miles away on the desert & the Delta; at sunset  
 the cliffs of Turra glowing with a deep crimson under a heavy  
 cloud, while the Indian ink masses overhead were flecked with  
 crimson on the underside. I now hear thunder, & have seen much

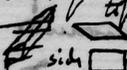
lightening far away North over the delta this evening. (74)  
 Monday Nov 21 up court by 7½. Fixing men till 10; out again  
 11½ till 5½. Cleaning coins at intervals, & in even: Suleiman brought  
 up the other day the lot of Ptolemy tetradrachm he mentioned before; &  
 I (after chattering) took 20 of the best as ~~an~~ a speculation; there were 41 in  
 all & he much tried to make me take the whole. I find on cleaning them  
<sup>by dissolving chloride of silver with strong ammonia</sup> that few are fine all over, but nearly all the reverses are fine,  
 apparently owing to having been buried en rouleau face upward: none  
 of them are in the least worn, but nearly all much eaten on the head.  
 They are of Tyre, Sidon, Cyprus, Rhodes, & Ptolemais (?). The work done today  
 was clearing more of rock trenches NE of  $\Delta^1$ , in course of which we  
 accidentally found the rock cutting for pavement edge on both N & E  
 sides; the reason I had missed it before is that it is 5ft nearer  
 the  $\Delta$ , being 512 on E, & 520 on N; how it joins to cutting  
 at 588 from N. I cannot imagine, & have set men to find it. I  
 must now try nearer  $\Delta$  on other sides for it. Two men were taken  
 down well into the grotto to farther examine the place which  
 D<sup>r</sup> G. thought might be a passage; they took out a good deal of  
 gravel, stowing it in the large excavation all round the back  
 of the steining of the well (made apparently in search of any other  
 passage); all this stuff had been moved before as it was all  
 loose, & two or three bits of wood & an Arab basket was  
 found about 3ft deep in it. The hollow is plainly natural, though  
 of course it cannot be proved not to have been utilized as a  
 passage without clearing it; but it has no trace of workmanship,  
 the sides being merely those of a waterworn fissure in the lime  
 rock, two or three blocks of which have fallen into it & become  
 stalagmized in place before the filling of gravel: it narrowed to  
 1½ ft wide & sloped downward straight W. for two or three feet  
 farther than I could reach, in all I saw it go W. for I think 18 ft

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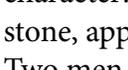
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(by memory) from the side of the grotto. I observed in two places in the well inserted stones of two small blocks (like those in the steining) put in to make a better step, in the stepped part between the vertical & the grotto. These <sup>much</sup> smaller inserted stones, as well as the small size of the steining blocks of the grotto, all point to the well having been cut (& made with care) through the masonry, after building the  $\Delta$ . The irregularities of it, & thin pieces of stones left on the side, had convinced me of this long before. I had enough of it, going twice down the well today; & have got a stuffy cold in the head from the dust. The hole on E side  $\Delta$  was enlarged E. ward, having been made too near  $\Delta$ ; & to my great disappointment, the paving which was found, stopped short broken away some 1 1/2 or 2 ft inside the line of the casing, so no alignment could be found. There is no other place on this side that I think worth the labour of another shaft. The new shaft on S. side was continued. These shafts near the middle, but not in deepest rubbish, cost 5/- or 10/- each; but from what I have seen, it is about 10 or 20 to 1 against finding casing worth having in them; so I do not think of doing any more now on  $\Delta^1$  after this new S. hole is finished.

Three parties continued work on the walls by  $\Delta^2$  to clear up their character: the only find was two curious little rhombi pieces of stone, apparently sawn waste from cutting casing . Two men cleared part of wall between  $\Delta^2$  &  $\Delta^3$ ; finding that  $\Delta^2$  had a complete square <sup>well</sup> at SW corner, & the S. wall was afterwards pieced on to farther, to make the wall round  $\Delta^3$ . Four men & two boys were all together at NE corner of  $\Delta^3$ : profiting by experience on  $\Delta^1$  &  $\Delta^2$ , I determined to leave the corners of  $\Delta^3$  alone,

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I sunk a hole about 20 ft from corner on ENE, <sup>the sides of</sup> passing two (76) courses of casing & reaching paving underneath it. On NNE the ground is more encumbered with fallen casing & we could not get through it to day. It was a ~~to~~ cold day, with wind, & several showers; which delayed work, as the Arabs cannot stand wet & cold.

Tuesday 22 Nov. A very high <sup>WNW to NW</sup> wind all day, rather cold, & some showers. It was too cold & too windy to put men on the exposed parts, as I would hardly stand sometimes in bad places, & the sand filled the air; so I had to select special work for to day. I had a sore throat & cold from yesterday, & felt less inclined to go out in a high wind than anything else; so I put on two coats, a blanket under them, & thick trousers, & thus got on pretty well. The work done was searching on N. face  $\Delta^1$  for paving edge, found it, but very anomalous, & too windy to follow it up. Also looking on E side closer to  $\Delta$  than before, but no edge found; only smooth rock all the way with plaster on it, shewing that some paving went a long way out, apparently to the trenches.

Hole on S side  $\Delta^1$  carried to 2 ft from paving. New hole NNW  $\Delta^2$  found edge of paving <sup>which supported</sup> granite; external paving & casing all gone. Two cuts were made in the immense rubbish mounds S of the  $\Delta^2$ , beyond the wall on that side: they shew the mounds to be stratified at angle of tip  like mounds of  $\Delta^1$ ; & some bits of pottery were found. The SE corner of  $\Delta^3$  was begun, being more sheltered than the others: but on neither side could they go far, being checked by the huge blocks of granite casing, which lie resting on one another almost everywhere under the sand; so fresh holes had to be begun. On the SSE they got

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Hole on S. side  $\Delta^1$  carried to 2ft from paving. New hole NNW  $\Delta^2$  found edge of paving under <which supported> granite; external paving & casing all gone. Two cuts were made in the immense rubbish mounds S of the  $\Delta^2$ , beyond the wall on that side: they shew the mounds to be stratified at angle of tip  like mounds of  $\Delta^1$ ; & some bits of pottery were found. The SE corner of  $\Delta^3$  was begun, being more sheltered than the others: but on neither side could they go far, being checked by the huge blocks of granite casing, which lie resting on one another everywhere under the sand; so fresh holes had to be begun. On the SSE they got

down deep, but all the paving was gone, & only irregular blocks of stone left lying about; which I did not ~~go~~ have moved, as they were certainly under paving level. 77

Wednesday 23 Nov & still, fine day; so work went on.

Out by 7½ to 10½: and from 11½ to 5½: principally occupied watching & helping at NNE hole  $\Delta^3$ , where a large block had to be raised. Work done was cleaning NE trenches  $\Delta^1$ ; the men did very little, & all work there is very slow as a lot of  $\Delta$  Arabs always sit close by NE corner & get squatting all round the workmen & talking unlimitedly. Deepening & evidencing S. hole  $\Delta^1$  which is very nearly done. Finishing cleaning the sub-granite paving of  $\Delta^2$  at NNW; this sub granite paving is always recognizable from being raised somewhat above rock or paving outside of it, but not the full 20 ins or so of paving thickness; also by being <sup>raised</sup> in a straight line parallel to  $\Delta^2$  side; & by having in many places small square holes cut in the edge of it, <sup>apparently</sup> to receive the crabs which held the casing blocks in lowering them into place; these holes are about 4 to 6 ins long about 4 wide & 3 deep. The galleries NW of this  $\Delta$  were cleaned more, shewing that they <sup>each</sup> ended with a larger block of masonry of well squared stones; the block being a little wider than the wall  & 83 ins long (4 cubits) by 74? wide. There was also a broad stone threshold to the doorway at the end of each gallery, thus  door. The distances & widths of the walls are very regular, not varying over an inch, by a rough measure I made; but as all the walls have a good deal of batter, nothing much can be made of the thickness. At  $\Delta^3$  the SSE hole was abandoned as the only <sup>apparently</sup> available place

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proved to be choked with blocks of casing. The ESE hole was somewhat continued. The NNE hole was worked at hard all day, but two blocks were let slip, one narrowed the hole, & the other fell into it; & when I came up they were just trying to get it up: we had a hard two hours work, with 3 crow bars going, to get it lifted about a foot & tipped over to one side; the Arabs are deficient in proper wedging, they waste a lot of force by lifting & letting fall again, trusting to something to drop down & keep the block from returning; so I had plenty to do in keeping it well wedged up, so as to secure every quarter inch of lift: also they never plan at all, but go on at whatever seems easiest or most urgent at the time, regardless of what may be required. This is a great waste, particularly in shafts, where they will go on sinking until the loose stuff over them is fright-full, & then begin to clear it, letting a lot go down, & needing to clear it out again; instead of finishing each foot of it completely as they go down. In fact they need continual superintendance, & this completely prevents being able to do any measuring; I tried to do some measuring of NE trenches, but the Arabs kept up such an incessant row of talking that I could scarcely get on.

Thursday 24 Nov Out by 7 $\frac{1}{4}$ , till 10 $\frac{3}{4}$ . Back for bath & breakfast. Just as I had done at 12, Ali came saying that Mrs Grant was come. So I went up & found Mrs G & a party, mainly Germans; two pastors, wife of one, two deaconesses, two maids, Miss Schultz, Jessie, & Miss Maclean. So I had some chat to Mrs G. Helped to arrange their lunch arrangements a little, & then went off to the men. They much asked me to lunch with them, but I had just had breakfast, & I knew Ali would be buzzing about them for certain, & so the men would be left altogether. I was fully employed, & would not get back till

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 done to day was finding edge of pavement at .575 out from SW  
 socket, but farther out apparently on W side. Finishing new S.  
 hole  $\Delta^1$ ; the casing is most curiously weathered & broken, thus  
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 until I looked up & saw the hollow; then on breaking away  
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 This renders it possible that what I took for edge very ill defined on  
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 I do not know how much a little enlarging might entail; the slightest  
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needs most attention, which Arabs never give, is to arrange wedges between the blocks around a hole, so that they shall rest one against the other, & not tend to fall in.

Friday 25 Nov. Out by 7 $\frac{1}{4}$  going round directing men till 11. In to breakfast. Out again at 2, round the men, & then by 4 back to NE corner of  $\Delta^1$  to small trenches with Ali; chained a plan of them, only needing angles from NE station to fix position. In by dark to supper. Mending four Arab hoes; I have generally some of them to mend almost every night, the handles get broken or the wedges split or lost. At supper a tortoiseshell cat came in, very tame & voracious; & soon a ginger equally voracious, but wild, also looked in; tortoiseshell would eat ship biscuit, & delighted in cheese rind & tomato skins: for Muhammad had brought up a basket of tomatoes, the first of the season here, Ali having sent him to get some; & I was having an orthodox stew of tomatoes, soup, cheese, & biscuit. I was glad to see cats come in, for a rat has been lively for weeks here, & their being about may keep both rats & snakes away. It is curious, but I am assured true by Ali, that cats will kill snakes whenever they have a chance, though they do not eat them. I saw today in the digging what I took for a small snake at first, a shiny round worm with plain ends, i.e. rounded brown head & tail; it had a marvellous knack of sinking into the ground immediately, & I saw it was really a lizard with very small legs, made on purpose for hiding in the sand. The work done today was, searching for corner of pavement at SW of  $\Delta^1$ , finding it again on S. side but none on W. yet. Walls W of  $\Delta^2$  cleared farther. WNW hole  $\Delta^3$  abandoned, a big granite block ~~is~~ covering all the bottom. SSW hole  $\Delta^3$  continued, after smashing a block of granite. Walls S. of  $\Delta^2$  uncovered farther: the E end is all of fine white squared Mokattam

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like the tombs, with rounded faces [☞], but fine joints; & in all 10 ft thick. Other parts, W of the shift in the line, are of good rough stone plastered. Walls W. of  $\Delta^3$  were also examined farther. Walls S of  $\Delta^3$  were begun on, finding one a well-built rough stone wall 8 ft thick, running into a large mound which may cover a building. After breakfast & supper working out formula for fixing distance of theod. from a rod placed skew to it, by two three measured points on the rod.

Saturday 26 Nov Out by 7 $\frac{1}{2}$ , setting men to work; & then for two <sup>or three</sup> hours or so ~~watching~~ watching the sand in bottom of one of the galleries W. of  $\Delta^2$  being turned over & floor cleared; no remains of any sort were found except pottery charcoal & bones in a heap of rubbish lying mixed with blocks of granite: the pottery is ~~so~~ much like Roman, yet it was within a foot or two of the floor, with 3 or 4 ft of sand over it, so I can hardly suppose it to be later than  $\Delta$  times; I suppose I kept most of it. Then after breakfast at 1 (I had some biscuits while out) I went up to  $\Delta^1$  NE trenches & took angles to points in the survey of them. Then at 4 I went round all the men, finishing by sunset; then paid them all off, & close works here for the present. I have done nearly all that I intended, & must now take a fortnight for measuring, levelling, &c, before I leave for going up Nile; & it is impossible to do accurate work steadily when one has continually to look after excavations.

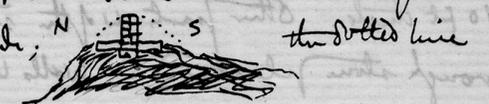
The work done today was clearing at SW of  $\Delta^1$  & finding corner of rock cutting, only about 500 ins from socket. Filling in all the trenches NE of  $\Delta^1$  for the road again. Turning over sand in gallery by  $\Delta^2$  & tracing junction of W & N walls of  $\Delta^2$ ; clearing

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The work done to day was clearing at SW of  $\Delta^1$  & finding corner of rock cutting, only about 50 ins from socket. Filling in all the trenches NE of  $\Delta^1$ , for the road again. Turning over sand in gallery by  $\Delta^2$  & tracing junction of W & N walls of  $\Delta^2$ . Clearing

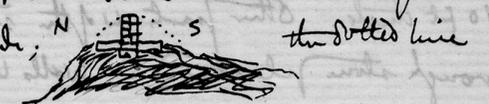
more of the wall S of  $\Delta^2$ ; it proves not to go down through all the high heap of rubbish apparently, but to be built on it as a sort of crest with a pavement on each side;  the dotted line showing present outline.

Clearing corners of walls W. of  $\Delta^3$ , & S of  $\Delta^3$ ; 10 men were on this in order to finish it off. The casing was found & cleaned yesterday in hole SSW  $\Delta^3$ , & no other place is practicable.

The total cost of workmen has been £17-6-0, & £3-10-0 to the useless Museum man; & I think we have got plenty done for the money; for a resumé of it all, see the enclosed letter to the Academy; the total of holes sunk is 85 for Great Pyramid & surroundings, (including 6 deep shafts), 108 for  $\Delta^2$  & all its walls; & 91 for  $\Delta^3$  & its walls.

Sunday 27 Nov Find that I have got slight pharyngitis, as I had last season; & it made me very lazy, & disinclined to think, move, or do anything. After reading a little in morn & ~~having a dozen~~, I went out for a stroll for three hours, & then in again, but ~~could~~ was not fit for anything. Had supper, & to bed, hoping to be able to go to Cairo tomorrow.

The accompanying letter for publication wish to go to "Academy", as they were civil about tube drills; it is desirable to publish now because people always have curiosity about excavations at the time, but not so much if they have been made months ago; also some notice of it may otherwise appear somehow; also it is a good opportunity to slightly mention, what we may now feel certain about, that the casing is less than supposed; & I think such a fact ought not to be kept back in order to state it perfectly completely some months or years hence. It is well

more of the wall S of  $\Delta^2$ ; it proves not to go down through all the high heap of rubbish apparently, but to be built on it as a sort of crest with a pavement on each side; [N  S] the dotted line shewing present outline.

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Cairo-  
10.

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Monday 28 Nov

Monday 28 Nov Off before 8 to Cairo. Went to Post, & found the bill of lading for box sent from Houghton on 12<sup>th</sup> Nov, though dated 2<sup>nd</sup> Nov; went to station to see if it had been sent on, but of course it was not there & they said it could not be rec<sup>d</sup> till bill had been rec<sup>d</sup> in Alex<sup>e</sup>. Houghton had also directed it to J. Petrie La Dagana instead of Poste Restante as I had told him; & I may have trouble about the box being J. I do not at all understand his delay & misdirection. In any case I cannot get the plates for another week; and I had thought that a month was long enough already for transit. Then to Bank & drew £10. Met there Mr Mackenzie, who had just arrived, & was at Shepherds. Then went to see Mr Loftie. Had a long talk with him on arrangements; they have decided on having a dragoman, mainly because they are going through Nubia. Mr Loftie & Miss Gott had gone off to look at dahabiyehs. Mr Ellis has not come yet, but is expected very soon; & Mr L. will get him to come out & help me here as soon as he can. They expect to be off in about a fortnight, very likely a little longer. I am very glad to have the opportunity of such a party to go with, as probably not once in ten or four years is such a trip arranged; they intend to halt for work & not mere sightseeing; & getting fresh inscriptions, &c, will be considered better worth while, than seeing any that are already known; so far the plan exactly coincides with my own wishes. He bought a lot of things of Ali's that I took him to look at, & he much admired the bit of Chephren vase, as also did Dr Wiedemann who saw it. Then I left, went had dinner, bought fruit, & then to Dr Grant. He had not done dinner, so waited. When I saw him he asked where I had had my dinner, & reproved me for not coming to dine with him, saying that I ought to do so, whenever I was not with other friends. Also saw Mrs G. who was very cordial, & Jessie & Miss Schultz. The Dr. was looking over some scarabs of Suleiman's, whom he treated very

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unceremoniously; paying half of what he asked, putting the scarabs in his <sup>34</sup> drawer, telling him that was plenty for them. Had some talk over various matters of A, &c. Then I left about 3:30 & rode back. Oranges are now 6 a penny for ordinary, & 3 a penny for large mandarins, so I indulged in 48: getting through a dozen or more on the road. I find that I underestimated the distance to Cairo, it is really 9 miles to middle of Esbekiyeh; so I go 18 miles, beside going about Cairo 1 or 2 miles, whenever I go to post a letter or receive one. Dr & Miss G were delighted with the Chephren fragment, & shewed it diligently to Miss Shultz & Miss Mullock. Miss M. had an offer of going as a companion of the Nile, & would much have liked it; only the lady was a Viennese prima donna, whose suite was not known with certainty; & dear Miss M., with her sweetly smooth grey hair, was afraid of possible shocks to her feelings.

Tuesday Nov 29 Out by 9<sup>1</sup>/<sub>4</sub> after breakfast to  $\Delta^3$ ; there fixed place of casing on part at SW, & two points on the 4<sup>th</sup> course of casing, to be carried down by calculation afterwards. I really prefer for accuracy taking points of the finished contact-edges which are visible on all the blocks, <sup>where exposed</sup> instead of the rough and dressed outside which is all I can see at the bottom on the pavement: hence the obs<sup>s</sup> on upper courses on the top contact edge <sup>(definite to  $\pm .1$  or  $.2$ )</sup> to which the block was intended to be dressed down, are really the most important; the excavated holes being to shew what the height of the casing is all round, & roughly, yet unquestionably, how far the casing extended. Then at SE I fixed a point on 3<sup>rd</sup> course, & two at base. Then at NE I fixed two points at base & 1 on 1<sup>st</sup> course. These comprise all the excavations, & I only have <sup>now</sup> to take the visible casing at the NW. The method I now depend on for fixing points in holes, invisible from the survey station near them,

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or in fact <sup>for</sup> all points within 3 or 400 ins of a station, is to lay a 140 inch rod across the hole, drop a plumb line from a 10 inch diameter rod (sticking the thread on with wax, which is invaluable for plumb lines) anywhere into the hole; fix the plumb by observing azimuth from sta<sup>n</sup>, & azimuths of divisions on rod 60 or 70 ins on each side of plumb, thus giving distance horizontally; then measure off from plumb to points down in the hole. There was so much arrangement of plumb lines in these holes, that these 8 points occupied as many hours altogether; some places being so cumbered with fallen stones blocks of granite, that I had to build pillars to support the rods so as to see them; any sort of direct measurement was quite impracticable, nothing but a theod. would do it. I did this  $\Delta^3$  to day, as soon as I could, as the holes were very precarious, sand running down; & if the sand ran too much the big blocks around would drop in, & ~~to~~ choke the hole again. Then back in the dusk for supper, which ran thus: -

Stewed Quinces & ship biscuit.  
 An interval, in which the kettle boils, & the company assist in making a plough.  
 Black coffee very sweet, with ship biscuit.  
 Stewed tomatoes, with ship biscuit.  
 An interval for washing up.  
 Coffee as before, with mixed biscuit, & journal.  
 Bananas  
 Oranges.

Ali, as he not unfrequently does, sent me up a dish; of boiled crushed maize (?) & a chicken's leg, this time. I set it down, & left it unprotected for a minute, when I heard a crunching, & found that tortoishell had jumped up & seized it; so I caught her

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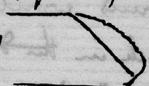
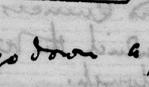
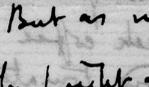
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86  
 & after a sound banging all over turned her out: this will  
 end our acquaintance, for the time at least. I had already  
 come to the conclusion that the remedy was worse than the  
 disease; & that it was preferable to hear a rat running  
 round a night, when all the victuals were safe in the  
 biscuit tins, than to have to secure everything all the time  
 out was at meals; so as now the charitable motion is  
 neutralized, I shall keep biss outside. i.e. pass—

I cannot make out the pavement of  $\Delta^3$ ; the stone outside  
~~the~~ the granite is very rough; it has frequently (or  
 always?) a wide gap of 3-9 ins between the stones  
 under the granite & that outside, yet not a regular gap;  
 the stone outside is rock <sup>of Gizeh</sup> & that under granite Mokattam, in  
 one case where I could see it well; the stone outside is higher  
 irregularly than that under granite in one case: in a case where  
 the side of bottom course stone is exposed, the finished edge-line  
 does not run down to ground, thus  hence the stone  
 never could be trimmed to a sharp edge  at bottom; also  
 the stones vary in height, & some go down a foot or so under  
 the end of their slope . But as most of the stones

are only 44.6 high, there would not be height enough to lay a  
 paving over the present basing thus  But there  
 can be no question that the casing is unfinished, never <sup>trimmed or</sup> polished  
 down except in parts; hence what if the pavement has never  
 been laid? I think the present state  was to  
 be finished thus  making it just like  $\Delta^2$ .

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Wednesday Nov 30

Wednesday Nov 30 after breakfast out by 10 to NW of  $\Delta^2$ .<sup>(81)</sup>  
 There I had much difficulty in arranging to see plumb lines over  
 holes, from the station at the corner. We had to cut through  
 rubbish, move large stones, & then build pillars to support the  
 rods high enough to see them. Happily the lines of sight being  
 very nearly parallel to the base sides, the exact distance of the  
 rods from theod. <sup>(about 80 ft)</sup> is immaterial, & so fixing that by sub-tension  
 is sufficient. At last I got them arranged, & observed ~~the~~  
 the alignment of casing on N & W; also 3 points of rock  
 cutting supposed edge of pavement, about 578 from casing (25 x 20.72).  
 Then carefully planned all the details of holes, drafted lines, &c, on  
 the socket floor, in order to see (after calculation) what ~~of~~ details  
 of the rock dressing probably coincide with edge of casing. During  
 this I was told that I was wanted, & going to  $\Delta^1$  found Mr Mackenzie  
 coming down. He was going to granite temple, &c. so I agreed  
 to shew him the painted tombs in the afternoon. Having done  
 N.W. I went & began looking at N.E. when about 2 1/2 M. M. came  
 up, so I packed up, & sent things down to tomb, & then  
 explained details & inscriptions of the painted tombs to him till  
 dusk. He has been in London, in August I think, but was  
 so engaged with business that he could not take a day for  
 Bromley. He is now on his way to China, Japan, Australia  
 &c; & if his trip lasts over next summer, he will not  
 return to England till the summer of /83. Then back to  
 tomb, calculated some of the dis obs<sup>ns</sup>, had supper; reading  
 up various, & to bed abt 11.

Thursday Dec 1 Out after breakfast to  $\Delta^2$  SW corner. There  
 I cleaned the casing stone, & turned myself nearly upside down <sup>in a deep narrow hole</sup>  
 as to getting eyes down to see the rock under it: there is a slight  
 raised step in rock, about 1.3 to 1.9, on which casing has stood.

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This casing stone has been shifted out a little on one side, skew, <sup>(88)</sup>  
 but not on other apparently; the least distance I could find,  
 by clearing gap between its back & the rock step behind it, was 1.1;  
 so it cannot have been moved out more than that, on that side,  
 & probably not as much. The bottom face <sup>foot</sup> of it is not vertical,  
 but at 9° slope, making 1.6 ins difference in alignment; but the  
 top of it is certainly the right thing. Strange to say there is a  
 similar slope at SSE between <sup>on which granite stood</sup> basement & pavement; there  
 being 5°; & at ESE 11°. This peculiarity prevents the alignment  
 of the basement under the casing, shewing the exact place of  
 edge of casing; as the angle is variable, & the depth of the foot  
 of the casing is also variable. I should add 1½, & say ± 1, for a  
 general allowance for it. After finishing fixing the exact place  
 & alignment of this casing (by two plumbs 35 ins apart along  
 its edge) I then went to ~~the~~ SE corner. There I found that the  
 alignments found near outside the deep hole we dug last season;  
 so I cleared a stone 40 ins higher, & there within 6 ins of surface  
 I found the corner of the alignments, marked by a raised edge  
 of rock as at SW socket. So I fixed the two alignments found  
 on ESE & SSE & also the corner. Then moved on to do the  
 casing found in new hole S of Δ<sup>1</sup>; Ali coming back from dinner  
 told to bring the rods with him while I put up signals; I was so  
 busy with the signals that I never watched him, & he dropped  
 down into the hole of SW pavement of Δ<sup>1</sup>, to clean it meanwhile;  
 I did not see him, & went up a small Δ to look, & then down to  
 my tomb, then up again, & at last sighted the rods lying on the  
 ground; he had concluded that of course I should see the rods at  
 first; thus 20 min, <sup>or 2 hr</sup> or so was wasted, & there was no light to

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 its edge,) I then went to E SE corner. There I found that the  
 alignments found ran outside the deep hole we dug last season;  
 so I cleared a stone 40 ins higher, & there within 6 ins of surface  
 I found the corner of the alignments, marked by a raised edge  
 of rock as at SW socket. So I fixed the two alignments found  
 on ESE & SSE & also the corner. Then moved on to do the  
 casing found in new hole S of Δ<sup>1</sup>; Ali coming back from dinner  
 I told to bring the rods with him while I put up signals; I was so  
 busy with the signals that I never watched him, & he dropped  
 down into the hole of SW of pavement of Δ<sup>1</sup>, to clear it meanwhile;  
 I did not see him, & went up a small Δ to look, & then down to  
 my tomb, then up again, & at last sighted the rods lying on the  
 ground; he had concluded that of course I should see the rods at  
 first: thus 20 min <or ½ hr> or so was wasted, & there was no light to

space. At last got to work, & fixed the place of the casing <sup>to</sup> <sup>(with 10 inch theod)</sup> about  $\pm \frac{1}{4}$  inch: if I have time I should like to do it closer for on clearing the top of the piece of casing I found the 1<sup>st</sup> joint in very sharp condition: it is a curious case the bottom of the stone all decayed, & section thus; <sup>solid</sup> 

the pavement having been pulled out & broken off irregularly; with variable face }  
 It is rather anomalous in one point, that height of casing is 59.4 against 58.8 on N side, & pavement from which I measured is not at all worn apparently; & then pavement is only 19.9; thus pav<sup>t</sup> & 1<sup>st</sup> course is = 20.5 + 58.8, or 1 cubit & N. course height; this looks much as if pav<sup>t</sup> level here was a little <sup>(.6 too low)</sup> erratic & had been corrected by 1<sup>st</sup> course height. I made by rough levelling referring to courses at corners that this S. pav<sup>t</sup> was 2.7 too low; but this must be settled by accurate work when Mr. Ellis comes.

Mr. Haig mentioned to me that the standard system in great Indian triangl<sup>n</sup> was to observe all azimuths, & then return <sup>reversing</sup> back to start; then shift circle  $7^{\circ} 12'$  i.e.  $\frac{1}{50}$  of  $360^{\circ}$  & take azimuths again; & so go all round circle 50 shifts, & 100 readings for each point. I like the idea so much, that now when I want accuracy with the 5 inch theod, I always shift circle  $\frac{1}{3}$  or  $\frac{1}{4}$  of  $360^{\circ}$  at each set of azimuths, & so take 3 or 4 readings on each point, at 3 or 4 different parts of circle; thus neutralizing circle errors, & checking errors of graduation. I thus generally get with 4 readings a  $\pm$  of 4" with the 5 inch.

Just as I finished, & was coming very tenderly up the shaft, (which is awfully ticklish in condition, one fall coming on me while there) Ali gave cry that there were 5 hyenas; so on getting up I gave chase, & got near enough to see them in the

spare. At last I got to work, & fixed the place of the casing to about  $\pm \frac{1}{4}$  inch: if I have time I should like to do it closer <(with 10 inch theod)> for on clearing the top of the piece of casing I found the 1<sup>st</sup> joint in very sharp condition: it is a curious case, the bottom of the stone all decayed, & section thus; the pavement having been pulled out & broken off irregularly; with variable face { 

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dusk; they were certainly not jackals by size, appearance, & foot prints. Then packed up, & back to tomb. Reduced some of the readings on rods, then had supper; wrote this, &c, & to bed about 10 1/2.

Friday Dec 2 After breakfast to  $\Delta^1$  SW corner; there fixed various points of edge of pavement. Then examined continuation of part W. There is no trace at 575 from socket farther W along side; but a rock edge with 2 blocks of Mohattann still cemented in place at about 630 from socket: but neither this edge, nor that 575 out at corner, point to each other, but both are parallel to  $\Delta$ ; at the place where edge is 630 out there is no trace of anything at 575, but only a smooth rock bed. I cannot explain it at all, it needs many more pits sunk all along, or a trench; the depth is about 2 ft. average below surface. Then I looked roughly at alignment of new S. casing; by sighting a long rod to socket at each side, a method certain to 10 ins or so; this made the new casing, if continued to its pavement, fall 35 ins inside socket line; this might be 25 possibly, but certainly far from socket line, as on E. & W. & N. sides. Then to N.E. corner of  $\Delta^2$ ; found that the socket edges on N & E sides in holes, which I had supposed to be  $\Delta$  alignment, were too close to  $\Delta$  by a good deal, & had not the usual character of such alignment of the basement of granite casing; but on cleaning the socket I found just such a raised square corner as exists on SW. & SE. with several sloping holes cut into its edge to receive the clutches that held the stone, when fixing it. So I cleaned & measured this. Then to  $\Delta^1$  NW; & looked for paving edge again on W; but could not find it; fixed the end of the N side edge, which runs out beyond the diagonal, & has no mark at that point. Then rough measured the basalt paving, as a guide for future work. Then in to supper, & to bed about 9. My throat swollen & inflamed in glands, making me very disinclined to work to day.

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Saturday Dec 3

4 Saturday Dec 3 Finding my sore throat still on, though (91)  
 better, I did not feel up to standing about in the wind  
 surveying; so determined to go to Cairo, which I must do today  
 or Monday. So I ordered donkey, & got my breakfast, & then  
 off about 8 1/2. Got into Cairo about 11, to post, & found  
 English letters, but no order for my box. This is very  
 awkward, & I sent off a card asking Moss to send up the  
 box at once: the ship it came in has come & gone  
 again, so it must be stuck at Alex<sup>e</sup>. Then I went  
 to Hotel du Nil, & found Mr. Loftie just dressing, after  
 doing a batch of early writing. Had a talk over all the  
 necessary details; & arranged to do without my coming  
 into Cairo again. They are now starting on their  
 earlier than intended, & it is supposed that I must join  
 them at Gizeh not later than Thursday, the boat  
 starting from Bulak on Tues. or Wed<sup>n</sup>. Unhappily Mr. Ellis  
 has not yet arrived, having been detained in his sketching  
 business at Gibraltar by a long East wind; & he will not  
 join the boat at first, but overtake it by rail. I am  
 thus quite cut out of getting work in levelling &c done here  
 before starting, & I fear that it may be too hot on  
 my return to work well. However I do not think it is  
 worth while to get a substitute & give up going; or to join  
 later on, & stay here a little longer, as I mainly want  
 to see the things just S. of this, & to have Prof. Sayce's  
 company. He had been to see Maspero this morn.  
 & M. has promised to join us at Meydoun & try to  
 open the  $\Delta$  there (supposed earliest of all) & while we are  
 there, & certainly to open a tomb: so this sounds very  
 promising. I saw him <sup>Prof. S.</sup> just before I left the Hotel  
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I then did some shopping, got my hair cut, & then to Dr Grants. After some talk we had lunch, & then after a bit I left; Mrs G. seems very brisk & much better; they were going to the opening of a new small hospital in Miss Whateley's school buildings. I then went back to Hotel du Nil to tell Mr L. of the value of the box of plates, as he had kindly undertaken to get them passed if they came to Cairo in time: if they should not arrive before the boat leaves they must be sent after us by train.

I then saw Mrs L., who has done great part of the business of arrangement with Mr Gott; & heard further details. Mrs Gott, who is manager, requires  $\frac{2}{3}$  of money down; <sup>i.e. £60</sup> or as much as I can muster pro temp. & the rest to be received in Cairo (say by Mrs Corbett, who intends running up at Xmas to join us for a time) & brought on. For this purpose I shall leave ~~the~~ cheque in Cairo, with Mrs Gott's nominee, for the balance of the  $\frac{2}{3}$  <sup>rd</sup> beyond what I now hand over: the remaining  $\frac{1}{3}$  to be paid at the end, or sooner if cash should be short. I shall take a small sum, say £10, in cash with me; for petty expenses, antiquities, &c. Considering all things I think it would be best (i.e. much the most convenient, with not 1% of risk I should suppose) to send here <sup>as soon as possible</sup> by remittance as before to Bank of Egypt (for as I shall not be in Cairo, nothing must need my personal attendance or signature, as letter of credit, P.O.O. &c would) say £100. If the results of the voyage up to Thebes do not promise that

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<sup>2</sup> The remainder will be sufficiently worth the expense, it is probable that there would not be much difficulty in finding a substitute, either among travellers there; or by letter for to Cairo getting some one to come up there by steamer to join. If the expense of the whole trip is not thought worth while at home, pray say so by return post, & I will arrange for substitute as soon as possible.

The party will consist of two stay-at-homes, three for antiquities, one artist, & two sportsmen. I.E. <sup>1</sup> M<sup>r</sup> Loftie, for M<sup>r</sup> L. will not go about much, both from ill-health & needing to do writing; <sup>3</sup> Prof Sayce, <sup>4</sup> M<sup>r</sup> Percival, & <sup>5</sup> myself, for antiquities; <sup>6</sup> M<sup>r</sup> Ellis, whenever he does come, for sketching & also up in engineering; <sup>7</sup> M<sup>r</sup> Gott who manages matters, & a Capt<sup>n</sup> Meller. There are also two arranged to join at Thebes to fill Prof Sayce's & M<sup>r</sup> Percival's places.

Then I left Hotel, got a few more things, posted letters, & rode back. I met Capt<sup>n</sup> Meller on the way, who had been to the Δs, & brought me a letter from M<sup>r</sup> Loftie telling me some of these points. Then had supper, read Pub.Op. &c, wrote this, & to bed somewhat after 12.

I met the Khedive today, the third time I have seen him, & had a good look as I knew who it was that was coming: there being no one else but myself saluting at that point, I had the honour of a special recognition in return for my hat coming off. He is an intelligent practical-looking man; most like A. L. Lewis, <sup>but</sup> fair with brown hair. The D<sup>r</sup> to day at dinner said to little Jessie "you'll be like the Dean some day"; "How's that" said M<sup>rs</sup> G. "Why he turns his toes in like this" said the D<sup>r</sup>, making the tips of his knife & fork

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Sunday Dec 4 After a late-ish breakfast, reading till  
 noon, then out for a ramble. Went down the edge of  
 the desert for 2 or 3 miles then westwards to a watershed in  
 the desert about a mile from the edge, & then back along  
 that to the Pyramids. This with various detours & examinations  
 occupied all the afternoon. Then in for supper, but  
 the paraffin stove came to grief, owing to the unsoldering  
 of some parts by the heat, it has been going for some  
 time; & so I had to mend it first with rivetting, as it  
 should have been made originally. After supper, & stoving  
 rice & quinces, writing this, to bed about 10 1/2.

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Monday Dec<sup>r</sup> 5

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 began fixing position of its sides; doing the N & part of  
 E by putting theod. on NE  $\angle$  of it, & reading on horizontal rods,  
 of which the middle were plumbed over the edge of the pavement,  
 the breadth regularly of the rods giving their distance accurately  
 enough in direction of along the sides of the paving. Of course  
 there is no paving left at the edge, & what I speak of is the  
 rock cut bed of it , this never has vertical sides,  
 so I had to adopt something, & took the point near the top, but  
 not rounded, as I supposed it probable that the stones  
 bedded pretty closely to the rock, & sloped away somewhat  
 beneath, filled with mortar thus . Ali tells  
 me that there is always a layer of Mokattam under the  
 basalt, even though only 3 or 4 inches thick. While doing  
 this up came Prof. Sayce & Mr Percival; I expected them  
 to day. After a general talk, Mr P. went up  $\Delta$ , &  
 the Prof. sat by while I finished the theod. work; looking  
 over & buying some of Omar's scarabs. Then after  
 some walking to & fro, we found Mr P. again, & then  
 went inside  $\Delta$ . They went first of all down to Subt<sup>t</sup>  
 Ch<sup>r</sup>, & both were much interested in details & points  
 unfinished. Then after a rest at Al Mamoon's hole, we  
 went up to G. Gallery. Prof. S. was too much troubled in his lungs,  
 by dust & exertion to be able to go farther; so Mr P. & I  
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I saw the eclipse of the moon well to night; it was nearly total, the light from the edge being just about equal to that of Jupiter; I compared them by squinting, so as to throw the moon seen with one eye & Jupiter with the other, close together, at the same time this threw the eyes out of focus so that both lights were discs of unfocussed light of equal apparent size. This plan of forming discs equal in size, by throwing the eye out of focus, seems to me very useful for comparisons. Far more curious than the eclipse, was to hear the Arabs beating tom-toms, kettles, & all sorts of metal work, & firing guns during the advance of the shadow. I thought it was only in India or Africa, that they tried to frighten the evil spirit that is devouring the moon, & did not expect it here. (N.B. this is not Africa, by nation reckoning; Ali talks of going to & coming from Africa, as from Europe or other foreign countries.

Tuesday Dec 6.

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Wednesday Dec 7

Wednesday Dec 7 Up at 6 1/2, throat as bad, but temp. down to 100°. Then had a cup of chocolate, & handed the things out to Ali who had obtained two donkeys to carry them down. We did not get off before 8, and then the donkeys went very slow, & it was a bitter cold wind. I pushed on ahead, & got off for walking, twice. At last I reached the boat by 10 1/2, but found that they were not expecting to get it so soon. So leaving word about my baggage, & I went off to consult Dr Grant. I found him in hospital, though it was after 11, & he said my throat was not serious, & would not need to stop behind for it; so he cauterized it, as it was suppurating, & told me to go on with caustic solution, & quinine & iron in small doses. Then he introduced me to M. Wilbour (a Belgian?) who speaks English perfectly. Had some talk with him & then left. Went & got the prescriptions, & some more belladonna. Then to boat, found baggage arrived; got a few

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things held straight, & then went to bed; temp <sup>was</sup> up to 102° again. Had some soup in the evening, & got down to 101°. Prof. Sayce was laid up with chest & throat.

Thursday Dec 8. Down to 100°; still stopped in bed, had a good breakfast however, feeling ready for it though throat was still bad. By lunch I thought I would turn out for an hour or two. Had lunch; then 4 o'clock refecton, & at last staid for dinner, finding that feeding was improving. In the evening a long discussion went on between the Prof. & Mr. L. on the tablet supposed to date the Sphinx before the Δ's, in which we went at ~~it~~ briskly. ~~At last~~ In the morning, Mr. Ellis turned up at last, brought me 2 doz dry plates of his own, & promised to get my box if it arrived, & bring it with him, when he joins us at Wasta about a week hence. There was a contrary wind, so we only poled out into the stream, & waited. Temp. down to 99:4°.

Friday Dec 9. Temp. not down at all farther, still felt brisk, so got up at 6 1/2, had a bath, & a read before anyone else appeared. It was a lovely day, very little wind to help us, but that a warm weather, & I could enjoy being on deck, in spite of my throat. The Khedive passed us in his steamer, out for the day, at lunch, his band playing God Save the Queen; we were quite taken by surprise; but sighting him returning <sup>from Helwan</sup> about 4, we were ~~dr~~ ready; saluted him with hats & flag, had his salutes in return & God save the Q. again. Temp: normal at night.

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Saturday Dec 10

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 split up; Prof. Sayce & myself went off first to Sakkara;  
 there we went to the new pyramids, & looked at  
 two where nothing was to be seen of inscriptions & then went  
 to 'Pepi's', that I copied last season. There we had a  
 good look at all that could be seen without  
 going down by a ladder. After that, we completely  
 puzzled our donkey boys, & upset their calculations  
 by refusing to go to the regular sights, which we  
 both knew, & went round under the hills to the  
 very early tombs at Abusier, <sup>the inscriptions of</sup> which were  
 unknown to Lepsius, &c. There we had lunch,  
 & after that, the Prof<sup>r</sup> copied the inscriptions that I had  
 roughly copied last year. While he did this, I dropped  
 down a shallow well just under the inscriptions, to have a  
 look at the bottom, which seemed to open into a chamber,  
 some Arabs followed me, & taking my candle  
 beckoned me inward. So I followed, & we went into  
 a series of galleries of Ibis mummy pits, which had been  
 built up at various parts with brick walls. I saw at the  
 end a bank of mummies, all filling the passage; I did not  
 see any perfect in their pots, as all on the surface  
 were broken about by the Arabs. They did not seem  
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100  
 track their way back again. Then after returning,  
 we went over sundry other caves, seeing again the  
 inscriptions I copied last time. After this, we got on donkeys  
 again & returned, through Memphis again, to the boat; getting  
 in just also before sunset. I was delighted to find  
 my ~~own~~ railway receipt for the box of plates at last.  
 So I sent it off to Mr Ellis. Mr Gott was so bad  
 with stomach, ~~that~~ being consumption, the Lofties were  
 frightened, & sent for Dr Grant. After dinner, the  
 Dr came in, at 9: & says that if the temp<sup>r</sup> goes  
 down, the case will be all right. There is no way  
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