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Analysis of Flight Loads
Recorded on Comet 4B
Aircraft by Means of
the Fatigue Load Meter

by

R. Hain Taylor, B.Sc., M.A., A.F.R.Ae.S.

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ANALYSIS OF FLIGHT LOADS RECORDED ON COMET 4B AIRCRAFT
BY MEANS OF THE FATIGUE LOAD METER

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Flight load data collected by means of Fatigue Load Meters installed on Comet 4B aircraft operated by B.L.A. over Europe are presented in full, and analysed to determine whether a seasonal variation exists. It is concluded that there is no evidence of such a variation, probably due to the equipment of these aircraft with Cloud Collision Warning Radar. The use of this radar appears to result in a lower general level of turbulence being encountered. Some comparisons are also made with data from Comet 1 and Comet 2 aircraft.

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1 INTRODUCTION

1.1 A recent paper by the present author¹ discusses the seasonal variation of flight loads recorded on Viscount aircraft operated by British European Airways throughout Europe and by Trans Australia Airlines throughout Australia. A similar body of data from Comet 4B aircraft operated by B.L.A. throughout Europe has also been built up, and it was hoped that these data could be analysed in a similar manner. Unfortunately for our purposes, there was, during most of the period under review, an additional device in the equipment used to record the flight loads which made it difficult to determine the exact flight time corresponding to any sequence of counts. However, attempts have been made (and are described here) to surmount this difficulty, and it is believed that the final curves represent reasonable deductions from the data available. The amount of data is much less than in the case of the Viscount, as it has been collected from fewer aircraft over a shorter period, and so a greater uncertainty must be expected.

1.2 Data obtained on the Comet 1 and 2 by means of the Compound Counting Accelerometer have been published²; the latter aircraft also carried Cloud Collision Warning radar but the former did not. A comparison of results is obviously of interest, though the initial data are in rather different form, observations from the Counting Accelerometer being made at much more frequent intervals and including aircraft speeds and altitude; the corresponding aircraft weight can also be calculated fairly closely. The data can be aggregated to enable a comparison to be made, however, although the quantity available for the Comet 1 and 2 is much less than for the 4B.

2 EQUIPMENT AND BASIC DATA

2.1 Description of equipment

The instrument by which the data used in the present analysis were obtained is that described in the previous paper¹, namely the Fatigue Load Meter Type 1B. A full description is given in an Instruction Leaflet³. The recordings consist of counts of the numbers of distinct occasions on which increments of normal acceleration of $\pm 0.25g$, $\pm 0.55g$ and $\pm 0.95g$ are exceeded. Counts from the 0.05g and 1.95g levels are few in number, and are not used in this analysis. As before, an airspeed switch is incorporated in the installation to ensure that all accelerations during taxiing, take-off or landing, or low speed manoeuvre, are cut out, and that only true flight accelerations in proper flight are counted; in the Comet 4B the switch starts the recording at 125 knots and stops it again at 110 knots.

There was an extra item in this installation which was not present in the Viscount, namely an altitude switch which was set to operate at 20,000 ft. In part of the fleet it allowed recordings to be taken up to this height, and then switched off, switching on again when the aircraft was descending; in most of the other aircraft it operated in the reverse fashion. About half way through the period under investigation the switch was removed, allowing recording at all heights, and in some aircraft it was never installed. The reason for this switch was quite unconnected with the present investigation, and its presence had to be accepted. It resulted, however, in a very marked difference being revealed between the readings obtained from below and from above 20,000 ft. The flying

below 20,000 ft is very largely climb and descent, above this altitude there is still some climb and descent, as for shorter stages the cruise height is about 25,000 ft and for longer stages about 32,000 ft, but the great majority of time is spent in cruise.

There is also an additional piece of equipment carried by the Comet 4B and Comet 2 and not by the Viscount nor by the Comet 1, which is believed, as discussed later in the Note, to affect the pattern of counts materially. This is a Cloud Collision Warning radar set, which should make it more possible for an aircraft to avoid areas of intense turbulence associated with cumulus or cumulonimbus cloud, and accordingly the number of counts recorded should be much lower. This applies particularly to cruise conditions; an aircraft tends to be more closely controlled during climb and descent and so is less able to take avoiding action. We should expect, therefore, the improvement to be more marked during cruise.

The Compound Counting Accelerometer by means of which the data on the Comet 1 and 2 were obtained is fully described in an Instruction Leaflet⁴, and more briefly in the Note² on the atmospheric turbulence encountered by the Comet 1 and 2. Essentially it consists of a battery of counters, driven by an accelerometer as in the Fatigue Load Meter, which is photographed at preset intervals along with an airspeed indicator, an altimeter and a clock. The available information thus consists of the number of counts at the various g increment levels in fairly short intervals, and the airspeed and altitude at each end of the interval; if the aircraft weight at the beginning and end of the flight are known the weight at mid-interval can be fairly closely estimated. An airspeed switch is incorporated in the installation but not an altitude switch.

2.2 Data collected

The basic data collected by the Fatigue Load Meter consist, as previously, of counts of the number of times preset acceleration increments are exceeded in one direction in flight. While these counts are strictly a measure of the flight loads imposed on the aircraft as a result of atmospheric turbulence, the variation in their frequency of occurrence can also be taken as a good indication of the variation of the turbulence. This holds for one aircraft type; the position when comparing two different aircraft will be discussed later.

As noted above, the meters on some of the aircraft counted only below 20,000 ft, some only above, some during the whole flight. We have, therefore, three sets of observations for analysis. The difference between the information collected below and that collected above 20,000 ft may represent the effect of altitude on turbulence, or it may represent the difference in turbulence encountered in climb and descent and in cruise; both effects will be present and cannot be separated. One test of the consistency of the results will be whether if we combine in the correct way counts per hour obtained below 20,000 ft with those obtained above, we shall derive a curve which strongly resembles that comprising results collected independently of altitude.

The basic data presented by the Compound Counting Accelerometer on Comets 1 and 2 include airspeed and altitude, but these are not required in the present comparison. The information taken from the Note² already referred to was,

therefore, used to estimate counts at roughly the same g increment levels, namely $\pm 0.23g$ and $\pm 0.52g$ for the Comet 1 and $\pm 0.25g$ and $\pm 0.55g$ for the Comet 2, summed for below and above 21,500 ft (as the nearest altitude level to 20,000 ft) and tabulated separately for climb and descent, cruise, and all conditions.

2.3 Flying covered by records

It is believed that the Fatigue Load Meters from which the data were made available to us were carried by most of the Comets in the B.E.A. fleet. Four of the aircraft (records from three of which were used) belonged to Olympic Airways, and were operated under a pooling arrangement; there was, accordingly, a tendency to use these aircraft on routes to the Mediterranean rather than, say, to Scandinavia. Apart from this, the aircraft were used indiscriminately on all routes, and so it is hoped that the data are representative of all routes flown by B.E.A. Comets, which cover a large part of Europe. The flight time per stage varies from about fifty minutes for London to Paris, to four hours for London to Moscow.

The Comet 1 and 2 aircraft both flew much longer stages. The former, which were operated by B.O.A.C., were employed on routes from London to Johannesburg, Colombo, Singapore and Tokyo, while the latter, belonging to Transport Command, Royal Air Force, were flown from the U.K. to Singapore, with very occasional flights to Africa, Australia or Christmas Island; most of these were training flights. The flight pattern was, therefore, rather different from that of the B.E.A. Comets, as the proportion of cruise was greater, and the cruise altitude higher. The turbulence experienced was also more representative of tropical than of temperate conditions, so altogether a comparison between the 1 and 2 on the one hand and the 4 on the other cannot be expected to be very revealing.

3 METHODS OF ANALYSIS AND PRESENTATION

3.1 Method of smoothing

The counts were read and smoothed as described in the earlier paper¹ up to the point of finding the geometric mean of the counts at the positive and negative values of the same g level, and doubling. This is the best estimate of the total number of counts at a given g level irrespective of sign, which the instrument would record were it not subject to instrument error. This quantity (referred to in future for convenience as "the double G.M.") is regarded as the fundamental unit and all operations are carried out on it. Consequently, in aggregating counts over time or aircraft, the double G.M.'s are summed directly, rather than the original counts summed and the double G.M. of the totals found.

Since the total number of counts is comparatively small, there is an appreciable number of occasions on which no counts are recorded during one month at the 0.55g increment level, usually for the negative increment. Because of these low counts, any pattern shown by the results at this g level cannot be relied upon by itself, and is of use only to add a little more weight to a pattern already shown by counts at the 0.25g increment level. However, if we wish to use results at this level at all, it is preferable to avoid gaps, and so a method of estimating a value other than zero has to be sought.

Several methods based on straight line extrapolation of log counts per hour were therefore applied to readings from one aircraft chosen at random, and the results compared; the one chosen for use in this report gave results which fell in the middle of the range and was also arithmetically the simplest to apply.

3.2 Method of reducing counts to counts per hour

The quantity used in the previous paper¹ for the diagram showing the annual variation was counts of crossings of an acceleration level per hour, rather than miles per gust as is generally used in the series of papers on gust analysis by means of the Counting Accelerometer. The justification for this is that the Fatigue Load Meter does not record speed or altitude, and readings of counts are made at irregular intervals, during which a number of flights will probably have been made, under different conditions. To attempt to convert into miles per count, still more into miles per gust, would therefore involve introducing many assumptions about average speeds in each condition of flight. Each such assumption of course reduces the credibility of the final figure. This quantity of counts per hour is therefore retained in the present paper as being the most suitable for the purpose in hand.

Now we encounter a serious difficulty. The flight times taken from the aircraft log represent total flying hours for the period; the altitude switch operates no time clock, so the proportion of time spent above and below 20,000 ft is unknown. It is therefore impossible to calculate counts per hour directly, and we must seek ways of circumventing this difficulty and obtaining the best possible estimate of counts per hour.

One way is to analyse the schedules and flight patterns of the Comets flown by B.E.A., and arrive at an average time spent above and below 20,000 ft. Such an analysis has been carried out by de Havillands, and figures provided by them in a private communication show that 31% of total flying time is spent below 20,000 ft and 69% above 20,000 ft. (It is of interest that the proportion of flying time spent below and above 21,500 ft by Comet 1 aircraft operated by B.O.A.C. was found to be 24% and 76%, and 13% and 87% for the Comet 2 operated by Transport Command, using figures published elsewhere.) Using these partial flying times we can then get estimates of the counts per hour for the various conditions, E_1 above 20,000 ft, E_2 below 20,000 ft, and E_3 covering all altitudes (from aircraft with no altitude switch).

Since the removal of the altitude switch occurred late in the period originally covered by this Note, the estimate of average counts per hour during total flying time was based on a rather low number of counts and hours; an appreciable amount of additional data has been received since the first draft of the Note was put in hand. It seemed, therefore, desirable to obtain a further estimate of this quantity from information recorded during part of the flight only, if this should be possible. Several methods were investigated, and estimates obtained which showed fair agreement over a considerable number of months; but it was finally decided to reject most of these on account of complication or doubtful theoretical foundation, and only two estimates are presented here, one assuming fixed proportions of flying time being spent above and below 20,000 ft, and one completely independent of any such assumptions.

The notation employed is to denote the number of counts by C , and the flying time by T ; subscript letters are used to denote the condition of flight, x referring to information collected only above 20,000 ft, y to information below 20,000 ft, and z to information collected at all altitudes. Thus, the estimates referred to above are given by $E_1 = C_x/0.69 T_x$, $E_2 = C_y/0.31 T_y$, $E_3 = C_z/T_z$. We have, therefore, if we wish to combine information collected above and below 20,000 ft, that the total counts recorded are $C_x + C_y$, and the total flying time during which recording is taking place is $0.69 T_x + 0.31 T_y$; so we can calculate an estimate of average counts per hour over all altitudes $E_4 = (C_x + C_y)/(0.69 T_x + 0.31 T_y)$. Alternatively, we can say that in total flying time T the expected number of counts above 20,000 ft would be $T (C_x/T_x)$ and below 20,000 ft $T (C_y/T_y)$; the total number of counts would therefore be $T (C_x/T_x + C_y/T_y)$, and the overall counts per hour covering all altitudes would be $E_5 = C_x/T_x + C_y/T_y$. This gives us altogether three estimates of rates of counting irrespective of altitude.

One of the rejected methods referred to above used the number of landings as a base instead of the number of flying hours. It may be of interest to remark that periodically (mainly in March or April), the number of hours per landing falls sharply from a normal value of about 1.6 or 1.7 to 1.2 or 1.3, and once as low as 0.7; this effect occurs independently of the setting of the altitude switch in an aircraft. It is presumably due to the use of the aircraft for crew training, refresher courses, and so on. Obviously using the number of landings as a base for finding rates of counting would give false maxima in the spring.

3.3 Method of tabular presentation

The tabular presentation of the results for the Comet 4 is similar to that used in the previous paper¹, as far as may be arranged. Thus, Table 1 shows the successive difference between readings of counts, flying hours and landings on the original Data Sheets, against the date on which the readings were made, for all aircraft separately. Table 2 gives the smoothed readings, i.e. the counts, landings, and flying hours estimated to be recorded in each calendar month. Table 3 arranges these quantities under monthly headings, and calculates the double G.M.'s for the 0.25g and 0.55g increment levels. Since the counts of any one kind are so few, analysis of individual aircraft is carried no further, and the double G.M.'s are summed over aircraft for each year and for all years, values corresponding to above 20,000 ft, below 20,000 ft, and over all altitudes being summed separately. These totals are then transferred to Table 4, still arranged under months, and the estimates E_1 to E_5 as defined above are calculated.

Although the data from the Comet 1 and 2² cover a much shorter period of time than for the Comet 4B, the original readings from the films constitute a considerable bulk of matter. To analyse these data on the same basis as has been done for the 4B would involve either a prohibitive amount of man-hours of labour, or the preparation and testing of a special DEUCE programme; as in the event there would be insufficient final material to yield a reliable seasonal variation, it is thought better to accept it as it is, and merely derive

estimates for counts per hour at different altitudes and conditions of flight. The data are therefore aggregated over aircraft and time, and the resulting counts at $\pm 0.23g$ and $\pm 0.52g$ and corresponding flying hours are listed in Table 5 against altitude (above and below 21,500 ft or at all altitudes) and condition of flight (climb and descent, cruise, or both conditions aggregated) and the double G.M.'s calculated. The counts per hour are then found and listed in Table 6. The data for the Comet 4B are also summed over all months and years for the three altitude conditions, and the estimates E_1 to E_5 calculated and listed for purposes of comparison. (It should be remembered, however, that for the Comet 1 and 2 the recording over all altitudes is the sum of that above and below 21,500 ft, while for the Comet 4B the three altitude conditions are all separate recordings.) Finally, the overall counts per hour for the Viscount summed over all aircraft, months and years are quoted for comparison. It should be remembered that at typical speeds, altitudes and weights the same acceleration level corresponds to a rather higher gust velocity on the Viscount than on the Comet. Thus, at a speed of 200 kt A.S.I., an altitude of 20,000 ft and a weight of 50,000 lb an acceleration of $0.25g$ on a Viscount requires a vertical gust velocity of slightly over 8 ft/sec, while on a Comet at 200 kt A.S.I., 25,000 ft, and 100,000 lb the same acceleration is caused by a gust of about $7\frac{1}{4}$ to $7\frac{1}{2}$ ft/sec, depending on the Mark of aircraft.

3.4 Method of graphical presentation

The results which can usefully be shown graphically are much less extensive for the Comet 4B than for the Viscount; they consist only of the values of counts per hour estimated in the five ways described above, aggregated from all aircraft, each estimate shown in the same ordinate band both in extended form for each month in successive years, and also summed for corresponding months in all years. This is done in four diagrams. Fig. 1 shows the estimate of counts per hour at the $\pm 0.25g$ increment level, and Fig. 2 at the $\pm 0.55g$ increment level; in both cases estimates E_1 and E_2 are on sheet (a), and E_3 , E_4 and E_5 on sheet (b).

As a matter of interest, and also a check on the steadiness of gathering readings, the flying time is plotted out in Fig. 3; the hours flown per month are shown separately for aircraft recording above 20,000 ft, below 20,000 ft, and over all altitudes, for successive years. The flying times are not plotted for individual months summed over all years; the removal of the switch from the aircraft took place over a sufficient number of months to render such a curve misleading. For ease of comparison of Comet 4B with Viscount, counts per hour at both acceleration levels are reproduced in Fig. 4 for both aircraft over the same period of time; the particular estimate chosen for Comet 4B is E_5 , which does not depend on any assumption regarding flight time, as E_4 does.

4 DISCUSSION OF RESULTS

4.1 General

The total period over which records have been collected from the Comet 4B extends over nearly four years. As the method of collecting data was changed half way through this time, in that the use of the altitude switch was

discontinued, we have at best barely two years of consistent recording. This is the minimum that would be required to suggest a seasonal variation, and, however closely the pattern of the two years might agree, it would obviously be preferable to have a longer period to confirm the agreement; similarly, failure to show a pattern would require longer to be definite unless results were very hazardous. The conclusions that are reached, therefore, cannot be regarded as fully established.

As noted above, the final estimate of counts per hour were plotted out for successive years, as well as being summed to give a graph spanning one year only; when the total period covered is comparatively short, it is desirable to examine both curves to ensure that nothing is missed.

4.2 Variation of flying time

Before entering on a detailed discussion of the accelerations recorded, it is as well to look at the flying time as plotted in Fig. 3 to ensure that nothing is happening which may bias the final result. It would appear that there is no reason to worry, for, although there is variation in flying time from one month to another, it is of comparatively small magnitude when compared with the average. Apart from the beginning and end, there are no occasions when an unusually small sample might have a disproportionate effect on the curves of counts per hour.

One interesting point is the great similarity between the curves of flying time for aircraft which record only above and below 20,000 ft; naturally the curve representing their sum will also be similar, though it is smoother than either of the first two. This confirms our belief that there is no difference in the way that the various aircraft were operated, and so results gathered by them can be regarded as samples of the accelerations experienced by all Comet 4B aircraft operated by B.E.A.

It will also be noted that there is a pronounced peak in the summer, as was previously shown¹ in the case of the B.E.A. Viscount; one would, of course, expect maximum flying activity to occur in the main holiday months.

4.3 Variation of acceleration counts per hour on Comet 4B

We now come to discuss the annual variation of the acceleration counts per hour, and it would seem best to look first at the estimates of the variation of readings, irrespective of altitude, and later to investigate the effect of difference of altitude. There is a strong resemblance between the curves for E_4 and E_5 for all years successively, at the lower acceleration level (Fig. 1(b)) as we should expect since they are derived from the same data, though there are differences in detail; the curves for all years summed show only general similarity. The curve for E_3 for all years successively looks to be of a quite different character; it overlaps E_4 and E_5 for only a few months, unfortunately, but over this short section it bears no particular resemblance to the other two curves. The curve for all years summed is also less like those for E_4 and E_5

than they are to each other, and the values of E_3 are almost without exception noticeably less than those for E_4 and E_5 . It appears then, that either we have too few data to be reliable, or the methods of combining data obtained above and below 20,000 ft are inadequate - it would appear most unlikely that the mere removal of the altitude switch from the installation while leaving the accelerometer unchanged would materially alter the character of the data collected. It is also possible that the years 1962 and 1963 were less turbulent than 1960 and 1961, or that the method of operating the aircraft had changed.

When we look at the curves in Fig. 2(b) which present similar information at the higher acceleration level, we get the somewhat surprising result that, though they have sharper peaks and troughs, as one expects of curves based on a smaller amount of information, and as was found previously in the case of the Viscount, they still show a fairly close resemblance to each other, both for all years successively and for all years summed. The curve for E_3 is much closer to those for E_4 and E_5 where they overlap than was the case at the lower acceleration level.

However, whichever estimate we accept as the best founded, at whichever acceleration level, we can find no trace of a pattern which is repeated with a period of one year. There is therefore no evidence of any seasonal variation in the rate of acceleration counts recorded by Comet 4B aircraft operating in Europe. It seems a fair guess that this is at any rate partly due to the presence of the C.C.W.R. set.

When we examine in Figs. 1(a) and 2(a) the curves for E_1 and E_2 , the estimate of counts per hour recorded above and below 20,000 ft respectively, we find that there is no recognisable pattern repeated above 20,000 ft, though there is some appearance of repetition of pattern below 20,000 ft; there is no resemblance between the curves. It must be remembered that the flying below 20,000 ft will consist very largely of climb and descent, while that above 20,000 ft will contain a large proportion of cruise, but, even so, if there was a seasonal variation in the rate of counting accelerations we should expect it to be visible in both conditions, although the scale would differ. The rate of counting recorded below 20,000 ft is very much greater than that recorded above, as we should expect. The actual difference may be exaggerated if the proportion of time spent above and below 20,000 ft is not correct, but the effect of using an inaccurate factor of proportionality between the flying times spent above and below 20,000 ft should be of scale only, provided that the pattern of flying on different routes does not change materially from month to month. So again we are led to conclude that there is no evidence to suggest any annual variation in the rate of counting accelerations on the Comet 4B.

4.4 Comparison between the Comet 4B and the Viscount

Since the Comet 4B covers practically the same geographical area as the Viscount, and flies under similar conditions, though at a higher altitude and perhaps not on the shorter routes, it should be instructive to compare results gathered over the same period from the two aircraft, but it is necessary first to lay the groundwork for comparing aircraft of different types.

The determination of gust velocities from counts recorded by Counting Accelerometers is based on work by Zbrozek⁴; using his methods and graphs, the factor gust velocity/acceleration increment can be calculated for any aircraft, for different values of aircraft weight, speed, and attitude. As a rough test the gust speeds corresponding to an acceleration of 0.25g were accordingly found for the four aircraft discussed in this Note at typical cruising speeds and altitudes, at weights slightly less than the maximum T.O. weight. It was seen that these were almost identical for the three Comets, at just over $7\frac{1}{2}$ ft/sec; it is therefore permissible within the accuracy required for our purposes, to compare directly counts per hour recorded by these aircraft. The Viscount, on the other hand, required a gust speed of about $8\frac{1}{2}$ ft/sec to produce an acceleration of 0.25g, showing that if a Comet and a Viscount at equivalent points on the flight plan recorded the same accelerations the Viscount would actually be flying in the rougher air.

Fig. 4 enables this comparison to be made for the two aircraft for the period March 1960 to August 1961, again using E_5 as the estimate of counting for the Comet. One cannot say that there is much similarity between the curves for the Comet and the Viscount; the Comet curve is noticeably less angular, at least at the lower acceleration level. If we calculate the means (m) and root mean square deviations (r) for counts per hour per month in this period, we get the following figures:-

	<u>Comet 4B</u>		<u>Viscount</u>	
	<u>0.25g</u>	<u>0.55g</u>	<u>0.25g</u>	<u>0.55g</u>
m	3.54	0.064	3.61	0.074
r	0.67	0.029	0.75	0.023

This shows that the Comet experiences accelerations which are slightly lower than the Viscount does, though perhaps not significantly so, and as similar accelerations represent an appreciably lower gust velocity on the former aircraft than on the latter, it is clear that the Comet does encounter smoother air than the Viscount. (It is assumed that the two aircraft fly at a similar altitude, namely somewhat over 20,000 ft, but if the Comet were assumed to fly at say 30,000 ft the result would still be to require a lower gust velocity for the same acceleration increment.)

If we neglect the variation of turbulence from year to year, and compare accelerations recorded on the Comet 4B irrespective of altitude in each month summed over all years of operation with similar data recorded on the Viscount, we find that with only one exception, namely December at the 0.55g level, higher accelerations are recorded on the Viscount, and often appreciably higher accelerations. This means that the Viscount normally experienced considerably rougher air than the Comet 4B. Had there been a seasonal variation on the Comet, the difference in air might have been explained by difference in altitude; but when the air encountered by the Comet is both smoother and less variable than that encountered by the Viscount, it does seem that we can fairly conclude that when a cloud collision warning radar set is operated, an aircraft does in fact manage to avoid a considerable amount of turbulence.

4.5 Variation of acceleration counts per hour for Comet 1 and Comet 2

We can derive considerable assistance towards the solution of the problem of the influence of altitude if we disregard any possible effect of seasonal variation and sum the readings for the Comet 1, Comet 2 and Comet 4B over all months and years to derive as large a body of data as possible. (The discussion of these data unfortunately involves repetition of some points already made in a fuller review of the Comet 1 and 2², but it is felt to be necessary for the sake of comparison with Comet 4B and Viscount.) For the Comet 1 and 2 it has been possible to make an attempt to separate out records for climb and descent, and records for cruise - the criterion for climb and descent was, a change in altitude of 2,000 ft or more in the course of the time interval between exposures of the films in the Compound Counting Accelerometer. Inevitably some records classified as cruise will contain some climb and descent, and records classified as climb and descent will contain cruise, but by and large we do not expect to be involved in any serious errors. The results of this summation are given in Table 6, as detailed in para 3.3.

Let us first look at the broad overall picture of accelerations recorded. It is evident that the Comet 1 on the whole flies through much rougher air than either the 2 or the 4B. The Comet 4B also appears to experience more accelerations during the whole flight than does the 2; yet fewer accelerations per hour are recorded by it either above or below 20,000 ft than by the 2. This apparent anomaly is explained by the flight plan being different, the 4B having a much larger proportion of hours flown below 20,000 ft, where the rate of recording accelerations is considerably higher, and when we combine readings above and below 20,000 ft to obtain the overall figure we are taking a weighted mean. This does show how careful we must be to compare like with like; overall results on Comet 2 and 4B are not really comparable because of their different flight pattern. We are on reasonably safe ground, however, in comparing Comet 1 with Comet 2, and Comet 4B with Viscount. This latter comparison using previously published results¹ for the Viscount which are quoted in Table 6 shows a count frequency of 2.8 (E_3) against 3.4 at the 0.25g level and 0.06 against 0.076 at the 0.55g level, in other words a distinctly higher rate of counting for the Viscount, as found previously in para 4.4 over a selected period. But of course the same acceleration level corresponds to a higher gust level for the Viscount. So in each of two comparisons we have the aircraft which is not fitted with C.C.W.R. encountering the rougher air, though we have previously suggested that for the Comet 4B - Viscount comparison the effect of cruising altitude may also be important.

Secondly let us take up the point mentioned in para 4.4. and compare results gathered at different altitudes. For both Comet 1 and Comet 2 we find that in climb and descent, in cruise, and in all flight irrespective of condition, accelerations recorded in the lower altitude band are much more frequent than those recorded in the higher; this holds for Comet 4B for all flight irrespective of condition - we have no further breakdown of the figures. However, we find in Comet 2, as in almost every aircraft carrying a Counting Accelerometer which has been reported on, that the frequency of accelerations is higher in climb and descent than in cruise irrespective of altitude, and that in the lower altitude band there is much more climb and descent than cruise, while the position is reversed at the higher altitude. This forms a consistent picture, and so it is reasonable to expect that this pattern may be also found

on Comet 4B. The Comet 1 does not quite follow this pattern, as at the higher altitude more counts per hour are recorded in cruise than in climb and descent; at the lower altitude cruise the same thing happens, but the hours are too few to constitute a reliable sample.

The normal reasons given for the effect noted in the last paragraph, that more accelerations are recorded in climb and descent than in cruise, are two in number; first that an aircraft tends to climb above bad weather (and so climb tends to be associated with turbulence) and second that flight is more closely controlled in climb and descent, so restricting the pilot's ability to take evasive action. The latter argument is more applicable to the Comet when below about 20,000 ft and the former when above that altitude. The results for the Comet 1 are somewhat anomalous, but we suspect that during low level cruise an unusually large number of manoeuvres may have occurred, or that possibly on some occasions the aircraft had to stand-off for a long time in bad weather, thus upsetting the normal balance. However, the figures for all altitudes combined conform to the general rule.

5 CONCLUSIONS

5.1 From an examination of the data collected from Fatigue Load Meters installed in Comet 4B aircraft operated on European routes by B.E.A., and from comparisons both with similar data for the Viscount and with data from Counting Accelerometers installed in Comets 1 and 2, the following conclusions can be drawn:-

(a) The equipment of an aircraft with Cloud Collision Warning Radar appears to succeed in enabling it to avoid an appreciable amount of atmospheric turbulence. The proportionate decrease in acceleration frequency recorded is slightly greater at the higher acceleration level.

(b) No consistent seasonal variation of acceleration loads can be identified on the Comet 4B, in contradistinction to the Viscount. This is no doubt largely due to the use of the C.C.W.R., as the convectional disturbances which are thereby avoided are mainly seasonal in occurrence; but it may also be true that there is less seasonal variation at higher than at medium altitudes.

(c) Aircraft equipped with C.C.W.R. still show the normal tendency to encounter more turbulence at lower altitudes than higher up, and also in climb and descent than in cruise. These two effects are clearly seen in the Comet 2, but are difficult to disentangle in the Comet 4B.

REFERENCES

<u>No.</u>	<u>Author</u>	<u>Title, etc.</u>
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2	Aplin, Judy, E.	Atmospheric turbulence encountered by Comet 2 aircraft carrying Cloud Collision Warning Radar. A.R.C. C.P.713, June, 1963.
3	-	Instruction Leaflet No. Structures 201 for R.A.E. fatigue meters. Type 1, 2 and 3.
4	-	Instruction Leaflet No. Structures 202 for Accelerometer Counting Type IT 6-1 Mks. 1, 2, 2A, 2B, 3, 3E, 4, 4A, 4B and 4C. November 1954.
5	Zbrozek, J.K.	Gust alleviation factor. Parts 1, 2 and 3. A.R.C. R&M 2970. August, 1953.

TABLE 1 - Acceleration counts for B.E.A. Comet 4B

Aircraft: G-APMA

Meter Number: IB/543/C/59

Recording: Below 20,000 ft, to 1.10.61.

All altitudes after 1.10.61.

Date	Aircraft hours in period	Landings in period	Counts at 0.05g level	Counts at 0.45g level	Counts at 0.75g level	Counts at 1.25g level	Counts at 1.55g level	Counts at 1.95g level
22. 3.60	0	0	0	0	0	0	0	0
10. 4.60	89	47	0	0	59	160	1	1
5. 5.60	103	287	0	0	187	829	25	7
1. 6.60	111	60	0	1	54	150	2	0
19. 6.60	125	64	0	1	84	235	5	1
7. 7.60	86	46	0	1	45	152	4	0
26. 7.60	123	73	0	2	124	324	4	0
14. 8.60	124	70	0	3	133	317	6	0
20. 8.60	98	56	0	1	73	172	4	0
21. 9.60	108	59	0	0	90	261	7	0
10. 10.60	121	69	0	3	146	282	3	0
29. 10.60	113	65	0	0	33	169	2	0
6. 11.60	18	8	0	0	3	17	1	0
6. 12.60	86	46	0	0	96	190	5	0
29. 12.60	120	66	0	1	70	244	2	0
26. 1.61	132	71	0	1	92	238	6	0
26. 2.61	57	32	0	0	26	90	1	0
14. 3.61	96	177	0	0	54	386	9	0
3. 4.61	143	162	0	3	131	538	16	0
16. 4.61	84	52	0	2	108	264	7	0
9. 5.61	135	74	0	0	102	289	10	0
29. 5.61	123	68	0	1	61	222	2	0
14. 6.61	121	66	0	0	61	215	3	0
27. 6.61	88	52	0	1	65	173	3	0
8. 7.61	82	48	0	2	72	212	0	0
31. 7.61	127	80	0	0	38	352	9	0
28. 8.61	193	115	0	1	196	391	7	0
21. 9.61	156	88	0	1	55	210	6	0
1. 10.61	Altitude switch removed							
5. 11.61	91	52	2	12	109	188	10	0
10. 12.61	190	115	0	1	129	321	2	0
30. 1.62	181	99	2	10	116	321	8	0
27. 2.62	175	105	0	7	200	504	17	0
28. 3.62	170	244	1	3	149	544	10	0
27. 4.62	173	93	0	3	179	438	13	0
13. 5.62	107	56	0	2	89	239	1	0
7. 6.62	157	85	0	1	90	220	7	0
25. 6.62	140	79	0	3	90	266	10	0
16. 7.62	158	88	1	3	107	284	5	0
6. 8.62	182	97	1	14	188	426	16	0

TABLE 1 (Continued)

Aircraft: G-APMA (Contd)

Meter Number: IB/543/C/59

Recording: Below 20,000 ft, to 1.10.61.

All altitudes after 1.10.61.

Date	Aircraft hours in period	Landings in period	Counts at 0.05g level	Counts at 0.45g level	Counts at 0.75g level	Counts at 1.25g level	Counts at 1.55g level	Counts at 1.95g level
26. 8.62	140	83	0	1	122	307	7	0
20. 9.62	157	91	0	0	102	281	4	0
15.10.62	161	90	0	1	75	452	6	0
15.11.62	182	111	3	14	239	302	29	0
17.12.62	165	100	0	1	83	286	3	0
17. 2.63	160	145	0	0	89	245	7	0
14. 3.63	165	96	0	2	110	253	4	0
8. 4.63	171	99	0	7	197	358	9	0
2. 5.63	176	107	0	4	201	370	4	0
22. 7.63	587	344	0	8	429	1019	20	0
15. 8.63	161	98	0	6	133	350	3	0
14. 9.63	176	104	0	2	156	308	12	0
26. 9.63	192	115	0	6	157	339	15	0
Total	7279	4797	10	136	5797	15,703	377	9

Aircraft: G-APMB

Meter Number: IB/542/C/59

Recording: Below 20,000 ft to 18.1.62.

All altitudes after 18.1.62

3. 1.60	0	0	0	0	0	0	0	0
14. 2.60	117	74	0	1	75	276	3	1
13. 3.60	75	45	0	0	49	179	2	0
6. 4.60	93	200	0	0	106	594	3	0
28. 4.60	111	54	0	0	41	147	1	0
18. 5.60	91	44	0	1	24	91	1	0
29. 5.60	86	46	0	0	33	152	2	0
20. 6.60	134	79	0	4	116	331	7	1
10. 7.60	116	68	0	1	77	294	1	0
24. 7.60	116	66	0	2	88	284	3	0
14. 8.60	114	68	0	2	96	260	7	1
29. 8.60	107	67	0	0	50	193	3	0
12. 9.60	118	68	0	0	40	212	0	0
2.10.60	144	86	0	2	76	310	4	0
25.10.60	107	60	1	1	26	189	3	0
13.11.60	94	54	0	1	47	184	0	0
4.12.60	117	62	0	1	70	186	9	0
1. 1.61	109	66	0	4	92	300	6	1
18. 1.61	105	60	0	1	63	205	6	0
12. 2.61	137	140	0	0	191	924	10	0
12. 3.61	81	41	0	6	133	268	14	0
21. 3.61	60	34	0	0	39	130	4	0

TABLE 1 (Continued)

Aircraft: G-APMB (Contd)

Meter Number: IB/542/C/59

Recording: Below 20,000 ft to 18.1.62.

All altitudes after 18.1.62

Date	Aircraft hours in period	Landings in period	Counts at 0.05g level	Counts at 0.45g level	Counts at 0.75g level	Counts at 1.25g level	Counts at 1.55g level	Counts at 1.95g level
10. 4. 61	117	57	0	0	49	170	0	0
1. 5. 61	124	209	0	0	93	428	12	0
9. 5. 61	51	33	0	0	31	122	0	0
6. 6. 61	135	82	0	1	54	221	0	0
23. 6. 61	105	212	0	2	72	408	2	0
10. 7. 61	105	63	0	0	58	226	1	0
17. 7. 61	47	30	0	0	71	180	3	0
24. 8. 61	181	102	0	5	125	355	6	0
18. 9. 61	188	103	0	0	77	343	4	0
12. 10. 61	180	114	0	2	78	314	3	0
5. 11. 61	148	86	0	3	46	184	7	1
22. 12. 61	143	84	0	0	60	221	4	1
18. 1. 62	Altitude switch removed							
7. 2. 62	129	71	0	0	54	203	4	0
19. 3. 62	177	98	0	1	130	420	16	0
18. 4. 62	198	115						
14. 5. 62	189	99	1	3	136	578	7	0
20. 5. 62	41	23	0	0	21	107	1	0
19. 6. 62	144	86	0	3	82	292	5	1
5. 7. 62	162	85	0	2	94	322	8	0
1. 8. 62	190	110	0	2	140	434	11	0
22. 8. 62	174	99	0	3	103	301	4	0
16. 9. 62	142	80	0	2	53	213	4	0
8. 10. 62	154	95	0	5	74	261	7	0
13. 11. 62	189	106	0	1	48	283	1	0
14. 12. 62	183	112	1	8	195	502	15	0
8. 1. 63	134	75	0	1	140	499	11	0
20. 2. 63	118	76	0	0	51	248	1	0
18. 3. 63	178	173	0	0	58	233	2	0
16. 4. 63	188	256	0	11	126	362	13	0
Total	6446	4416	3	82	3856	14,189	241	7

TABLE 1 (Continued)

Aircraft: G-APMC

Meter Number: IB/265/C/58

Recording: Below 20,000 ft to 1.3.62.

All altitudes after 1.3.62.

Date	Aircraft hours in period	Landings in period	Counts at 0.05g level	Counts at 0.45g level	Counts at 0.75g level	Counts at 1.25g level	Counts at 1.55g level	Counts at 1.95g level
12. 6.60	0	0	0	0	0	0	0	0
5. 7.60	120	65	0	0	99	144	0	0
21. 7.60	109	59	0	2	105	119	4	0
7. 8.60	130	73	0	3	82	139	2	0
30. 8.60	112	65	0	2	74	122	5	0
14. 9.60	121	69	0	0	64	113	0	0
29. 9.60	130	75	0	12	119	186	6	0
16. 10.60	102	56	0	8	130	185	16	1
20. 11.60	121	66	0	0	109	159	3	0
12. 12.60	86	51	0	0	67	118	5	0
23. 12.60	47	28	0	3	64	126	2	1
1. 2.61	105	61	0	2	79	94	1	0
21. 2.61	124	66	0	1	147	200	4	0
13. 3.61	111	57	0	0	66	95	2	0
26. 3.61	77	40	0	0	50	90	1	0
25. 4.61	104	60	0	1	55	97	1	0
11. 5.61	125	79	0	7	131	165	8	1
28. 5.61	133	69	0	0	68	130	3	0
11. 6.61	102	54	0	2	74	79	0	0
3. 7.61	103	66	0	1	104	156	2	0
24. 7.61	120	69	3	23	122	184	25	2
10. 8.61	130	65	1	8	124	171	7	0
6. 9.61	166	95	1	8	151	195	9	1
5. 10.61	189	107	0	1	126	205	2	0
8. 10.61	24	12	0	3	30	73	4	0
18. 11.61	143	83	0	3	90	130	3	0
4. 1.62	194	110	0	0	87	153	0	0
31. 1.62	189	112	0	7	150	221	3	0
20. 2.62	93	56	0	0	77	145	1	0
1. 3.62	Altitude switch removed							
3. 4.62	78	44	0	0	49	72	2	0
9. 4.62	34	18	0	1	42	56	1	0
5. 6.62	108	62	0	1	112	133	3	0
1. 7.62	185	109	0	7	211	257	5	0
23. 7.62	178	103	0	6	171	240	4	0
12. 8.62	134	75						
6. 9.62	165	88	0	6	280	408	6	0
26. 9.62	140	83	0	3	154	207	3	0
18. 10.62	152	85	0	1	138	178	3	0
20. 11.62	184	104	0	5	202	243	6	0
15. 12.62	144	91	0	1	156	256	7	0
31. 12.62	55	30	0	1	74	59	2	0

TABLE 1 (Continued)

Aircraft: G-APMC (Contd)

Meter Number: IB/263/C/58

Recording: Below 20,000 ft to 1.3.62.

All altitudes after 1.3.62

Date	Aircraft hours in period	Landings in period	Counts at 0.05g level	Counts at 0.45g level	Counts at 0.75g level	Counts at 1.25g level	Counts at 1.55g level	Counts at 1.95g level
18. 2.63	168	98	0	5	263	342	15	0
14. 3.63	165	117	0	1	141	163	6	0
11. 4.63	187	167	0	0	212	329	0	0
6. 5.63	184	110	0	3	149	205	0	0
23. 6.63	352	221	0	0	331	449	2	0
12. 8.63	391	236	0	0	197	376	0	0
3. 9.63	190	112	0	0	116	214	0	0
Total	6504	3821	5	138	5650	8169	184	6

Aircraft: G-APMD

Meter Number: IB/214/C/57

Recording: Above 20,000 ft to 27.12.61.

All altitudes after 27.12.61.

25. 3.60	0	0	0	0	0	0	0	0
24. 4.60	132	67	0	1	40	48	0	0
11. 5.60	142	74	0	0	15	18	1	0
26. 5.60	118	500	0	0	36	59	6	0
5. 6.60	56	27	0	1	14	15	0	0
28. 6.60	115	63	0	0	7	7	0	0
12. 7.60	111	67	0	0	4	8	0	0
27. 7.60	125	72	0	0	8	14	0	0
14. 8.60	139	78	0	2	39	31	1	0
5. 9.60	122	70	0	0	31	38	1	0
19. 9.60	114	66	0	0	17	16	3	0
5. 10.60	96	60	0	3	53	62	0	0
23. 10.60	119	68	0	2	94	106	3	0
23. 11.60	135	73	0	4	62	65	2	0
13. 12.60	74	41	0	4	66	55	3	0
2. 1.61	110	59	2	21	202	222	31	1
31. 1.61	95	54	0	0	23	30	1	0
15. 2.61	96	51	0	0	43	37	1	0
4. 3.61	134	71	0	0	23	41	0	0
29. 3.61	120	289	0	1	31	33	2	0
16. 4.61	140	83	0	1	50	49	0	0
2. 5.61	110	65	0	0	6	13	0	0
16. 5.61	93	60	0	2	48	66	0	0
4. 6.61	139	81	0	2	95	74	3	1
29. 6.61	88	45	0	0	17	17	1	0
17. 7.61	119	76	0	0	7	15	0	0

TABLE 1 (Continued)

Aircraft: G-APMD (Contd)

Meter Number: IB/214/C/57

Recording: Above 20,000 ft to 27.12.61.

All altitudes after 27.12.61.

Date	Aircraft hours in period	Landings in period	Counts at 0.05g level	Counts at 0.45g level	Counts at 0.75g level	Counts at 1.25g level	Counts at 1.55g level	Counts at 1.95g level
2. 8.61	135	77	0	0	16	18	1	0
28. 8.61	163	95	0	0	25	22	0	0
24. 9.61	196	110	0	0	24	22	0	0
31.10.61	198	115	0	1	45	54	0	0
27.11.61	165	98	0	0	35	31	0	0
27.12.61	Altitude switch removed							
13. 1.62	160	90	0	2	56	67	3	0
13. 2.62	146	78	0	3	151	279	5	0
25. 2.62	53	35	0	2	97	179	2	0
4. 4.62	162	391	0	3	243	927	32	3
26. 4.62	185	111	0	5	233	368	9	1
21. 5.62	169	91	0	7	189	340	12	0
11. 6.62	159	87	0	3	222	327	8	0
1. 7.62	131	72	0	1	134	281	4	0
29. 7.62	172	96	1	9	208	356	6	1
20. 8.62	161	93	0	6	199	375	6	0
13. 9.62	173	99	1	12	175	300	8	0
7.10.62	162	89	0	2	138	220	2	0
13.11.62	173	105	0	0	141	247	1	0
8. 1.63	149	86	0	1	193	266	7	0
5. 2.63	173	92	0	5	162	278	9	0
6. 3.63	182	112	0	1	136	207	6	1
3. 4.63	178	207	0	4	224	458	16	0
28. 4.63	199	114	0	6	32	194	5	0
23. 7.63	671	419	0	10	410	955	17	0
11. 8.63	189	117	0	2	125	277	5	0
21. 9.63	199	121	0	3	121	320	6	0
Total	7645	5460	4	132	4765	8537	229	8

TABLE 1 (Continued)

Aircraft: G-APME

Meter Number: IB/584/C/59

Recording: Above 20,000 ft

Date	Aircraft hours in period	Landings in period	Counts at 0.05g level	Counts at 0.45g level	Counts at 0.75g level	Counts at 1.25g level	Counts at 1.55g level	Counts at 1.95g level
7. 5.60	0	0	0	0	0	0	0	0
2. 6.60	118	60	0	1	32	55	1	0
21. 6.60	117	66	0	0	29	34	0	0
26. 6.60	31	17	0	1	42	45	3	0
14. 7.60	106	60	0	0	14	42	1	0
2. 8.60	134	74	0	0	56	63	0	0
21. 8.60	136	80	0	0	94	115	0	0
8. 9.60	84	48	0	0	12	12	0	0
26. 9.60	121	70	0	5	54	89	0	0
12. 10.60	113	62	1	3	54	88	0	0
30. 10.60	92	56	0	0	37	52	0	0
24. 11.60	117	65	0	5	122	183	0	0
14. 12.60	74	41	0	0	29	44	0	0
8. 1.61	134	68	0	7	213	314	0	0
8. 2.61	115	60	0	4	36	46	0	0
16. 2.61	58	30	0	0	27	35	0	0
12. 3.61	132	363	0	1	26	42	0	0
6. 4.61	130	68	0	0	9	20	0	0
Total	1812	1288	1	27	886	1279	5	0

Aircraft: G-APME

Meter Number: IB/407/C/58

Recording: Above 20,000 ft to 22.3.62.

All altitudes after 22.3.62

18. 9.61	0	0	0	0	0	0	0	0
19. 10.61	163	96	0	9	171	160	24	3
23. 11.61	158	87	0	1	67	38	0	0
27. 12.61	192	106	0	2	68	54	3	0
21. 1.62	130	75	0	0	35	17	0	0
11. 2.62	105	63	0	1	33	23	1	0
11. 3.62	121	76	0	1	37	27	1	0
22. 3.62	Altitude switch removed							
6. 5.62	193	119	0	7	264	259	6	1
30. 5.62	161	82	0	2	126	175	4	0
18. 6.62	140	82	0	3	141	158	2	0
6. 7.62	109	67	0	2	163	173	2	0
22. 7.62	126	77	0	3	140	168	3	0
31. 8.62	179	105	0	10	253	280	8	1
19. 9.63	152	85	0	2	212	222	4	0
11. 10.63	176	109	0	7	219	254	13	0

TABLE 1 (Continued)

Aircraft: G-APME (Contd)

Meter Number: IB/407/C/58

Recording: Above 20,000 ft to 22.3.62.

All altitudes after 22.3.62

Date	Aircraft hours in period	Landings in period	Counts at 0.05g level	Counts at 0.45g level	Counts at 0.75g level	Counts at 1.25g level	Counts at 1.55g level	Counts at 1.95g level
1.11.63	142	80	0	2	119	115	3	0
9.12.63	198	111	0	4	216	202	11	2
3. 2.63	189	169	0	19	308	438	9	0
28. 2.63	152	207	0	1	132	162	0	0
28. 3.63	161	93	0	3	4.11	194	1	0
22. 4.63	173	108	0	1		244	2	0
15. 5.63	168	92	0	7	175	160	4	0
26. 5.63	96	57	0	2	83	82	1	0
31. 7.63	539	312	0	31	670	708	26	2
27. 8.63	195	117	1	17	370	378	27	2
16. 9.63	186	104	0	1	186	198	0	0
Total	4304	2679	1	138	4599	4889	155	11

Aircraft: G-APMF

Meter Number: IB/571/C/59

Recording: Above 20,000 ft

22. 5.60	0	0	0	0	0	0	0	0
14. 6.60	97	57	0	1	48	39	1	0
30. 6.60	127	68	0	0	17	22	0	0
17. 7.60	125	71	0	0	14	20	0	0
4. 8.60	114	62	0	1	53	41	1	0
20. 8.60	130	74	0	0	28	28	1	0
4. 9.60	95	57	0	1	69	59	2	0
27. 9.60	112	68	0	2	98	83	4	0
16.10.60	121	68	0	2	71	52	0	0
7.11.60	104	57	0	0	48	53	1	0
20.11.60	78	43	0	1	39	31	0	0
20.12.60	86	52	0	1	68	49	0	0
9. 1.61	82	52	0	1	41	35	1	0
5. 2.61	93	48	0	0	13	11	0	0
23. 2.61	111	141	0	0	31	34	0	0
9. 3.61	93	53	0	1	31	25	0	0
27. 3.61	101	62	0	1	52	32	2	0
17. 4.61	137	86	0	0	50	29	0	0
23. 4.61	32	18	0	0	20	28	2	0
1. 6.61	103	60	0	1	65	66	1	0
19. 6.61	132	216	0	2	79	86	1	0
5. 7.61	125	280	0	0	27	47	6	0

TABLE 1 (Continued)

Aircraft: G-APMF (Contd)

Meter Number: IB/571/C/59

Recording: Above 20,000 ft

Date	Aircraft hours in period	Landings in period	Counts at 0.05g level	Counts at 0.45g level	Counts at 0.75g level	Counts at 1.25g level	Counts at 1.55g level	Counts at 1.95g level
22. 7.61	133	75	0	3	109	104	7	0
9. 8.61	109	65	0	0	41	18	0	0
20. 8.61	84	51	0	0	26	25	0	1
25. 9.61	188	102	0	7	56	48	7	1
23.10.61	178	100	0	5	113	49	7	0
Total	2890	2086	0	30	1307	1114	44	2

Aircraft: G-APMG

Meter Number: IB/740/C/60

Recording: Below 20,000 ft to 19.11.61

All altitudes after 19.11.61

27. 7.60	0	0	0	0	0	0	0	0
16. 8.60	114	62	0	1	66	59	0	0
31. 8.60	111	62	0	0	74	57	0	0
18. 9.60	136	79	0	0	19	18	1	0
9. 10.60	136	76	0	1	100	91	1	0
2. 11.60	126	70	0	1	36	47	0	0
27. 11.60	88	62	0	0	28	20	0	0
18. 12.60	127	61	0	0	61	71	0	0
16. 1.61	114	65	0	0	52	163	1	0
9. 2.61	125	243	0	2	243	1028	11	0
1. 3.61	125	67	0	0	214	132	0	0
23. 3.61	134	79	0	2	76	181	5	0
13. 4.61	134	76	0	4	89	199	4	0
23. 4.61	51	32	0	3	60	85	2	0
17. 5.61	64	38	0	0	61	110	1	0
13. 6.61	109	58	0	1	37	121	2	0
28. 6.61	101	60	0	1	83	159	5	0
16. 7.61	134	82	0	2	68	194	2	0
1. 8.61	127	83	0	3	112	235	4	0
21. 8.61	162	100	0	1	128	276	4	0
3. 9.61	90	54	0	0	54	126	2	0
10. 10.61	183	104	0	3	39	231	7	0
12. 11.61	182	106	0	0	85	188	5	0
19. 11.61	Altitude switch removed							
27. 12.61	92	53	0	2	47	97	1	0
24. 1.62	146	86	0	3	163	246	0	0
18. 2.62	125	75	0	9	128	243	5	1

TABLE 1 (Continued)

Aircraft: G-APMG (Contd)

Meter Number: IB/740/C/60

Recording: Below 20,000 ft to 19.11.61

All altitudes after 19.11.61

Date	Aircraft hours in period	Landings in period	Counts at 0.05g level	Counts at 0.45g level	Counts at 0.75g level	Counts at 1.25g level	Counts at 1.55g level	Counts at 1.95g level
26. 3.62	187	112	0	2	205	393	10	0
23. 4.62	177	94	0	1	180	269	2	0
29. 5.62	152	76	0	0	99	187	2	0
17. 6.62	146	87	0	3	193	311	5	0
12. 7.62	126	70	0	2	133	214	6	0
2. 8.62	167	93	0	9	243	351	10	0
26. 8.62	176	97	0	3	205	303	5	0
16. 9.62	178	103	0	3	121	233	2	0
23. 9.62	60	38	0	0	45	68	1	0
22.10.62	147	81	3	11	136	208	14	0
25.11.62	183	115	2	10	271	369	6	0
31.12.62	180	118	0	9	261	376	15	0
29. 1.63	178	201	0	0	87	182	3	0
Total	5093	3218	5	72	4352	7841	144	1

Aircraft: G-ARGM

Meter Number: IB/762/C/60

Recording: Above 20,000 ft to 6.1.62.

All altitudes after 6.1.62

3. 5.61	0	0	0	0	0	0	0	0
22. 5.61	125	78	0	0	7	7	0	0
8. 6.61	125	77	0	0	18	33	0	0
25. 6.61	123	78	0	0	47	35	0	0
13. 7.61	127	77	0	0	29	44	0	0
30. 7.61	144	82	0	0	8	16	0	0
31. 8.61	193	111	0	0	46	45	0	0
28. 9.61	162	99	0	1	20	19	1	0
30.10.61	183	108	0	0	67	65	1	0
4.12.61	116	69	0	0	47	59	0	0
20.12.61	86	48	0	0	26	35	0	0
6. 1.62	Altitude switch removed							
8. 2.62	171	101	0	1	219	398	7	0
11. 3.62	172	96	0	1	157	343	9	0
5. 4.62	184	105	0	3	250	430	6	0
8. 5.62	213	114	0	0	170	342	6	0
30. 5.62	115	66	0	0	102	243	1	0
2. 7.62	182	98	0	4	166	316	8	0
27. 7.62	166	89	1	)	195	275	10	0
19. 8.62	183	110	0	) 13	157	400	1	0

TABLE 1 (Continued)

Aircraft: G-ARGM (Contd)

Meter Number: IB/762/C/60

Recording: Above 20,000 ft to 6.1.62.

All altitudes after 6.1.62

Date	Aircraft hours in period	Landings in period	Counts at 0.05g level	Counts at 0.45g level	Counts at 0.75g level	Counts at 1.25g level	Counts at 1.55g level	Counts at 1.95g level
11. 9.62	143	31	0	1	121	264	4	0
7.10.62	178	106	0	1	130	338	7	0
14.11.62	172	96	0	6	309	517	10	0
19.12.62	164	97	0	5	234	412	6	0
23. 1.63	165	102	0	4	186	311	3	0
26. 2.63	176	240	0	4	168	429	7	0
31. 3.63	190	119	0	6	207	353	10	0
Total	3958	2447	1	50	3136	5729	97	0

Aircraft: G-ARJK

Meter Number: IB/231/C/60

Recording: Above 20,000 ft

10. 5.61	0	0	0	0	0	0	0	0
30. 5.61	115	64	0	1	203	276	7	0
15. 6.61	109	68	0	2	154	274	5	0
2. 7.61	102	66	0	0	62	139	0	0
18. 7.61	143	80	0	2	216	422	3	0
3. 8.61	130	75	0	2	128	285	3	0
7. 8.61	35	19	0	0	60	101	4	0
11. 9.61	197	112	0	2	162	380	1	0
17.10.61	197	115	1	3	224	420	7	0
15.11.61	145	80	0	6	135	364	16	1
14. 1.62	210	123	0	2	159	330	5	0
21. 1.62	Altitude switch removed							
15. 3.62	315	172	1	2	321	654	13	1
29. 4.62	190	104	0	1	173	475	8	0
16. 5.62	182	98	0	1	136	312	4	1
27. 5.62	76	44	0	1	96	181	3	0
26. 6.62	183	98	0	4	161	381	13	0
17. 7.62	156	37	0	0	98	298	4	0
9. 8.62	175	89	0	2	136	369	2	0
28. 8.62	187	107	0	0	120	404	4	0
2. 9.62	44	28	0	0	17	58	0	0
2.10.62	184	99	0	) 9	389	784	9	0
1.11.62	180	104	0					
29.11.62	160	98	0	4	135	409	6	0
31.12.62	170	104	0	4	176	471	8	0
13. 1.63	64	39	0	0	42	95	1	0
21. 2.63	156	129	0	0	108	332	6	2

TABLE 1 (Continued)

Aircraft: G-ARJK (Contd)

Meter Number: IB/231/C/60

Recording: Above 20,000 ft

Date	Aircraft hours in period	Landings in period	Counts at 0.05g level	Counts at 0.45g level	Counts at 0.75g level	Counts at 1.25g level	Counts at 1.55g level	Counts at 1.95g level
27. 3.63	188	123	0	2	236	562	6	0
24. 4.63	185	113	0	6	135	433	4	0
20. 5.63	179	107	0	2	217	438	12	0
11. 7.63	372	221	0	3	268	730	13	0
7. 8.63	198	117	0	7	189	469	15	1
29. 8.63	192	111	0	4	171	384	6	1
19. 9.63	157	89	0	8	160	395	13	0
13. 10.63	179	111	0	2	147	415	12	0
10. 11.63	173	104	1	2	78	275	8	0
17. 12.63	180	105	0	4	196	492	22	1
Total	5808	3403	3	38	5463	12,807	243	8

Aircraft: G-ARJL

Meter Number: 232/C/60

Recording: All Altitudes

28. 1.62	0	0	0	0	0	0	0	0
2. 3.62	152	163	0	3	212	832	19	0
9. 4.62	194	112	0	5	201	797	13	0
18. 5.62	196	108	0	5	120	648	10	0
6. 6.62	131	75	0	1	54	344	3	0
24. 6.62	142	78	0	2	157	649	16	1
24. 7.62	167	91	0	2	74	493	14	0
14. 8.62	182	104	0	3	96	647	15	0
3. 9.62	155	87	0	2	109	555	9	0
24. 9.62	147	81	0	0	60	435	3	0
28. 10.62	195	115	0	6	145	787	14	1
16. 12.62	173	126	0	2	86	644	8	0
10. 1.63	155	86	0	1	84	528	5	0
Total	1989	1226	0	32	1398	7359	129	2

TABLE 1 (Continued)

Aircraft: G-ARJN

Meter Number: 338/C/61

Recording: All altitudes

Date	Aircraft hours in period	Landings in period	Counts at 0.05g level	Counts at 0.45g level	Counts at 0.75g level	Counts at 1.25g level	Counts at 1.55g level	Counts at 1.95g level
27. 3.62	0	0	0	0	0	0	0	0
1. 5.62	198	114	0	0	81	696	9	0
27. 5.62	182	98	0	2	64	552	10	0
20. 6.62	134	73	0	0	33	446	2	1
18. 7.62	154	96	0	2	62	709	17	0
13. 8.62	154	90	0	0	64	669	10	0
19. 8.62	50	30	0	3	44	244	2	0
17. 9.62	169	96	0	0	32	526	13	0
9. 10.62	159	91	0	2	72	608	7	0
6. 11.62	178	100	0	0	26	444	2	0
12. 12.62	152	138	1	9	98	802	10	0
30. 12.62	102	60	0	1	55	490	3	0
6. 2.63	130	130	0	0	20	461	3	0
Total	1765	1116	1	19	648	6647	88	1

Aircraft: G-ARCO

Meter Number: IB/740/C/60

Recording: Above 20,000 ft to 4.3.62

All altitudes after 4.3.62

6. 10.61	0	0	0	0	0	0	0	0
9. 11.61	174	96	0	1	92	96	3	0
19. 12.61	171	95	0	3	118	139	7	0
29. 1.62	155	82	0	1	87	77	1	0
4. 3.62	183	107	0	0	28	19	0	0
4. 3.62	Altitude switch removed							
13. 4.62	200	106	0	3	200	266	7	0
?	174	90	0	1	110	156	2	0
4. 6.62	169	88	0	1	135	186	2	0
28. 6.62	184	101	0	1	128	193	4	0
15. 7.62	122	73	0	2	101	424	2	0
Total	1532	838	0	13	999	1556	28	0

TABLE 1 (Continued)

Aircraft: G-ARCP

Meter Number: IB/759/C/60

Recording: Below 20,000 ft

Date	Aircraft hours in period	Landings in period	Counts at 0.05g level	Counts at 0.45g level	Counts at 0.75g level	Counts at 1.25g level	Counts at 1.55g level	Counts at 1.95g level
16. 4.61	0	0	0	0	0	0	0	0
8. 5.61	131	82	0	0	90	236	4	0
11. 6.61	253	142	0	1	168	387	5	1
25. 6.61	110	59	0	1	42	124	2	1
19. 7.61	138	86	0	1	122	282	6	0
7. 8.61	111	70	0	3	75	185	9	1
4. 9.61	197	120	0	2	135	341	12	2
2. 10.61	164	100	0	6	69	223	14	3
22. 10.61	121	72	0	0	49	154	0	0
13. 12.61	195	119	0	4	137	336	10	1
15. 1.62	196	107	0	0	61	244	1	0
12. 2.62	155	92	0	4	95	251	4	1
18. 3.62	189	118	0	6	234	521	14	1
19. 3.62	Altitude switch removed							
20. 4.62	188	101	0	1	180	374	3	0
20. 5.62	187	105	0	2	113	310	0	0
14. 6.62	150	80	0	2	139	282	11	0
11. 7.62	192	115	0	1	109	275	6	0
11. 8.62	143	77	0	13	185	336	23	1
2. 9.62	162	95	0	2	76	209	3	0
25. 9.62	165	99	0	3	121	313	0	0
17. 10.62	130	74	0	1	42	149	1	0
19. 11.62	194	122	0	9	221	426	11	0
29. 1.63	260	59	0	5	139	430	6	0
20. 2.63	158	178	0	2	131	335	8	0
26. 3.63	196	126	0	4	211	523	9	0
Total	4085	2398	0	73	2944	7246	162	12

TABLE 1 (Continued)

Aircraft: G-ARDI

Meter Number: IB/534/C/59

Recording: All altitudes

Date	Aircraft hours in period	Landings in period	Counts at 0.05g level	Counts at 0.45g level	Counts at 0.75g level	Counts at 1.25g level	Counts at 1.55g level	Counts at 1.95g level
19.11.61	0	0	0	0	0	0	0	0
20.12.61	139	88	1	7	354	433	6	0
17. 1.62	150	94	0	7	344	373	9	1
16. 2.62	170	108	0	4	326	463	9	0
22. 3.62	144	95	0	3	209	308	4	1
19. 4.62	174	111	0	6	473	508	10	0
29. 5.62	104	67	0	0	165	209	5	0
27. 6.62	221	143	0	5	459	617	14	0
25. 7.62	163	104	0	3	242	384	5	0
24. 8.62	182	117	1	5	338	456	13	0
19. 9.62	163	100	0	3	245	380	9	0
19.10.62	136	86	0	7	364	404	6	0
19.11.62	182	118	0	8	307	461	16	1
Total	1928	1231	2	58	3826	4996	106	3

Aircraft: G-APYC)
SX-DAK)

Meter Number: IB/590/C/59

Recording: Above 20,000 ft to 29.10.61.

All altitudes after 29.10.61

20. 4.60	0	0	0	0	0	0	0	0
24. 5.60	138	101	0	0	48	144	1	0
9. 6.60	116	70	0	0	32	21	0	0
27. 6.60	126	78	0	2	67	65	1	0
3. 7.60	46	31	0	0	6	4	0	0
25. 7.60	136	83	0	0	53	39	1	0
10. 8.60	107	71	0	1	30	33	0	0
28. 8.60	106	70	0	0	50	27	1	0
11. 9.60	100	63	0	1	36	31	0	0
5. 10.60	109	86	0	0	36	39	2	0
24. 10.60	114	72	0	0	67	63	0	0
13. 11.60	94	59	0	6	125	100	6	0
14. 12.60	135	87	0	0	63	55	2	0
30. 12.60	95	62	0	1	102	82	7	0
20. 1.61	127	83	0	3	136	94	1	0
13. 2.61	135	85	0	1	83	52	11	0
6. 3.61	128	80	0	1	32	17	1	0
19. 3.61	81	52	0	0	7	8	0	0
11. 4.61	100	62	0	0	27	22	0	0

TABLE 1 (Continued)

Aircraft: G-APYC)
SX-DAK) (Contd)

Meter Number: IB/590/C/59

Recording: Above 20,000 ft to 29.10.61.

All altitudes after 29.10.61

Date	Aircraft hours in period	Landings in period	Counts at 0.05g level	Counts at 0.45g level	Counts at 0.75g level	Counts at 1.25g level	Counts at 1.55g level	Counts at 1.95g level
1. 5.61	133	87	0	0	39	30	1	0
19. 5.61	100	67	0	2	74	47	2	0
5. 6.61	110	70	0	0	31	22	0	0
26. 6.61	132	87	0	2	48	37	2	0
2. 7.61	32	19	0	0	2	4	0	0
28. 7.61	113	71	0	2	67	76	4	0
18. 8.61	138	91	0	2	53	36	2	0
29.10.61	Altitude switch removed							
25.11.61	0	0	0	0	0	0	0	0
6. 1.62	194	119	0	3	365	420	8	0
14. 2.62	195	158	1	13	460	537	20	2
14. 3.62	156	99	0	0	294	361	4	0
16. 4.62	192	122	0	11	478	553	13	0
6. 5.62	125	80	0	0	206	289	4	0
13. 6.62	176	115	0	7	362	460	12	0
13. 7.62	190	135	0	10	430	567	23	0
8. 8.62	162	108	0	1	367	412	9	0
6. 9.62	170	112	0	13	250	362	8	0
7.10.62	135	87	1	12	244	309	12	0
31.10.62	170	103	0	8	233	292	6	1
28.11.62	157	99	0	1	224	223	6	0
27.12.62	156	93	1	20	340	324	19	5
23. 1.63	145	88	0	5	252	298	4	0
21. 2.63	163	85	0	4	192	183	3	0
6. 3.63	93	59	1	2	95	125	3	1
4. 5.63	199	118	0	7	363	410	10	0
30. 5.63	175	106	0	4	255	304	4	0
26. 6.63	192	128	0	2	229	285	4	0
23. 8.63	372	229	2	27	562	685	25	1
8. 9.63	123	74	0	0	139	169	6	0
11.10.63	167	102	1	6	256	278	8	1
Total	6558	4206	7	180	7910	8894	256	11

TABLE 1 (Continued)

Aircraft: G-APYD)
SX-DAL)

Meter Number: IB/810/C/59

Recording: Above 20,000 ft to 8.2.62.

All altitudes after 8.2.62

Date	Aircraft hours in period	Landings in period	Counts at 0.05g level	Counts at 0.45g level	Counts at 0.75g level	Counts at 1.25g level	Counts at 1.55g level	Counts at 1.95g level
29. 9.61	0	0	0	0	0	0	0	0
27.10.61	194	127	0	1	45	45	0	0
29.11.61	187	115	0	6	105	96	7	0
3. 1.62	185	111	0	3	91	90	1	0
7. 1.62	24	14	0	0	6	8	0	0
2. 2.62	96	57	0	2	52	44	1	1
8. 2.62	Altitude switch removed							
17. 3.62	100	64	0	1	86	204	1	0
11. 4.62	153	96	0	5	267	454	8	0
9. 5.62	180	114	0	6	288	581	12	0
18. 7.62	383	248	0	9	636	1297	24	0
15. 8.62	196	127	2	13	309	569	17	2
12. 9.62	152	98	0	3	201	393	4	0
10.10.62	151	99	1	7	215	404	12	0
23.10.62	47	31	0	0	29	67	0	0
5.12.62	120	76	0	1	48	75	0	0
Total	2168	1377	3	57	2378	4327	87	3

Aircraft: G-APZM

Meter Number: IB/549/C/59

Recording: Below 20,000 ft to 3.12.61.

All altitudes after 3.12.61

10. 3.61	0	0	0	0	0	0	0	0
1. 4.61	127	81	0	3	166	285	4	0
9. 4.61	54	35	0	5	110	187	11	4
9. 5.61	138	92	0	4	169	368	8	0
29. 5.61	119	79	0	1	155	349	4	0
16. 6.61	98	62	0	3	162	310	10	0
10. 7.61	125	79	0	3	153	298	4	0
4. 8.61	130	90	1	6	244	423	16	0
13. 8.61	37	23	0	0	61	114	0	0
15. 9.61	160	100	0	7	243	435	8	0
16.10.61	182	120	0	1	217	461	6	1
15.11.61	172	108	0	3	178	347	18	1
3.12.61	Altitude switch removed							
30.12.61	124	80	0	1	131	236	3	0

TABLE 1 (Continued)

Aircraft: G-APZM (Contd)

Meter Number: IB/549/C/59

Recording: Below 20,000 ft to 3.12.61.

All altitudes after 3.12.61

Date	Aircraft hours in period	Landings in period	Counts at 0.05g level	Counts at 0.45g level	Counts at 0.75g level	Counts at 1.25g level	Counts at 1.55g level	Counts at 1.95g level
22. 1.62	124	76	0	4	183	306	3	0
22. 2.62	156	97	0	7	288	537	8	0
28. 3.62	192	120	1	11	268	509	17	0
25. 4.62	169	106	0	6	326	586	21	0
23. 5.62	168	103	0	4	167	337	3	0
3. 6.62	71	44	0	2	62	138	1	0
4. 7.62	155	98	0	3	221	405	5	0
3. 8.62	184	118	0	2	102	450	3	0
29. 8.62	145	90	0	1	31	140	9	0
16. 9.62	113	76	0	6	6	229	3	0
24.10.62	173	103	0	6	17	297	6	0
26.11.62	186	119	0	3	4	424	5	0
19.12.62	154	89	1	17	30	579	23	0
Total	3456	2188	3	109	3694	9050	199	6

TABLE 2 - Acceleration counts per month

Aircraft: G-APMA

Recording - Below 20,000 ft

Month	Aircraft hours in period	Landings in period	Counts at 0.45g level	Counts at 0.75g level	Counts at 1.25g level	Counts at 1.55g level
March '60	42	22	0	28	76	0
April	130	255	0	181	747	21
May	127	115	1	89	310	7
June	182	94	2	114	334	8
July	189	109	3	176	466	7
Aug.	226	128	3	202	496	10
Sept.	128	71	1	128	305	6
Oct.	182	104	2	111	321	4
Nov.	82	43	0	79	165	5
Dec.	146	80	1	96	299	3
Jan. '61	132	71	1	90	236	6
Feb.	60	49	0	28	123	2
March	206	293	3	158	795	22
April	187	121	2	190	521	15
May	191	105	1	109	362	6
June	216	123	2	138	419	6
July	187	115	1	90	506	9
Aug.	213	126	1	203	417	8
Sept.	154	88	4	70	222	7
Oct.	2	1	0	2	4	0
Total	2982	2113	28	2282	7124	152

Recording: At all altitudes

Oct. '61	61	34	8	73	125	7
Nov.	146	88	1	104	250	2
Dec.	129	74	5	85	224	4
Jan. '62	112	62	6	75	207	6
Feb	175	109	7	198	505	16
March	181	245	3	162	569	11
April	176	95	3	178	439	12
May	200	106	3	137	352	6
June	217	124	4	141	396	13
July	255	136	12	215	520	15
Aug	223	129	5	196	485	13
Sept.	190	109	0	112	406	5
Oct.	191	111	8	168	427	19
Nov.	165	101	7	155	280	15
Dec.	124	86	1	64	207	4
Jan. '63	80	72	0	45	123	3
Feb.	123	86	1	77	189	4

TABLE 2 (Continued)

Aircraft: G-APMA
(Contd)

Recording: At all altitudes
(Contd)

Month	Aircraft hours in period	Landings in period	Counts at 0.45g level	Counts at 0.75g level	Counts at 1.25g level	Counts at 1.55g level
March	202	117	6	191	374	8
April	216	130	6	247	454	7
May	225	132	3	171	396	7
June	218	128	3	159	377	8
July	219	130	4	166	408	8
Aug.	195	116	5	166	383	11
Sept.	274	164	7	230	483	21
Total	4297	2684	108	3515	8579	225

Aircraft: G-APMB

Recording: Below 20,000 ft

Jan. '60	78	49	0	25	92	1
Feb.	79	49	1	76	280	3
March	105	171	0	102	528	3
April	143	108	0	70	305	2
May	180	93	1	71	264	4
June	180	106	5	144	448	7
July	212	123	3	158	518	5
Aug.	200	122	1	120	396	8
Sept.	231	135	2	102	461	4
Oct.	151	86	1	49	278	3
Nov.	159	87	2	89	277	7
Dec.	127	76	4	102	324	8
Jan. '61	180	135	1	165	733	11
Feb.	112	90	3	168	560	13
March	154	81	3	121	330	10
April	176	227	0	113	493	11
May	178	107	1	83	339	1
June	162	256	2	102	525	2
July	176	105	2	151	444	6
Aug.	167	93	3	101	320	5
Sept.	225	131	1	94	404	5
Oct.	207	127	3	75	303	7
Nov.	107	61	1	42	156	3
Dec.	92	53	0	38	142	3
Jan. '62	49	27	0	21	78	1
Total	3830	2698	40	2382	8998	133

TABLE 2 (Continued)

Aircraft: G-APMB
(Contd)

Recording: At all altitudes

Month	Aircraft hours in period	Landings in period	Counts at 0.45g level	Counts at 0.75g level	Counts at 1.25g level	Counts at 1.55g level
Jan. '62	36	20	0	15	56	1
Feb.	112	61	1	76	251	9
March	163	93	1	90	317	10
April	206	115	1	72	308	3
May	196	108	2	87	366	5
June	202	112	3	117	406	9
July	226	129	3	158	548	12
Aug.	240	136	4	133	415	8
Sept.	189	111	4	81	302	5
Oct.	177	103	3	58	276	4
Nov.	168	99	4	124	377	8
Dec.	174	102	5	183	566	14
Jan. '63	106	65	0	72	293	5
Feb.	110	88	0	42	187	1
March	204	230	5	94	316	7
April	107	146	6	72	207	7
Total	2616	1718	42	1474	5191	108

Aircraft: G-APMC

Recording: Below 20,000 ft

June '60	94	51	0	77	113	0
July	208	116	4	173	228	5
Aug.	177	100	3	114	191	6
Sept.	249	145	12	186	302	7
Oct.	148	78	8	170	242	16
Nov.	108	61	0	92	145	4
Dec.	115	68	3	117	209	5
Jan. '61	81	47	2	61	73	1
Feb.	166	88	1	172	235	5
March	166	87	0	102	168	2
April	126	75	3	87	133	4
May	241	135	5	174	260	8
June	169	99	3	148	197	2
July	188	105	26	187	275	28
Aug.	205	112	11	190	253	11
Sept.	193	110	3	138	213	4
Oct.	137	77	5	110	185	6
Nov.	113	64	1	62	101	1
Dec.	127	73	0	58	105	0
Jan. '62	206	121	7	157	234	3
Feb.	108	64	0	86	159	1
March.	2	1	0	1	2	0
Total	3327	1877	97	2662	4023	119

TABLE 2 (Continued)

Aircraft: G-APMC (Contd)

Recording: At all altitudes

Month	Aircraft hours in period	Landings in period	Counts at 0.45g level	Counts at 0.75g level	Counts at 1.25g level	Counts at 1.55g level
Mar. '62	56	31	0	35	51	2
April	79	44	1	87	110	2
May	59	34	1	61	72	2
June	187	110	7	213	259	5
July	238	136	7	229	323	5
Aug.	206	112	4	193	281	4
Sept.	208	120	4	216	293	5
Oct.	196	111	3	193	232	4
Nov.	170	99	3	184	234	7
Dec.	141	85	2	168	213	6
Jan. '63	106	62	3	166	216	9
Feb.	131	85	2	156	194	9
March	210	169	1	211	295	3
April	213	150	2	196	285	0
May	227	141	1	208	283	1
June	224	139	0	187	268	1
July	242	146	0	122	233	0
Aug.	260	155	0	148	277	0
Sept.	24	14	0	15	27	0
Total	3177	1944	41	2988	4146	65

Aircraft: G-APMD

Recording: Above 20,000 ft

Mar. '60	26	13	0	8	10	0
April	156	80	1	37	44	0
May	238	562	1	53	79	7
June	159	85	0	15	15	0
July	251	147	0	20	28	0
Aug.	136	115	2	37	33	2
Sept.	274	123	2	77	118	3
Oct.	184	106	4	127	142	4
Nov.	126	68	4	69	67	2
Dec.	147	80	22	225	236	30
Jan. '61	106	60	2	43	52	4
Feb.	199	105	0	61	68	1
March	167	315	1	42	48	2
April	220	131	1	49	55	0
May	217	132	4	124	126	2
June	124	70	0	37	34	2
July	230	135	0	21	30	1

TABLE 2 (Continued)

Aircraft: G-APMD
(Contd)

Recording: Above 20,000 ft
(Contd)

Month	Aircraft hours in period	Landings in period	Counts at 0.45g level	Counts at 0.75g level	Counts at 1.25g level	Counts at 1.55g level
Aug. '61	202	117	0	30	26	0
Sept.	206	117	0	28	29	0
Oct.	166	96	1	38	45	0
Nov.	175	104	0	39	35	0
Dec.	92	51	1	32	39	2
Total	3801	2812	46	1212	1359	62

Recording: At all altitudes

Dec. '61	14	8	0	5	6	0
Jan. '62	129	70	3	103	180	4
Feb.	127	99	3	179	369	7
March	132	319	3	198	756	26
April	229	167	6	289	520	14
May	218	117	7	265	442	14
June	207	114	3	243	438	8
July	194	108	10	233	404	7
Aug.	225	130	10	261	478	9
Sept.	209	117	8	193	319	5
Oct.	159	94	1	131	224	2
Nov.	104	63	0	108	168	2
Dec.	85	48	1	107	147	4
Jan. '63	163	88	4	161	266	8
Feb.	175	105	2	137	214	7
March	197	208	4	228	452	15
April	234	146	6	66	265	7
May	242	151	4	148	344	6
June	234	146	3	143	333	6
July	259	161	4	162	373	7
Aug.	206	127	2	131	316	6
Sept.	102	62	2	62	164	3
Total	3844	2648	86	3553	7178	167

TABLE 2 (Continued)

Aircraft: G-APME

Recording: Above 20,000 ft

Month	Aircraft hours in period	Landings in period	Counts at 0.45g level	Counts at 0.75g level	Counts at 1.25g level	Counts at 1.55g level
May '60	109	55	1	30	51	1
June	181	101	1	76	92	3
July	202	113	0	60	88	1
Aug.	197	115	0	108	130	0
Sept.	186	107	6	73	116	0
Oct.	182	105	2	82	125	0
Nov.	123	74	5	121	183	0
Dec.	154	75	5	170	251	0
Jan. '61	128	67	5	95	134	0
Feb.	154	227	2	49	68	0
March	165	233	0	20	36	0
April	31	16	0	2	5	0
Sept.	63	37	3	66	62	9
Oct.	154	89	6	128	111	15
Nov.	144	79	2	58	36	1
Dec.	173	96	1	60	46	2
Jan. '62	159	93	0	45	25	0
Feb.	128	79	2	39	28	2
March	86	54	1	67	62	1
Total	2719	1815	42	1349	1649	35

Recording: At all altitudes

Mar. '62	31	19	1	43	42	1
April	103	63	4	141	138	3
May	189	99	3	161	211	5
June	206	123	4	243	265	3
July	202	123	6	251	289	6
Aug.	139	81	8	196	217	6
Sept.	240	140	6	322	349	11
Oct.	223	130	5	222	237	9
Nov.	153	86	3	165	154	8
Dec.	126	95	8	178	225	7
Jan. '63	105	94	11	171	243	5
Feb.	162	216	2	148	185	0
March	182	106	3	240	223	1
April	210	127	3	232	271	3
May	247	141	9	248	240	6

TABLE 2 (Continued)

Aircraft: G-APME
(Contd)

Recording: At all altitudes
(Contd)

Month	Aircraft hours in period	Landings in period	Counts at 0.45g level	Counts at 0.75g level	Counts at 1.25g level	Counts at 1.55g level
June '63	245	142	14	304	322	12
July	253	146	15	315	332	12
Aug.	232	138	17	407	418	27
Sept.	149	83	1	149	158	0
Total	3397	2152	123	4136	4519	125

Aircraft: G-APMF

Recording: Above 20,000 ft

May '60	38	22	0	19	15	0
June	186	103	1	46	46	1
July	214	119	1	55	52	1
Aug.	225	130	1	91	82	2
Sept.	156	94	2	127	105	5
Oct.	173	96	2	93	80	1
Nov.	140	78	1	97	64	0
Dec.	102	64	2	68	52	1
Jan. '61	113	62	0	27	25	0
Feb.	161	169	0	46	45	0
March	187	112	2	81	54	2
April	161	99	0	73	63	2
May	82	48	1	51	52	1
June	221	409	2	100	120	5
July	227	196	3	138	128	9
Aug.	195	114	2	62	49	2
Sept.	163	89	6	60	42	6
Oct.	146	82	4	93	40	6
Total	2890	2086	30	1307	1114	44

Aircraft: G-APMG

Recording: Below 20,000 ft

July '60	23	12	0	13	12	0
Aug.	202	112	1	127	104	0
Sept.	214	122	1	76	70	2
Oct.	174	97	1	76	82	0
Nov.	116	77	0	40	34	0
Dec.	160	81	0	75	134	0
Jan. '61	141	188	1	181	732	8
Feb.	166	155	1	294	511	4

TABLE 2 (Continued)

Aircraft: G-AFMG
(Contd)

Recording: Below 20,000 ft
(Contd)

Month	Aircraft hours in period	Landings in period	Counts at 0.45g level	Counts at 0.75g level	Counts at 1.25g level	Counts at 1.55g level
March '61	191	111	4	121	264	7
April	153	90	5	133	240	4
May	102	57	1	62	141	2
June	168	97	1	109	239	6
July	238	151	5	165	392	6
Aug.	239	147	1	177	388	6
Sept.	155	88	2	77	198	5
Oct.	165	95	1	78	182	5
Nov.	80	47	0	38	83	2
Total	2687	1727	25	1842	3806	57

Recording: At all altitudes

Nov. '61	23	13	1	12	24	0
Dec.	76	44	1	51	93	1
Jan. '62	160	95	6	176	279	1
Feb.	149	89	7	157	299	7
March	160	94	1	172	317	7
April	175	92	1	167	257	2
May	137	70	0	100	184	3
June	197	114	4	242	389	7
July	211	118	9	286	421	12
Aug.	234	184	6	318	514	8
Sept.	235	85	4	110	178	5
Oct.	156	89	11	172	251	12
Nov.	160	101	8	235	323	6
Dec.	155	102	8	225	324	13
Jan. '63	178	201	0	87	182	3
Total	2406	1491	67	2510	4035	87

Aircraft: G-ARGM

Recording: Above 20,000 ft

May '61	191	119	0	17	24	0
June	274	170	0	76	83	0
July	187	106	0	17	29	0
Aug.	185	108	0	45	44	0
Sept.	173	106	1	24	23	1
Oct.	175	103	0	64	63	1

TABLE 2 (Continued)

Aircraft: G-ARGM
(Contd)

Recording: Above 20,000 ft
(Contd)

Month	Aircraft hours in period	Landings in period	Counts at 0.45g level	Counts at 0.75g level	Counts at 1.25g level	Counts at 1.55g level
Nov. '61	100	59	0	41	50	0
Dec.	137	78	0	79	129	1
Jan. '62	20	12	0	26	48	1
Total	144.2	861	1	389	4.93	4

Recording: At all altitudes

Jan. '62	86	51	1	110	199	4
Feb	138	78	1	136	285	7
March	208	118	2	256	466	8
April	198	107	1	179	345	6
May	173	97	0	148	336	2
June	165	89	4	151	287	8
July	209	114	8	232	364	10
Aug.	226	133	6	193	468	3
Sept.	201	118	1	193	379	7
Oct.	154	88	4	240	412	8
Nov.	138	79	4	221	378	7
Dec.	146	88	4	191	331	4
Jan. '63	149	123	4	162	305	4
Feb.	147	191	3	141	349	6
March	178	112	6	194	332	9
Total	2516	1586	49	2747	5236	93

Aircraft: G-ARJK

Recording: Above 20,000 ft

May '61	122	68	1	213	293	7
June	192	122	2	199	380	5
July	261	149	4	327	670	5
Aug.	194	110	1	195	415	6
Sept.	166	96	3	169	341	4
Oct.	163	93	4	195	374	11
Nov.	127	72	4	136	270	9
Dec.	109	63	1	82	171	3
Jan. '62	86	49	0	74	153	3
Total	1420	822	20	1590	3067	53

TABLE 2 (Continued)

Aircraft: G-ARJK
(Contd)

Recording: At all altitudes

Month	Aircraft hours in period	Landings in period	Counts at 0.45g level	Counts at 0.75g level	Counts at 1.25g level	Counts at 1.55g level
Jan '62	52	29	0	54	109	2
Feb.	147	80	1	150	305	6
March	147	80	1	143	333	6
April	133	73	1	123	324	5
May	271	149	3	245	526	9
June	189	102	3	159	387	12
July	233	124	1	162	466	4
Aug.	281	159	1	183	583	5
Sept.	190	103	4	189	389	4
Oct.	186	108	5	201	405	5
Nov.	171	104	4	147	437	6
Dec.	165	101	4	170	456	8
Jan. '63	136	99	0	92	248	4
Feb.	123	94	0	107	295	4
March	175	114	3	206	508	6
April	200	122	5	166	472	6
May	217	129	3	224	492	12
June	214	127	1	154	421	7
July	226	134	6	197	501	14
Aug.	258	149	7	235	544	11
Sept.	224	132	8	212	547	17
Oct.	208	127	2	130	402	12
Nov.	159	94	3	134	364	15
Dec.	83	48	2	90	226	10
Total	4388	2581	68	3873	9740	190

Aircraft: G-ARJL

Recording: At all altitudes

Jan. '62	14	15	0	19	76	2
Feb.	129	138	3	180	706	16
March	157	95	4	166	658	11
April	152	85	4	113	538	8
May	180	101	3	92	534	7
June	216	120	2	189	857	20
July	195	108	3	91	610	16
Aug.	253	143	4	157	903	18
Sept.	204	114	1	102	657	6
Oct.	172	103	5	124	688	12
Nov.	106	77	1	53	604	5
Dec.	149	93	2	78	317	6
Jan. '63	62	34	0	34	211	2
Total	1989	1226	32	1398	7359	129

TABLE 2 (Continued)

Aircraft: G-ARJN

Recording: At all altitudes

Month	Aircraft hours in period	Landings in period	Counts at 0.45g level	Counts at 0.75g level	Counts at 1.25g level	Counts at 1.55g level
Mar. '62	22	13	0	9	80	1
April	170	98	0	70	596	8
May	210	113	2	69	646	10
June	167	95	1	49	625	8
July	176	107	1	72	791	16
Aug.	197	115	3	89	796	12
Sept.	193	110	1	62	667	12
Oct.	205	116	1	49	598	5
Nov.	139	113	6	71	630	7
Dec.	159	109	4	89	769	6
Jan. '63	107	107	0	16	376	3
Feb.	20	20	0	3	73	0
Total	1765	1116	19	648	6647	88

Aircraft: G-ARCO

Recording: Above 20,000 ft

Oct. '61	128	71	1	68	71	2
Nov.	136	75	2	86	98	5
Dec.	126	69	1	81	89	3
Jan. '62	121	64	1	63	55	1
Feb.	150	88	0	24	16	0
March	22	13	0	3	2	0
Total	683	380	5	325	331	11

Recording: At all altitudes

March '62	135	72	2	135	180	5
April	178	92	2	146	198	4
May	204	106	1	146	204	2
June	224	124	1	235	269	4
July	108	64	2	12	374	2
Total	849	458	8	674	1225	17

Aircraft: G-ARCP

Recording: Below 20,000 ft

April '61	83	52	0	57	86	3
May	219	126	1	147	412	4
June	221	123	1	121	308	5
July	179	112	3	144	354	11

TABLE 2 (Continued)

Aircraft: G-ARCP (Contd)

Recording: Below 20,000 ft
(Contd)

Month	Aircraft hours in period	Landings in period	Counts at 0.45g level	Counts at 0.75g level	Counts at 1.25g level	Counts at 1.55g level
Aug. '61	210	129	3	144	346	13
Sept.	180	110	6	83	256	15
Oct.	167	100	1	77	228	3
Nov.	112	68	2	80	194	6
Dec.	156	88	1	67	217	3
Jan. '62	178	102	2	82	254	2
Feb.	155	95	5	151	353	9
March	106	65	3	129	287	7
Total	1966	1170	28	1282	3295	81

Recording: At all altitudes

Mar. '62	68	37	0	66	136	1
April	176	96	2	147	330	2
May	191	105	2	136	331	5
June	198	113	2	143	321	10
July	170	97	8	163	329	17
Aug.	198	113	7	135	309	11
Sept.	210	125	3	138	366	0
Oct.	182	109	5	126	296	6
Nov.	152	79	6	148	311	7
Dec.	114	26	2	61	188	3
Jan. '63	120	40	2	69	206	3
Feb.	190	192	3	169	428	9
March	150	96	3	161	400	7
Total	2119	1228	45	1662	3951	81

Aircraft: G-ARDI

Recording: At all altitudes

Dec. '61	178	125	10	489	580	10
Jan. '62	190	107	6	361	442	9
Feb.	142	92	3	248	356	6
March	149	97	4	287	362	6
April	138	88	4	353	386	8
May	99	64	0	165	211	5
June	223	144	5	453	615	14
July	182	116	4	284	434	7
Aug.	190	121	5	336	467	12
Sept.	169	105	5	312	426	9
Oct.	156	100	7	350	434	10
Nov.	112	72	5	188	283	10
Total	1928	1231	58	3826	4996	106

TABLE 2 (Continued)

Aircraft: G-APYC }
SX-DAK }

Recording: Above 20,000 ft

Month	Aircraft hours in period	Landings in period	Counts at 0.45g level	Counts at 0.75g level	Counts at 1.25g level	Counts at 1.55g level
April '60	41	30	0	14	13	0
May	148	102	0	48	40	1
June	214	133	2	88	79	1
July	199	125	0	67	53	1
Aug.	194	128	1	77	55	1
Sept.	165	117	1	36	32	0
Oct.	170	111	2	139	129	4
Nov.	135	86	4	116	95	5
Dec.	162	105	1	137	112	8
Jan. '61	183	118	3	167	117	6
Feb.	164	103	2	68	36	7
March	170	107	0	30	24	0
April	174	113	0	50	39	1
May	185	120	2	93	66	2
June	186	121	2	58	45	2
July	143	90	2	76	82	4
Aug.	118	78	2	45	31	2
Total	2751	1787	24	1314	1048	45

Recording: At all altitudes

Nov. '61	23	14	0	43	50	1
Dec.	143	88	3	270	310	6
Jan. '62	153	118	8	347	404	14
Feb.	148	107	5	312	374	9
March	177	112	6	393	465	9
April	180	115	5	376	470	9
May	154	100	5	300	390	9
June	168	116	8	368	478	17
July	194	133	5	440	531	16
Aug.	185	122	10	311	414	9
Sept.	140	90	12	241	314	11
Oct.	200	123	11	288	362	9
Nov.	168	105	2	247	245	7
Dec.	166	100	20	354	346	19
Jan. '63	171	99	5	270	306	4
Feb.	169	95	4	191	202	4
March	124	75	4	195	228	5
April	101	60	4	184	208	5
May	196	119	4	288	343	5
June	211	139	4	260	321	6
July	199	122	14	300	366	13

TABLE 2 (Continued)

Aircraft: G-APYC
(Contd) SX-DAK

Recording: At all altitudes
(Contd)

Month	Aircraft hours in period	Landings in period	Counts at 0.45g level	Counts at 0.75g level	Counts at 1.25g level	Counts at 1.55g level
Aug. '63	209	128	11	293	357	13
Sept.	172	105	4	240	269	8
Oct.	56	34	2	85	93	3
Total	3807	2419	156	6596	7846	211

Aircraft: G-APYD
SX-DAL

Recording: Below 20,000 ft

Sept. '61	7	5	0	2	2	0
Oct.	210	136	2	56	55	1
Nov.	169	104	5	95	87	6
Dec.	164	98	3	80	79	1
Jan. '62	129	77	2	62	57	1
Feb.	21	13	0	16	31	0
Total	700	433	12	311	311	9

Recording: At all altitudes

Feb. '62	46	30	1	40	95	1
March	126	78	3	184	335	4
April	189	120	6	312	594	12
May	178	115	5	293	595	12
June	164	106	4	273	556	10
July	190	123	8	306	597	14
Aug.	192	124	9	281	530	11
Sept.	162	106	6	224	428	10
Oct.	123	80	2	115	225	4
Nov.	84	53	1	33	52	0
Dec.	14	9	0	6	9	0
Total	1468	944	45	2067	4016	78

Aircraft: G-APZM

Recording: Below 20,000 ft

March '61	121	77	3	158	272	4
April	157	103	8	236	458	17
May	171	114	2	224	493	7
June	160	101	5	233	450	11
July	161	109	6	269	479	15

TABLE 2 (Continued)

Aircraft: G-APZM
(Contd)

Recording: Below 20,000 ft
(Contd)

Month	Aircraft hours in period	Landings in period	Counts at 0.45g level	Counts at 0.75g level	Counts at 1.25g level	Counts at 1.55g level
Aug. '61	145	92	5	233	419	7
Sept.	161	103	3	215	421	7
Oct.	180	116	3	201	412	12
Nov.	128	81	1	132	251	10
Dec.	8	5	0	9	16	0
Total	1392	901	36	1910	3671	90

Recording: At all altitudes

Dec. '61	79	51	1	87	155	2
Jan. '62	164	101	6	259	449	5
Feb.	145	90	7	251	471	9
March	176	110	10	256	482	16
April	181	113	6	321	583	20
May	190	117	4	182	377	3
June	154	97	4	209	391	4
July	186	119	2	121	457	4
Aug.	176	110	2	42	510	9
Sept.	164	106	7	11	313	5
Oct.	148	90	5	12	278	5
Nov.	179	113	6	9	456	9
Dec.	122	70	13	24	457	18
Total	2064	1287	73	1784	5379	109

TABLE 3 - Mean acceleration counts per month

JANUARY

Year	Aircraft	Altitude	Aircraft hours	Landings	Counts at 0.75g level	Counts at 1.25g level	2x geometric mean at $\pm 0.25g$	Counts at 0.45g level	Counts at 1.55g level	2x geometric mean at $\pm 0.55g$
1960	MA	Below	78	49	25	92	96	0	1	0
1961	MA	Below	132	71	90	236	292	1	6	4
	MB	Below	180	135	165	733	696	1	11	6
	MC	Below	81	47	61	73	134	2	1	2
	MD	Above	106	60	43	52	94	2	4	6
	ME	Above	128	67	95	134	226	5	0	4
	MF	Above	113	62	27	25	52	0	0	0
	MG	Below	141	188	181	732	728	1	8	6
YC	Above	183	118	167	117	280	3	6	8	
	All	Above	530	307			652			18
	All	Below	534	441			1850			18
	Total		1064	748						

1962	MA	All	112	62	75	207	250	6	6	12
	MB	Below	49	27	21	78	80	0	1	0
	MB	All	36	20	15	56	58	0	1	0
	MC	Below	206	121	157	234	384	7	3	10
	MD	All	129	70	103	180	272	3	4	6
	ME	Above	159	93	45	25	68	0	0	0
	MG	All	160	95	176	279	444	6	1	4
	GM	Above	20	12	26	48	70	0	1	0
	GM	All	86	51	110	199	296	1	4	4
	JK	Above	86	49	74	153	212	0	3	4
	JK	All	52	29	54	109	154	0	2	2
	JL	All	14	15	19	76	76	0	2	2
	CO	Above	121	64	63	55	118	1	1	2
	CP	Below	178	102	82	254	288	2	2	4
	DI	All	190	107	361	442	798	6	9	14
	YC	All	153	118	347	404	748	8	14	22
	YD	Below	129	77	62	57	118	2	1	2
ZM	All	164	101	259	449	682	6	5	10	
	All	Above	386	218			468			6
	All	Below	562	327			870			16
	All	All	1096	668			3778			76
	Total		2044	1213						

TABLE 3 (Continued)

Year	Aircraft	Altitude	Aircraft hours	Landings	Counts at 0.75g level	Counts at 1.25g level	2x geometric mean at $\pm 0.25g$	Counts at 0.45g level	Counts at 1.55g level	2x geometric mean at $\pm 0.55g$
1963	MA	All	80	72	45	123	148	0	3	4
	MB	All	106	65	72	293	290	0	5	4
	MC	All	106	62	166	216	378	3	9	10
	MD	All	163	88	161	266	414	4	8	12
	ME	All	105	94	171	243	408	11	5	14
	MG	All	178	201	87	182	252	0	3	4
	GM	All	149	123	162	305	444	4	4	8
	JK	All	136	99	92	248	302	0	4	4
	JL	All	62	34	34	211	170	0	2	2
	JN	All	107	107	16	376	156	0	3	4
	CP	All	120	40	69	206	238	2	3	4
	YC	All	171	99	270	306	574	5	4	8
	Total	All	1483	1084			3774			78

All years	MA	Below	132	71			292			4
	MA	All	192	134			398			16
	MB	Below	307	211			872			6
	MB	All	142	85			348			4
	MC	Below	287	168			518			12
	MC	All	106	62			378			10
	MD	Above	106	60			94			6
	MD	All	292	158			686			18
	ME	Above	287	160			294			4
	ME	All	105	94			408			14
	MF	Above	113	62			52			0
	MG	Below	141	188			728			6
	MG	All	338	296			696			8
	GM	Above	20	12			70			0
	GM	All	235	174			740			12
	JK	Above	86	49			212			4
	JK	All	188	128			456			6
	JL	All	76	49			246			4
	JN	All	107	107			156			4
	CO	Above	121	64			118			2
CP	Below	178	102			288			4	
CP	All	120	40			238			4	
DI	All	190	107			798			14	
YC	Above	183	118			280			8	
YC	All	324	217			1322			30	

TABLE 3 (Continued)

Year	Aircraft	Altitude	Aircraft hours	Landings	Counts at 0.75g level	Counts at 1.25g level	2x geometric mean at $\pm 0.25g$	Counts at 0.45g level	Counts at 1.55g level	2x geometric mean at $\pm 0.55g$
All years (Contd)	YD	Below	129	77			118			2
	ZM	All	164	101			682			10
	All	Above	916	525			1120			24
	All	Below	1174	817			2816			34
	All	All	2579	1752			7552			154
	Total		4669	3094						

FEBRUARY

1960	MB	Below	79	49	76	280	292	1	3	4
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1961	MA	Below	60	49	28	123	118	0	2	2
	MB	Below	112	90	168	560	614	3	13	12
	MC	Below	166	88	172	235	402	1	5	4
	MD	Above	199	105	61	68	128	0	1	0
	ME	Above	154	227	49	68	116	2	0	2
	MF	Above	161	169	46	45	90	0	0	0
	MG	Below	166	155	294	511	776	1	4	4
	YC	Above	164	103	68	36	98	2	7	8
	All	Above	678	604			432			10
	All	Below	504	382			1910			22
	Total		1182	986						

1962	MA	All	175	109	198	505	566	7	16	22
	MB	All	112	61	76	251	276	1	9	6
	MC	Below	108	64	86	159	234	0	1	0
	MD	All	127	99	179	369	514	3	7	10
	ME	Above	128	79	39	28	66	2	2	4
	MG	All	149	89	157	299	434	7	7	14
	GM	All	138	78	136	285	394	1	7	6
	JK	All	147	80	150	305	428	1	6	4
	JL	All	129	138	180	706	712	3	16	14

TABLE 3 (Continued)

Year	Aircraft	Altitude	Aircraft hours	Landings	Counts at 0.75g level	Counts at 1.25g level	2x geometric mean at $\pm 0.25g$	Counts at 0.45g level	Counts at 1.55g level	2x geometric mean at $\pm 0.55g$
1962 (Contd)	CO	Above	150	88	24	16	40	0	0	0
	CP	Below	155	95	151	353	467	5	9	14
	DI	All	142	92	248	356	594	3	6	16
	YC	All	148	107	312	374	684	5	9	14
	YD	Below	21	13	16	31	14	0	0	0
	YD	All	46	30	40	95	124	1	1	2
	ZM	All	145	90	251	471	688	7	9	16
	All	Above	278	167			106			4
	All	Below	284	172			745			14
	All	All	1458	973			5414			124
	Total		2020	1312						

1963	MA	All	123	86	77	189	242	1	4	4
	MB	All	110	88	42	187	198	0	1	0
	MC	All	131	85	156	194	348	2	9	8
	MD	All	175	105	137	214	342	2	7	8
	ME	All	162	216	148	185	330	2	0	2
	GM	All	147	191	141	349	444	3	6	8
	JK	All	123	94	107	295	356	0	4	4
	JN	All	20	20	3	73	30	0	0	0
	CP	All	190	192	169	428	538	3	9	10
	YC	All	169	95	191	202	392	4	4	8
	Total	All	1350	1172			3220			52

All years	MA	Below	60	49			118			2
	MA	All	298	195			808			26
	MB	Below	191	139			906			16
	MB	All	222	149			474			6
	MC	Below	274	152			636			4
	MC	All	131	85			348			8
	MD	Above	199	105			128			0
	MD	All	302	204			856			18
	ME	Above	282	306			182			6
	ME	All	162	216			330			2
	MF	Above	161	169			90			0
	MG	Below	166	155			776			4
	MG	All	149	89			434			14

TABLE 3 (Continued)

Year	Aircraft	Altitude	Aircraft hours	Landings	Counts at 0.75g level	Counts at 1.25g level	2x geometric mean at $\pm 0.25g$	Counts at 0.45g level	Counts at 1.55g level	2x geometric mean at $\pm 0.55g$
All years (Contd)	GM	All	285	269			838			14
	JK	All	270	174			784			8
	JL	All	129	138			712			14
	JN	All	20	20			30			0
	CO	Above	150	88			40			0
	CP	Below	155	95			467			14
	CP	All	190	192			538			10
	DI	All	142	92			594			16
	YC	Above	164	103			98			8
	YC	All	317	202			1076			22
	YD	Below	21	13			44			0
	YD	All	46	30			124			2
	ZM	All	145	90			688			16
	All	Above	956	771			538			14
	All	Below	867	603			2947			40
	All	All	2808	2145			8634			176
	Total		4631	3519						

MARCH

1960	MA	Below	42	22	28	76	92	0	0	0
	MB	Below	105	171	102	528	464	0	3	4
	MD	Above	26	13	8	10	18	0	0	0
	All	Above	26	13			18			0
	All	Below	147	193			556			4
	Total		173	206						

1961	MA	Below	206	293	158	795	708	3	22	16
	MB	Below	154	81	121	330	400	3	10	10
	MC	Below	166	87	102	168	262	0	2	2
	MD	Above	167	315	42	48	90	1	2	2
	ME	Above	165	233	20	36	54	0	0	0
	MF	Above	187	112	81	54	132	2	2	4
	MG	Below	191	111	121	264	358	4	7	10
	YC	Above	170	107	30	24	54	0	0	0
	ZM	Below	121	77	158	272	414	3	4	6
		All	Above	689	767			330			6
	All	Below	838	649			2142			44
	Total		1527	1416						

TABLE 3 (Continued)

Year	Aircraft	Altitude	Aircraft hours	Landings	Counts at 0.75g level	Counts at 1.25g level	2x geometric mean at $\pm 0.25g$	Counts at 0.45g level	Counts at 1.55g level	2x geometric mean at $\pm 0.55g$
1962	MA	All	181	245	162	569	608	3	11	12
	MB	All	163	93	90	317	338	1	10	6
	MC	Below	2	1	1	2	2	0	0	0
	MC	All	56	32	35	51	84	0	2	2
	MD	All	132	319	198	756	774	3	26	18
	ME	Above	86	54	67	62	128	1	1	2
	ME	All	31	19	43	42	84	1	1	2
	MG	All	160	94	172	317	468	1	7	6
	GM	All	208	118	256	466	690	2	8	8
	JK	All	147	80	143	333	436	1	6	4
	JL	All	157	95	166	658	660	4	11	14
	JN	All	22	13	9	80	54	0	1	0
	CO	Above	22	13	3	2	4	0	0	0
	CO	All	135	72	135	180	312	2	5	6
	CP	Below	106	65	129	287	384	3	7	10
	CP	All	68	37	66	136	190	0	1	0
	DI	All	149	97	287	362	644	4	6	10
	YC	All	177	112	393	465	854	6	9	14
	YD	All	126	78	184	335	496	3	4	6
	ZM	All	176	110	256	482	702	10	16	26
	All	Above	108	67			132			2
	All	Below	108	66			386			10
	All	All	2088	1614			7394			134
	Total		2304	1747						

1963	MA	All	202	117	191	374	534	6	8	14
	MB	All	204	230	94	316	344	5	7	12
	MC	All	210	169	211	295	498	1	3	4
	MD	All	197	208	228	452	646	4	15	16
	ME	All	182	106	240	223	462	3	1	4
	GM	All	178	112	194	332	508	6	9	14
	JK	All	175	114	206	508	646	3	6	8
	CP	All	150	96	161	400	508	3	7	10
	YC	All	124	75	195	228	422	4	5	8
		Total	All	1622	1227			4568			90

TABLE 3 (Continued)

Year	Aircraft	Altitude	Aircraft hours	Landings	Counts at 0.75g level	Counts at 1.25g level	2x geometric mean at $\pm 0.25g$	Counts at 0.45g level	Counts at 1.55g level	2x geometric mean at $\pm 0.55g$
All years	MA	Below	248	315			800			16
	MA	All	383	362			1142			26
	MB	Below	259	252			864			14
	MB	All	367	323			682			18
	MC	Below	168	88			264			2
	MC	All	266	201			582			6
	MD	Above	193	328			108			2
	MD	All	329	527			1420			34
	ME	Above	251	287			182			2
	ME	All	213	125			546			6
	MF	Above	187	112			132			4
	MG	Below	191	111			358			10
	MG	All	160	94			468			6
	GM	All	386	230			1198			22
	JK	All	322	194			1082			12
	JL	All	157	95			660			14
	JN	All	22	13			54			0
	CO	Above	22	13			4			0
	CO	All	135	72			312			6
	CP	Below	106	65			384			10
CP	All	218	133			698			10	
DI	All	149	97			644			10	
YC	Above	170	107			54			0	
YC	All	301	187			1276			22	
YD	All	126	78			496			6	
ZM	Below	121	77			414			6	
ZM	All	176	110			702			26	
	All	Above	823	847			480			8
	All	Below	1093	908			3084			58
	All	All	3710	2841			11,962			224
	Total		5626	4596						

APRIL

1960	MA	Below	130	255	181	747	736	0	21	10
	MB	Below	143	108	70	305	292	0	2	2
	MD	Above	156	80	37	44	80	1	0	0
	YC	Above	41	30	14	13	26	0	0	0
	All	Above	197	110			106			0
	All	Below	273	363			1028			12
	Total		470	473						

TABLE 3 (Continued)

Year	Aircraft	Altitude	Aircraft hours	Landings	Counts at 0.75g level	Counts at 1.25g level	2x geometric mean at $\pm 0.25g$	Counts at 0.45g level	Counts at 1.55g level	2x geometric mean at $\pm 0.55g$
1961	MA	Below	187	121	190	521	630	2	15	10
	MB	Below	176	227	113	493	472	0	11	6
	MC	Below	126	75	87	133	198	3	4	6
	MD	Above	220	131	49	55	104	1	0	0
	ME	Above	31	16	2	5	6	0	0	0
	MF	Above	161	99	73	63	136	0	2	2
	MG	Below	153	90	133	240	358	5	4	8
	CP	Below	83	52	57	86	140	0	3	4
	YC	Above	174	113	50	39	88	0	1	0
	ZM	Below	157	103	236	458	658	8	17	24
	All Above		586	359			334			2
	All Below		882	668			2456			58
	Total		1468	1027						

1962	MA	All	176	95	178	439	560	3	12	12
	MB	All	206	115	72	308	298	1	3	4
	MC	All	79	44	87	110	196	1	2	2
	MD	All	229	167	289	520	776	6	14	18
	ME	All	103	63	141	138	278	4	3	6
	MG	All	175	92	167	257	414	1	2	2
	GM	All	198	107	179	345	498	1	6	4
	JK	All	133	73	123	324	400	1	5	4
	JL	All	152	85	113	538	494	4	8	12
	JN	All	170	98	70	596	408	0	8	6
	CO	All	178	92	146	198	340	2	4	6
	CP	All	176	96	147	330	440	2	2	4
	DI	All	138	88	353	386	798	4	8	12
	YC	All	180	115	376	470	840	5	9	14
	YD	All	189	120	312	594	860	6	12	16
	ZM	All	181	113	321	583	866	6	20	22
	Total	All	2663	1563			8466			144

1963	MA	All	216	130	247	454	670	6	7	12
	MB	All	107	146	72	207	244	6	7	12
	MC	All	213	150	196	285	492	2	0	2
	MD	All	234	146	66	265	264	6	7	12
	ME	All	210	127	232	271	502	3	3	6
	JK	All	200	122	166	472	560	5	6	10
	YC	All	101	60	184	208	380	4	5	8
	Total	All	1281	881			3112			62

TABLE 3 (Continued)

Year	Aircraft	Altitude	Aircraft hours	Landings	Counts at 0.75g level	Counts at 1.25g level	2x geometric mean at $\pm 0.25g$	Counts at 0.45g level	Counts at 1.55g level	2x geometric mean at $\pm 0.55g$
All years	MA	Below	317	376			1366			20
	MA	All	392	225			1230			24
	MB	Below	319	335			764			8
	MB	All	313	261			542			16
	MC	Below	126	75			198			6
	MC	All	292	194			688			4
	MD	Above	376	211			184			0
	MD	All	463	313			1040			30
	ME	Above	31	16			6			0
	ME	All	313	190			780			12
	MF	Above	161	99			136			2
	MG	Below	153	90			358			8
	MG	All	175	92			414			2
	GM	All	198	107			498			4
	JK	All	333	195			960			14
	JL	All	152	85			494			12
	JN	All	170	98			408			6
	CO	All	178	92			340			6
	CP	Below	83	52			140			4
	CP	All	176	96			440			4
	DI	All	138	88			798			12
	YC	Above	215	143			114			0
	YC	All	281	175			1220			22
	YD	All	189	120			860			16
ZM	Below	157	103			658			24	
ZM	All	181	113			866			22	
	All	Above	783	469			440			2
	All	Below	1155	1031			3484			70
	All	All	3944	2444			11,578			206
	Total		5882	3944						

MAY

1960	MA	Below	127	115	89	310	332	1	7	6
	MB	Below	180	93	71	264	274	1	4	4
	MD	Above	238	562	53	79	130	1	7	6
	ME	Above	109	55	30	51	78	1	1	2
	MF	Above	38	22	19	15	34	0	0	0
	YC	Above	148	102	48	40	88	0	1	0
	All	Above	533	741			330			8
	All	Below	307	208			606			10
	Total		840	949						

TABLE 3 (Continued)

Year	Aircraft	Altitude	Aircraft hours	Landings	Counts at 0.75g level	Counts at 1.25g level	2x geometric mean at $\pm 0.25g$	Counts at 0.45g level	Counts at 1.55g level	2x geometric mean at $\pm 0.55g$
1961	MA	Below	191	105	109	362	398	1	6	4
	MB	Below	178	107	83	339	336	1	1	2
	MC	Below	241	135	174	260	426	5	8	12
	MD	Above	217	132	124	126	250	4	2	6
	MF	Above	82	48	51	52	102	1	1	2
	MG	Below	102	57	62	141	186	1	2	2
	GM	Above	191	119	17	24	40	0	0	0
	JK	Above	122	68	213	293	500	1	7	6
	CP	Below	219	126	147	412	492	1	4	4
	YC	Above	185	120	98	66	160	2	2	4
	ZM	Below	171	114	224	493	664	2	7	8
	All Above		797	487			1052			18
	All Below		1102	644			2502			32
	Total		1899	1131						

1962	MA	All	200	106	137	352	440	3	6	8
	MB	All	196	108	87	366	356	2	5	6
	MC	All	59	34	61	72	132	1	2	2
	MD	All	218	117	265	442	684	7	14	20
	ME	All	189	99	161	211	368	3	5	8
	MG	All	137	70	100	184	272	0	3	4
	GM	All	173	97	148	336	446	0	2	2
	JK	All	271	149	245	526	718	3	9	10
	JL	All	180	101	92	534	444	3	7	10
	JN	All	210	113	69	646	422	2	10	8
	CO	All	204	106	146	204	346	1	2	2
	CP	All	191	105	136	331	424	2	5	6
	DI	All	99	64	165	211	374	0	5	4
	YC	All	154	100	300	390	684	5	9	14
	YD	All	178	115	293	595	836	5	12	16
	ZM	All	190	117	182	377	524	4	3	6
	Total	All	2849	1601			7470			126

1963	MA	All	225	132	171	396	260	3	7	10
	MC	All	227	141	208	283	486	1	1	2
	MD	All	242	151	148	344	452	4	6	10
	ME	All	247	141	248	240	488	9	6	14
	JK	All	217	129	224	492	664	3	12	12
	YC	All	196	119	288	343	628	4	5	8
	Total		1354	813			2978			56

TABLE 3 (Continued)

Year	Aircraft	Altitude	Aircraft hours	Landings	Counts at 0.75g level	Counts at 1.25g level	2x geometric mean at $\pm 0.25g$	Counts at 0.45g level	Counts at 1.55g level	2x geometric mean at $\pm 0.55g$
All years	MA	Below	318	220			730			10
	MA	All	425	238			700			18
	MB	Below	358	200			610			6
	MB	All	196	108			356			6
	MC	Below	241	135			426			12
	MC	All	286	175			618			4
	MD	Above	455	694			380			12
	MD	All	460	268			1136			30
	ME	Above	109	55			78			2
	ME	All	436	240			856			22
	MF	Above	120	70			136			2
	MG	Below	102	57			186			2
	MG	All	137	70			272			4
	GM	Above	191	119			40			0
	GM	All	173	97			446			2
	JK	Above	122	68			500			6
	JK	All	488	278			1382			22
	JL	All	180	101			444			10
	JN	All	210	113			422			8
	CO	All	204	106			346			2
	CP	Below	219	126			492			4
	CP	All	191	105			424			6
	DI	All	99	64			374			4
	YC	Above	333	222			248			4
YC	All	350	219			1312			22	
YD	All	178	115			836			16	
ZM	Below	171	114			664			8	
ZM	All	190	117			524			6	
	All	Above	1330	1228			1382			26
	All	Below	1409	852			3108			42
	All	All	4203	2414			10,448			182
	Total		6942	4494						

JUNE

1960	MA	Below	182	94	114	334	390	2	8	8
	MB	Below	180	106	144	448	508	5	7	12
	MC	Below	94	51	77	113	186	0	0	0
	MD	Above	159	85	15	15	30	0	0	0
	ME	Above	181	101	76	92	168	1	3	4
	MF	Above	186	103	46	46	92	1	1	2
	YC	Above	214	133	88	79	166	2	1	2
	All	Above	740	422			456			8
	All	Below	456	251			1084			20
	Total		1196	673						

TABLE 3 (Continued)

Year	Aircraft	Altitude	Aircraft hours	Landings	Counts at 0.75g level	Counts at 1.25g level	2x geometric mean at $\pm 0.25g$	Counts at 0.45g level	Counts at 1.55g level	2x geometric mean at $\pm 0.55g$
1961	MA	Below	216	123	138	419	480	2	6	6
	MB	Below	162	256	102	525	462	2	2	4
	MC	Below	169	99	148	197	342	3	2	4
	MD	Above	124	70	37	34	70	0	2	2
	MF	Above	221	409	100	120	220	2	5	6
	MG	Below	168	97	109	239	322	1	6	4
	GM	Above	274	170	76	83	158	0	0	0
	JK	Above	192	122	199	380	550	2	5	6
	CP	Below	221	123	121	308	386	1	5	4
	YC	Above	186	121	58	45	102	2	2	4
	ZM	Below	160	101	233	450	640	5	11	14
	All Above		997	892			1100			18
	All Below		1096	799			2640			36
	Total		2093	1691						

1962	MA	All	217	124	141	396	472	4	13	14
	MB	All	202	112	117	406	436	3	9	10
	MC	All	187	110	213	259	468	7	5	12
	MD	All	207	114	243	438	652	3	8	10
	ME	All	206	123	243	265	508	4	3	6
	MG	All	197	114	242	389	614	4	7	10
	GM	All	165	89	151	287	416	4	8	12
	JK	All	189	102	159	387	490	3	12	12
	JL	All	216	120	189	857	804	2	20	12
	JN	All	167	95	49	625	350	1	8	6
	CO	All	224	124	235	269	502	1	4	4
	CP	All	198	113	143	321	428	2	10	8
	DI	All	223	144	453	615	1056	5	14	16
	YC	All	168	116	363	478	838	8	17	24
	YD	All	164	106	273	556	780	4	10	12
ZM	All	154	97	209	391	572	4	4	8	
	Total	All	3084	1803			9392			176

1963	MA	All	218	128	159	377	490	3	8	10
	MC	All	224	139	187	268	448	0	1	0
	MD	All	234	146	143	333	436	3	6	8
	ME	All	245	142	304	322	626	14	12	26
	JK	All	214	127	154	421	510	1	7	6
	YC	All	211	139	260	321	578	4	6	10
	Total	All	1346	821			3088			60

TABLE 3 (Continued)

Year	Aircraft	Altitude	Aircraft hours	Landings	Counts at 0.75g level	Counts at 1.25g level	2x geometric mean at $\pm 0.25g$	Counts at 0.45g level	Counts at 1.55g level	2x geometric mean at $\pm 0.55g$
All years	MA	Below	398	217			870			14
	MA	All	435	252			962			24
	MB	Below	342	362			970			16
	MB	All	202	112			436			10
	MC	Below	263	150			528			4
	MC	All	411	249			916			12
	MD	Above	283	155			100			2
	MD	All	441	260			1088			18
	ME	Above	181	101			168			4
	ME	All	451	265			1134			32
	MF	Above	407	512			312			8
	MG	Below	168	97			322			4
	MG	All	197	114			614			10
	GM	Above	274	170			158			0
	GM	All	165	89			416			12
	JK	Above	192	122			550			6
	JK	All	403	229			1006			18
	JL	All	216	120			804			12
	JN	All	167	95			350			6
	CO	All	224	124			502			4
	CP	Below	221	123			386			4
	CP	All	198	113			428			8
	DI	All	223	144			1056			16
	YC	Above	400	254			268			6
	YC	All	379	255			1416			34
	YD	All	164	106			780			12
ZM	Below	160	101			648			14	
ZM	All	154	97			572			8	
	All	Above	1737	1314			1556			26
	All	Below	1552	1050			3724			56
	All	All	4430	2624			12,480			236
	Total		7719	4988						

TABLE 3 (Continued)

JULY

Year	Aircraft	Altitude	Aircraft hours	Landings	Counts at 0.75g level	Counts at 1.25g level	2x geometric mean at $\pm 0.25g$	Counts at 0.45g level	Counts at 1.55g level	2x geometric mean at $\pm 0.55g$
1960	MA	Below	189	109	176	466	572	3	7	10
	MB	Below	212	123	158	518	572	3	5	8
	MC	Below	208	116	173	228	398	4	5	8
	MD	Above	251	147	20	28	48	0	0	0
	ME	Above	202	113	60	88	146	0	1	0
	MF	Above	214	119	55	52	114	1	1	2
	MG	Below	23	12	13	12	24	0	0	0
	YC	Above	199	125	67	53	120	0	1	0
	All	Above	866	504			418			2
All	Below	632	360			1566			26	
	Total		1498	864						

1961	MA	Below	187	115	90	506	426	1	9	6
	MB	Below	176	105	151	444	518	2	6	6
	MC	Below	188	105	187	275	454	26	28	54
	MD	Above	230	135	21	30	46	0	1	0
	MF	Above	227	196	138	128	266	3	9	10
	MG	Below	238	151	165	392	508	5	6	10
	GM	Above	187	106	17	29	44	0	0	0
	JK	Above	261	149	327	670	936	4	5	8
	CP	Below	179	112	144	354	452	3	11	12
	YC	Above	143	90	76	82	158	2	4	6
	ZM	Below	161	109	269	479	718	6	15	18
	All	Above	1048	676			1450			24
	All	Below	1129	697			3076			106
	Total		2177	1373						

1962	MA	All	255	136	215	520	668	12	15	26
	MB	All	226	129	158	548	588	3	12	12
	MC	All	238	136	229	323	544	7	5	12
	MD	All	194	108	233	404	614	10	7	16
	ME	All	202	123	251	289	538	6	6	12
	MG	All	211	118	286	421	694	9	12	20
	GM	All	209	114	232	364	582	8	10	18
	JK	All	233	124	162	466	550	1	4	4
	JL	All	195	108	91	610	472	3	16	14
	JN	All	176	107	72	791	478	1	16	8
	CO	All	108	64	12	374	134	2	2	4
	CP	All	170	97	163	329	464	8	17	24

TABLE 3 (Continued)

Year	Aircraft	Altitude	Aircraft hours	Landings	Counts at 0.75g level	Counts at 1.25g level	2x geometric mean at $\pm 0.25g$	Counts at 0.45g level	Counts at 1.55g level	2x geometric mean at $\pm 0.55g$
1962 (Contd)	DI	All	182	116	284	434	702	4	7	10
	YC	All	194	133	440	531	966	5	16	18
	YD	All	190	123	306	597	854	8	14	22
	ZM	All	186	119	121	457	470	2	4	6
	Total	All	3169	1855			9318			226

1963	MA	All	219	130	166	408	520	4	8	12
	MC	All	242	146	122	233	338	0	0	0
	MD	All	259	161	162	373	492	4	7	10
	ME	All	253	146	315	332	646	15	12	26
	JK	All	226	134	197	501	628	6	14	18
	YC	All	199	122	300	366	662	14	13	26
	Total	All	1398	839			3286			92

All years	MA	Below	376	224			998			16
	MA	All	474	266			1188			38
	MB	Below	388	228			1090			14
	MB	All	226	129			588			12
	MC	Below	396	221			852			62
	MC	All	480	282			882			12
	MD	Above	481	282			94			0
	MD	All	453	269			1106			26
	ME	Above	202	113			146			0
	ME	All	455	269			1184			38
	MF	Above	441	315			370			12
	MG	Below	261	163			532			10
	MG	All	211	118			694			20
	GM	Above	187	106			44			0
	GM	All	209	114			582			18
	JK	Above	261	149			936			8
	JK	All	459	258			1178			22
	JL	All	195	108			472			14
	JN	All	176	107			478			8
	CO	All	108	64			134			4
CP	Below	179	112			452			12	
CP	All	170	97			464			24	
DI	All	182	116			702			10	
YC	Above	342	215			278			6	
YC	All	393	255			1628			44	

TABLE 3 (Continued)

Year	Aircraft	Altitude	Aircraft hours	Landings	Counts at 0.75g level	Counts at 1.25g level	2x geometric mean at $\pm 0.25g$	Counts at 0.45g level	Counts at 1.55g level	2x geometric mean at $\pm 0.55g$
All years (Contd)	YD	All	190	123			854			22
	ZM	Below	161	109			718			18
	ZM	All	186	119			470			6
	All	Above	1914	1180			1868			26
	All	Below	1761	1057			4642			132
	All	All	4567	2694			12,604			318
	Total		8242	4931						

AUGUST

1960	MA	Below	226	128	202	496	634	3	10	10
	MB	Below	200	122	120	396	436	1	8	6
	MC	Below	177	100	114	191	296	3	6	8
	MD	Above	136	115	37	33	70	2	2	4
	ME	Above	197	115	108	130	236	0	0	0
	MF	Above	225	130	91	82	172	1	2	2
	MG	Below	202	112	127	104	230	1	0	0
	YC	Above	194	128	77	55	130	1	1	2
		All	Above	752	488			608			8
	All	Below	805	462			1596			24
	Total		1557	950						

1961	MA	Below	213	126	203	417	582	1	8	6
	MB	Below	167	93	101	320	360	3	5	8
	MC	Below	205	112	190	253	438	11	11	22
	MD	Above	202	117	30	26	56	0	0	0
	ME	Above	195	114	62	49	110	2	2	4
	MG	Below	239	147	177	388	524	1	6	4
	GM	Above	185	108	45	44	88	0	0	0
	JK	Above	194	110	195	415	568	1	6	4
	CP	Below	210	129	144	346	446	3	13	12
	YC	Above	118	78	45	31	74	2	2	4
	ZM	Below	145	92	233	419	624	5	7	12
	All	Above	894	527			896			12
	All	Below	1179	699			2974			64
	Total		2073	1226						

TABLE 3 (Continued)

Year	Aircraft	Altitude	Aircraft hours	Landings	Counts at 0.75g level	Counts at 1.25g level	2x geometric mean at $\pm 0.25g$	Counts at 0.45g level	Counts at 1.55g level	2x geometric mean at $\pm 0.55g$
1962	MA	All	223	129	196	485	616	5	13	16
	MB	All	240	136	133	415	470	4	8	12
	MC	All	206	112	193	281	466	4	4	8
	MD	All	225	130	261	478	706	10	9	18
	ME	All	139	81	196	217	412	8	6	14
	MG	All	234	184	318	514	808	6	8	14
	GM	All	226	133	193	468	602	6	3	8
	JK	All	281	159	183	583	654	1	5	4
	JL	All	253	143	157	903	754	4	18	16
	JN	All	197	115	89	796	532	3	12	12
	CP	All	198	113	135	309	408	7	11	18
	DI	All	190	121	336	467	792	5	12	16
	YC	All	185	122	311	414	718	10	9	18
	YD	All	192	124	281	530	772	9	11	20
	ZM	All	176	110	42	510	292	2	9	8
	Total	All	3165	1912			9002			202

1963	MA	All	195	116	166	383	504	5	11	14
	MC	All	260	155	148	277	404	0	0	0
	MD	All	206	127	131	316	406	2	6	6
	ME	All	232	138	407	418	824	17	27	40
	JK	All	258	149	235	544	716	7	11	18
	YC	All	209	128	293	357	646	11	13	24
	Total	All	1360	813			3500			102

All years	MA	Below	439	254			1216			16
	MA	All	418	245			1120			30
	MB	Below	367	215			796			14
	MB	All	240	136			470			12
	MC	Below	382	212			734			30
	MC	All	466	267			870			8
	MD	Above	338	232			126			4
	MD	All	431	257			1112			24
	ME	Above	197	115			236			0
	ME	All	371	219			1236			54
	MF	Above	420	244			282			6
	MG	Below	441	259			754			4
	MG	All	234	184			808			14
	GM	Above	185	108			88			0
	GM	All	226	133			602			8

TABLE 3 (Continued)

Year	Aircraft	Altitude	Aircraft hours	Landings	Counts at 0.75g level	Counts at 1.25g level	2x geometric mean at $\pm 0.25g$	Counts at 0.45g level	Counts at 1.55g level	2x geometric mean at $\pm 0.55g$
All years (Contd)	JK	Above	194	110			568			4
	JK	All	539	308			1370			22
	JL	All	253	143			754			16
	JN	All	197	115			532			12
	CP	Below	210	129			446			12
	CP	All	198	113			408			18
	DI	All	190	121			792			16
	YC	Above	312	206			204			6
	YC	All	394	250			1364			42
	YD	All	192	124			772			20
	ZM	Below	145	92			624			12
	ZM	All	176	110			292			8
	All	Above	1646	1015			1504			20
	All	Below	1984	1161			4570			88
	All	All	4525	2725			12,502			304
	Total		8155	4901						

SEPTEMBER

1960	MA	Below	128	71	128	305	396	1	6	4
	MB	Below	231	135	102	461	434	2	4	6
	MC	Below	249	145	186	302	474	12	7	18
	MD	Above	274	123	77	118	190	2	3	4
	ME	Above	186	107	73	116	184	6	0	4
	MF	Above	156	94	127	105	230	2	5	6
	MG	Below	214	122	76	70	146	1	2	2
	YC	Above	165	117	36	32	68	1	0	0
		All	Above	781	441			672			14
	All	Below	822	473			1450			30
	Total		1603	914						

TABLE 3 (Continued)

Year	Aircraft	Altitude	Aircraft hours	Landings	Counts at 0.75g level	Counts at 1.25g level	2x geometric mean at $\pm 0.25g$	Counts at 0.45g level	Counts at 1.55g level	2x geometric mean at $\pm 0.55g$
1961	MA	Below	154	88	70	222	250	4	7	10
	MB	Below	225	131	94	404	390	1	5	4
	MC	Below	193	110	138	213	342	3	4	6
	MD	Above	206	117	28	29	56	0	0	0
	ME	Above	63	37	66	62	128	3	9	10
	MF	Above	163	89	60	42	100	6	6	12
	MG	Below	155	88	77	198	246	2	5	6
	GM	Above	173	106	24	23	46	1	1	2
	JK	Above	166	96	169	341	480	3	4	6
	CP	Below	180	110	83	256	292	6	15	18
	YD	Below	7	5	2	2	4	0	0	0
	ZM	Below	161	103	215	421	602	3	7	10
	All Above		771	445			810			30
	All Below		1075	635			2126			54
	Total		1846	1080						

1962	MA	All	190	109	112	406	426	0	5	4
	MB	All	189	111	81	302	312	4	5	8
	MC	All	208	120	216	293	446	4	5	8
	MD	All	209	117	193	319	496	8	5	12
	ME	All	240	140	322	349	670	6	11	16
	MG	All	235	85	110	178	280	4	5	8
	GM	All	201	118	193	379	540	1	7	6
	JK	All	190	103	189	389	542	4	4	8
	JL	All	204	114	102	657	518	1	6	4
	JN	All	193	110	62	667	406	1	12	6
	CP	All	210	125	138	366	449	3	0	4
	DI	All	169	105	312	426	730	5	9	14
	YC	All	140	90	241	314	550	12	11	22
	YD	All	162	106	224	428	620	6	10	16
	ZM	All	164	106	11	313	118	7	5	12
	Total	All	2904	1659			7103			148

TABLE 3 (Continued)

Year	Aircraft	Altitude	Aircraft hours	Landings	Counts at 0.75g level	Counts at 1.25g level	2 σ geometric mean at $\pm 0.25g$	Counts at 0.45g level	Counts at 1.55g level	2 σ geometric mean at $\pm 0.55g$
1963	MA	All	274	164	230	483	666	7	21	26
	MC	All	24	14	15	27	40	0	0	0
	MD	All	102	62	62	164	202	2	3	4
	ME	All	149	83	149	158	306	1	0	0
	JK	All	224	132	212	547	682	8	17	24
	YC	All	172	105	240	269	508	4	8	12
	Total		945	560			2404			66

All years	MA	Below	282	159			646			14
	MA	All	464	273			1092			30
	MB	Below	456	266			824			10
	MB	All	189	111			312			8
	MC	Below	442	255			816			24
	MC	All	232	134			486			8
	MD	Above	480	240			246			4
	MD	All	311	179			698			16
	ME	Above	249	144			312			14
	ML	All	389	223			976			16
	MF	Above	319	183			330			18
	MG	Below	369	210			392			8
	MG	All	235	85			280			8
	GM	Above	173	106			46			2
	GM	All	201	118			540			6
	JK	Above	166	96			480			6
	JK	All	414	235			1224			32
	JL	All	204	114			518			4
	JN	All	193	110			406			6
	CP	Below	180	110			292			18
	CP	All	210	125			449			4
	DI	All	169	105			730			14
	YC	Above	165	117			68			0
YC	All	312	195			1058			34	
YD	Below	7	5			4			0	
YD	All	162	106			620			16	
ZM	Below	161	103			602			10	
ZM	All	164	106			118			12	
	All	Above	1552	886			1482			44
	All	Below	1897	1108			3576			84
	All	All	3849	2219			9507			214
	Total		7298	4213						

TABLE 3 (Continued)

OCTOBER

Year	Aircraft	Altitude	Aircraft hours	Landings	Counts at 0.75g level	Counts at 1.25g level	2x geometric mean at $\pm 0.25g$	Counts at 0.45g level	Counts at 1.55g level	2x geometric mean at $\pm 0.55g$
1960	MA	Below	182	104	111	321	378	2	4	6
	MB	Below	151	86	49	278	234	1	3	4
	MC	Below	148	78	170	242	406	8	16	22
	MD	Above	184	106	127	142	268	4	4	8
	ME	Above	182	105	82	125	202	2	0	2
	MF	Above	173	96	93	80	172	2	1	2
	MG	Below	174	97	76	82	158	1	0	0
	YC	Above	170	111	139	129	268	2	4	6
	All	Above	709	418			910			18
	All	Below	655	365			1176			32
	Total		1364	783						

1961	MA	Below	2	1	2	4	6	0	0	0
	MA	All	61	34	73	125	184	8	7	14
	MB	Below	207	127	75	303	302	3	7	10
	MC	Below	137	77	110	185	286	5	6	10
	MD	Above	166	96	38	45	82	1	0	0
	ME	Above	154	89	128	111	238	6	15	18
	MF	Above	146	82	93	40	122	4	6	10
	MG	Below	165	95	78	182	238	1	5	4
	GM	Above	175	103	64	63	126	0	1	0
	JK	Above	163	93	195	374	540	4	11	14
	CO	Above	128	71	68	71	138	1	2	2
	CP	Below	167	100	77	228	264	1	3	4
	YD	Below	210	136	56	55	110	2	1	2
	ZM	Below	180	116	201	412	576	3	12	12
		All	Above	932	534			1246			44
	All	Below	1068	652			1782			42
	All	All	61	34			184			14
	Total		2061	1220						

1962	MA	All	191	111	168	427	536	8	19	24
	MB	All	177	103	58	276	254	3	4	6
	MC	All	196	111	193	232	424	3	4	6
	MD	All	159	94	131	224	342	1	2	2
	ME	All	223	130	222	237	458	5	9	14
	MG	All	156	89	172	251	416	11	12	22
	GM	All	154	88	240	412	628	4	8	12

TABLE 3 (Continued)

Year	Aircraft	Altitude	Aircraft hours	Landings	Counts at 0.75g level	Counts at 1.25g level	2x geometric mean at ±0.25g	Counts at 0.45g level	Counts at 1.55g level	2x geometric mean at ±0.55g
1962 (Contd)	JK	All	186	108	201	405	570	5	5	10
	JL	All	172	103	124	688	584	5	12	16
	JN	All	205	116	49	598	342	1	5	4
	CD	All	182	109	126	296	386	5	6	10
	DE	All	156	100	350	434	780	7	10	16
	YC	All	200	123	288	362	646	11	9	20
	YD	All	123	80	115	225	322	2	4	6
	ZM	All	148	90	12	278	116	5	5	10
	Total	All	2628	1555			6804			178

1963	JK	All	208	127	130	402	458	2	12	10
	YC	All	56	34	85	93	178	2	3	4
	Total	All	264	161			636			14

All years	MA	Below	184	105			384			6
	MA	All	252	145			720			38
	MB	Below	358	213			536			14
	MB	All	177	103			254			6
	MC	Below	285	155			692			32
	MC	All	196	111			424			6
	MD	Above	350	202			350			8
	MD	All	159	94			342			2
	ME	Above	336	194			440			20
	ME	All	223	130			458			14
	MF	Above	319	178			294			12
	MG	Below	339	192			396			4
	MG	All	156	89			416			22
	GM	Above	175	103			126			0
	GM	All	154	88			628			12
	JK	Above	163	93			540			14
	JK	All	394	235			1028			20
	JL	All	172	103			584			16
	JN	All	205	116			342			4
	CO	Above	128	71			138			2
CP	Below	167	100			264			4	
CP	All	182	109			386			10	
DI	All	156	100			780			16	
YC	Above	170	111			268			6	
YC	All	256	157			824			24	

TABLE 3 (Continued)

Year	Aircraft	Altitude	Aircraft hours	Landings	Counts at 0.75g level	Counts at 1.25g level	2x geometric mean at $\pm 0.25g$	Counts at 0.45g level	Counts at 1.55g level	2x geometric mean at $\pm 0.55g$
All years (Contd)	YD	Below	210	136			110			2
	YD	All	123	80			322			6
	ZM	Below	180	116			576			12
	ZM	All	148	90			116			10
	All	Above	1641	952			2156			62
	All	Below	1723	1017			2958			74
	All	All	2953	1750			7624			206
	Total		6317	3719						

NOVEMBER

1960	MA	Below	82	43	79	165	228	0	5	4
	MB	Below	159	87	89	277	314	2	7	8
	MC	Below	108	61	92	145	230	0	4	4
	MD	Above	126	68	69	67	136	4	2	6
	ME	Above	123	74	121	183	298	5	0	4
	MF	Above	140	78	77	64	140	1	0	0
	MG	Below	116	77	40	34	74	0	0	0
	YC	Above	135	86	116	95	210	4	5	8
	All	Above	524	306			784			18
	All	Below	465	268			846			16
	Total		989	574						

1961	MA	All	146	88	104	250	322	1	2	2
	MB	Below	107	61	42	156	162	1	3	4
	MC	Below	113	64	62	101	158	1	1	2
	MD	Above	175	104	39	35	74	0	0	0
	ME	Above	144	79	58	36	92	2	1	2
	MG	Below	80	47	38	83	112	0	2	2
	MG	All	23	13	12	24	34	1	0	0
	GM	Above	100	59	41	50	90	0	0	0
	JK	Above	127	72	136	270	384	4	9	12
	CO	Above	136	75	86	98	184	2	5	6
	CP	Below	112	68	80	194	250	2	6	6
	YC	All	23	14	43	50	92	0	1	0
	YD	Below	169	104	95	87	182	5	6	10
	ZM	Below	128	81	132	251	364	1	10	6

TABLE 3 (Continued)

Year	Aircraft	Altitude	Aircraft hours	Landings	Counts at 0.75g level	Counts at 1.25g level	2x geometric mean at $\pm 0.25g$	Counts at 0.45g level	Counts at 1.55g level	2x geometric mean at $\pm 0.55g$
1961 (Contd)	All	Above	682	389			824			20
	All	Below	709	425			1228			30
	All	All	192	115			448			2
	Total		1583	929						

1962	MA	All	165	101	155	280	416	7	15	20
	MB	All	168	99	124	377	432	4	8	12
	MC	All	170	99	184	234	414	3	7	10
	MD	All	104	63	108	168	270	0	2	2
	ME	All	153	86	165	154	318	3	8	10
	MG	All	160	101	235	323	552	8	6	14
	GM	All	138	79	221	378	578	4	7	10
	JK	All	171	104	147	437	506	4	6	10
	JL	All	106	77	53	604	358	1	5	4
	JN	All	139	113	71	630	422	6	7	12
	CP	All	152	79	148	311	429	6	7	12
	DI	All	112	72	188	283	462	5	10	14
	YC	All	168	105	247	245	492	2	7	8
	YD	All	84	53	33	52	82	1	0	0
	ZM	All	179	113	9	456	128	6	9	14
	Total	All	2169	1344			5859			152

1963	JK	All	159	94	134	364	442	3	15	14
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All Years	MA	Below	82	43			228			4
	MA	All	311	189			738			22
	MB	Below	266	148			476			12
	MB	All	168	99			432			12
	MC	Below	221	125			388			6
	MC	All	170	99			414			10
	MD	Above	301	172			210			6
	MD	All	104	63			270			2
	ME	Above	267	153			390			6
	ME	All	153	86			318			10
	MF	Above	140	78			140			0
	MG	Below	196	124			186			2
	MG	All	183	114			586			14

TABLE 3 (Continued)

Year	Aircraft	Altitude	Aircraft hours	Landings	Counts at 0.75g level	Counts at 1.25g level	2x geometric mean at $\pm 0.25g$	Counts at 0.45g level	Counts at 1.55g level	2x geometric mean at $\pm 0.55g$
All years (Contd)	GM	Above	100	59			90			0
	GM	All	138	79			578			10
	JK	Above	127	72			384			12
	JK	All	330	198			948			24
	JL	All	106	77			358			4
	JN	All	139	113			422			12
	CO	Above	136	75			184			6
	CP	Below	112	68			250			6
	CP	All	152	79			429			12
	DI	All	112	72			462			14
	YC	Above	135	86			210			8
	YC	All	191	119			584			8
	YD	Below	169	104			182			10
	YD	All	84	53			82			0
	ZM	Below	128	81			364			6
	ZM	All	179	113			128			14
		All	Above	1206	695			1608			38
	All	Below	1174	693			2074			46
	All	All	2520	1553			6749			168
	Total		4900	2941						

DECEMBER

1960	MA	Below	146	80	96	299	338	1	3	4
	MB	Below	127	76	102	324	364	4	8	12
	MC	Below	115	68	117	209	312	3	5	8
	MD	Above	147	80	225	236	460	22	30	52
	ME	Above	154	75	170	251	414	5	0	4
	MF	Above	102	64	68	52	118	2	1	2
	MG	Below	160	81	75	134	200	0	0	0
	YC	Above	162	105	137	112	248	1	8	6
		All	Above	565	324			1240			64
	All	Below	548	305			1214			24
	Total		1113	629						

TABLE 3 (Continued)

Year	Aircraft	Altitude	Aircraft hours	Landings	Counts at 0.75g level	Counts at 1.25g level	2x geometric mean at $\pm 0.25g$	Counts at 0.45g level	Counts at 1.55g level	2x geometric mean at $\pm 0.55g$
1961	MA	All	129	74	85	224	276	5	4	8
	MB	Below	92	53	38	142	146	0	3	4
	MC	Below	127	73	58	105	156	0	0	0
	MD	Above	92	51	32	39	70	1	2	2
	MD	All	14	8	5	6	10	0	0	0
	ME	Above	173	96	60	46	106	1	2	2
	MG	All	76	44	51	93	138	1	1	2
	GM	Above	137	78	79	129	202	0	1	0
	JK	Above	109	63	82	171	236	1	3	4
	CO	Above	126	69	81	89	170	1	3	4
	CP	Below	156	88	67	217	242	1	3	4
	DI	All	178	125	489	580	1066	10	10	20
	YC	All	143	88	270	310	578	3	6	8
	YD	Below	164	98	80	79	158	3	1	4
	ZM	Below	8	5	9	16	24	0	0	0
	ZM	All	79	51	87	155	232	1	2	2
		All	Above	637	357			784			12
	All	Below	547	317			726			12
	All	All	619	390			2300			40
	Total		1803	1064						

1962	MA	All	124	86	64	207	230	1	4	4
	MB	All	174	102	183	566	644	5	14	16
	MC	All	141	85	168	213	378	2	6	6
	MD	All	85	48	107	147	250	1	4	4
	ME	All	126	95	178	225	400	8	7	14
	MG	All	155	102	225	324	540	8	13	20
	GM	All	146	88	191	331	502	4	4	8
	JK	All	165	101	170	456	556	4	8	12
	JL	All	149	93	78	317	314	2	6	6
	JN	All	159	109	89	769	524	4	6	10
	CP	All	114	26	61	188	214	2	3	4
	YC	All	166	100	354	346	700	20	19	38
	YD	All	14	9	6	9	14	0	0	0
	ZM	All	122	70	24	457	210	13	18	32
	Total	All	1840	1114			5476			174

TABLE 3 (Continued)

Year	Aircraft	Altitude	Aircraft hours	Landings	Counts at 0.75g level	Counts at 1.25g level	2x geometric mean at $\pm 0.25g$	Counts at 0.45g level	Counts at 1.55g level	2x geometric mean at $\pm 0.55g$
1963	JK	All	83	48	90	226	286	2	10	8

All years	MA	Below	146	80			338			4
	MA	All	253	160			506			12
	MB	Below	219	129			510			16
	MB	All	174	102			644			16
	MC	Below	242	141			468			8
	MC	All	141	85			378			6
	MD	Above	239	131			530			54
	MD	All	99	56			260			4
	ME	Above	327	171			520			6
	ME	All	126	95			400			14
	MF	Above	102	64			118			2
	MG	Below	160	81			200			0
	MG	All	231	146			678			22
	GM	Above	137	78			202			0
	GM	All	146	88			502			8
	JK	Above	109	63			236			4
	JK	All	248	149			842			20
	JL	All	149	93			314			6
	JN	All	159	109			524			10
	CO	Above	126	69			170			4
	CP	Below	156	88			242			4
	CP	All	114	26			214			4
	DI	All	178	125			1066			20
YC	Above	162	105			248			6	
YC	All	309	188			1278			46	
YD	Below	164	98			158			4	
YD	All	14	9			14			0	
ZM	Below	8	5			24			0	
ZM	All	201	121			442			34	
	All	Above	1202	681			2024			76
	All	Below	1095	622			1940			36
	All	All	2542	1552			8062			222
	Total		4839	2855						

TABLE 4

Estimates of acceleration counts per hour

Note: Figures in lines X, Y and Z are recorded, in lines 1, 2, 3, 4 and 5 estimated.

X subscript denotes "records collected only above 20,000 ft".

Y subscript denotes "records collected only below 20,000 ft".

Z subscript denotes "records collected at all altitudes".

E is estimate of acceleration counts per hour.

$$E_1 = \frac{C_X}{0.69 T_X}$$

$$E_2 = \frac{C_Y}{0.31 T_Y}$$

$$E_3 = \frac{C_Z}{T_Z}$$

$$E_4 = \frac{C_X + C_Y}{0.69 T_X + 0.31 T_Y}$$

$$E_5 = \frac{C_X}{T_X} + \frac{C_Y}{T_Y}$$

JANUARY

			±0.25g		±0.55g	
Year	Subscript	Hours T	Counts C	Counts/hour E	Counts C	Counts/hour E
1960	Y	78	96		0	
	2	24	96	4.00	0	0

1961	X	530	652	1.23	18	0.0340
	Y	534	1,850	3.46	18	0.0337
	Z	-	-	-	-	-
	1	366	652	1.78	18	0.0492
	2	166	1,850	11.14	18	0.1084
	3	-	-	-	-	-
	4	532	2,502	4.70	36	0.0677
	5			4.69		0.0677

TABLE 4 (Continued)

Year	Subscript	Hours T	$\pm 0.25g$		$\pm 0.55g$	
			Counts C	Counts/hour E	Counts C	Counts/hour E
1962	X	386	468	1.21	6	0.0155
	Y	562	870	1.55	16	0.0285
	Z	1,096	3,778		76	
	1	266	468	1.76	6	0.0226
	2	174	870	5.00	16	0.0920
	3	1,096	3,778	3.45	76	0.0693
	4	440	1,338	3.04	22	0.0500
	5			2.76		0.0440

1963	Z/3	1,483	3,774	2.54	78	0.0526
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All years	X	916	1,120	1.22	24	0.0262
	Y	1,174	2,816	2.40	34	0.0290
	Z	2,579	7,552		154	
	1	632	1,120	1.77	24	0.0380
	2	364	2,816	7.74	34	0.0934
	3	2,579	7,552	2.93	154	0.0597
	4	996	3,936	3.95	58	0.0582
	5			3.62		0.0552

FEBRUARY

1960	Y	79	292		4	
	2	24	292	12.17	4	0.1667

1961	X	678	432	0.64	10	0.0147
	Y	504	1,910	3.79	22	0.0437
	Z	-	-		-	
	1	468	432	0.92	10	0.0214
	2	156	1,910	12.24	22	0.1410
	3	-	-		-	
	4	624	2,342	3.75	32	0.0513
	5			4.43		0.0584

TABLE 4 (Continued)

Year	Subscript	Hours T	$\pm 0.25g$		$+0.55g$	
			Counts C	Counts/hour E	Counts C	Counts/hour E
1962	X	278	106	0.38	4	0.0144
	Y	284	745	2.62	14	0.0493
	Z	1,458	5,414		124	
	1	192	106	0.55	4	0.0208
	2	88	745	8.47	14	0.1591
	3	1,458	5,414	3.71	124	0.0850
	4	280	851	3.04	18	0.0643
	5			3.00		0.0637

1963	Z/3	1,350	3,220	2.39	52	0.0385
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All years	X	956	538	0.56	14	0.0146
	Y	867	2,947	3.40	40	0.0461
	Z	2,808	8,634		176	
	1	660	538	0.82	14	0.0212
	2	268	2,947	11.00	40	0.1493
	3	2,808	8,634	3.07	176	0.0626
	4	928	3,485	3.76	54	0.0582
	5			3.96		0.0608

MARCH

1960	X	26	18	0.69	6	0
	Y	147	556	3.78	4	0.0272
	Z	-	-		-	
	1	18	18	1.00	0	0
	2	46	556	12.09	4	0.0870
	3	-	-		-	
	4	64	574	8.97	4	0.0625
	5			4.47		0.0272

TABLE 4 (Continued)

APRIL

Year	Subscript	Hours T	±0.25g		±0.55g	
			Counts C	Counts/hour E	Counts C	Counts/hour E
1960	X	197	106	0.54	0	0
	Y	273	1,028	3.77	12	0.0440
	Z	-	-	-	-	-
	1	136	106	0.78	0	0
	2	85	1,028	12.09	12	0.1412
	3	-	-	-	-	-
	4	221	1,134	5.13	12	0.0543
	5			4.31		0.0440
1961	X	586	334	0.57	2	0.0034
	Y	882	2,456	2.78	58	0.0658
	Z	-	-	-	-	-
	1	404	334	0.83	2	0.0050
	2	273	2,456	9.00	58	0.2125
	3	-	-	-	-	-
	4	677	2,790	4.12	60	0.0886
	5			3.35		0.0692
1962	Z/3	2,663	8,466	3.10	144	0.0582
1963	Z/3	1,281	3,112	2.43	62	0.0484
All years	X	783	440	0.56	2	0.0026
	Y	1,155	3,484	3.02	70	0.0606
	Z	3,944	11,578		206	
	1	540	440	0.81	2	0.0037
	2	358	3,484	9.73	70	0.1955
	3	3,944	11,578	2.94	206	0.0522
	4	898	3,924	4.37	72	0.0802
	5			3.58		0.0632

TABLE 4. (Continued)

MAY

Year	Subscript	Hours T	±0.25g		±0.55g	
			Counts C	Counts/hour E	Counts C	Counts/hour E
1960	X	533	330	0.62	8	0.0750
	Y	307	606	1.97	10	0.0326
	Z	-	-	-	-	-
	1	368	330	0.90	8	0.0217
	2	95	606	6.38	10	0.1053
	3	-	-	-	-	-
	4	463	936	2.02	18	0.0389
	5			2.59		0.0476

1961	X	797	1,052	1.32	18	0.0226
	Y	1,102	2,502	2.27	32	0.0290
	Z	-	-	-	-	-
	1	550	1,052	1.91	18	0.0327
	2	342	2,502	7.32	32	0.0936
	3	-	-	-	-	-
	4	892	3,554	3.98	50	0.0561
	5			3.59		0.0516

1962	Z/3	2,819	7,470	2.62	126	0.0442
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1963	Z/3	1,354	2,978	2.20	56	0.0414
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All years	X	1,330	1,382	1.04	26	0.0195
	Y	1,409	3,108	2.21	42	0.0298
	Z	4,203	10,448		182	
	1	918	1,382	1.51	26	0.0283
	2	437	3,108	7.11	42	0.0961
	3	4,203	10,448	2.49	182	0.0433
	4	1,355	4,490	3.31	68	0.0502
	5			3.25		0.0493

TABLE 4 (Continued)

JUNE

Year	Subscript	Hours T	±0.25g		±0.55g	
			Counts C	Counts/hour E	Counts C	Counts/hour E
1960	X	740	456	0.62	8	0.0108
	Y	456	1,084	2.38	20	0.0439
	Z	-	-	-	-	-
	1	511	456	0.89	8	0.0157
	2	141	1,084	7.69	20	0.1418
	3	-	-	-	-	-
	4	652	1,540	2.36	28	0.0329
	5			3.00		0.0547

1961	X	997	1,100	1.10	18	0.0181
	Y	1,096	2,640	2.41	36	0.0328
	Z	-	-	-	-	-
	1	688	1,100	1.60	18	0.0262
	2	340	2,640	7.76	36	0.1059
	3	-	-	-	-	-
	4	1,028	3,740	3.52	54	0.0525
	5			3.51		0.0509

1962	Z/3	3,084	9,392	3.05	176	0.0571
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1963	Z/3	1,346	3,088	2.29	60	0.0446
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All years	X	1,737	1,556	0.90	26	0.0150
	Y	1,552	3,724	2.40	56	0.0361
	Z	4,430	12,480		236	
	1	1,199	1,556	1.30	26	0.0217
	2	481	3,724	7.74	56	0.1164
	3	4,430	12,480	2.82	236	0.0533
	4	1,680	5,280	3.14	82	0.0488
	5			3.30		0.0511

TABLE 4 (Continued)

JULY

Year	Subscript	Hours T	±0.25g		±0.55g	
			Counts C	Counts/hour E	Counts C	Counts/hour E
1960	X	866	418	0.48	2	0.0023
	Y	632	1,566	2.48	26	0.0411
	Z	-	-	-	-	-
	1	598	418	0.70	2	0.0033
	2	196	1,566	7.99	26	0.1327
	3	-	-	-	-	-
	4	794	1,984	2.48	28	0.0353
	5			2.96		0.0434

1961	X	1,048	1,450	1.38	24	0.0229
	Y	1,129	3,076	2.72	106	0.0939
	Z	-	-	-	-	-
	1	723	1,450	2.01	24	0.0332
	2	350	3,076	8.79	106	0.3029
	3	-	-	-	-	-
	4	1,073	4,526	4.22	130	0.1212
	5			4.10		0.1168

1962	Z/3	3,169	9,318	2.94	226	0.0713
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1963	Z/3	1,398	3,286	2.35	92	0.0658
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All years	X	1,914	1,868	0.98	26	0.0136
	Y	1,761	4,642	2.64	132	0.0750
	Z	4,567	12,604		318	
	1	1,321	1,868	1.40	26	0.0197
	2	546	4,642	8.50	132	0.2418
	3	4,567	12,604	2.76	318	0.0696
	4	1,867	6,510	3.49	158	0.0846
	5			3.61		0.0886

TABLE 4 (Continued)

AUGUST

Year	Subscript	Hours T	±0.25g		±0.55g	
			Counts C	Counts/hour E	Counts C	Counts/hour E
1960	X	752	608	0.81	8	0.0106
	Y	805	1,596	1.98	24	0.0298
	Z	-	-	-	-	-
	1	519	608	1.17	8	0.0154
	2	250	1,596	6.38	24	0.0960
	3	-	-	-	-	-
	4	769	2,204	2.87	32	0.0416
	5	-	-	2.79	-	0.0404
1961	X	894	896	1.00	12	0.0134
	Y	1,179	2,974	2.52	64	0.0543
	Z	-	-	-	-	-
	1	617	896	1.45	12	0.0194
	2	365	2,974	8.15	64	0.1753
	3	-	-	-	-	-
	4	982	3,870	3.94	76	0.0774
	5	-	-	3.52	-	0.0677
1962	Z/3	3,165	9,002	2.84	202	0.0638
1963	Z/3	1,360	3,500	2.57	102	0.0750
All years	X	1,646	1,504	0.91	20	0.0122
	Y	1,984	4,570	2.30	88	0.0444
	Z	4,525	12,502	-	304	-
	1	1,136	1,504	1.32	20	0.0176
	2	615	4,570	7.43	88	0.1431
	3	4,525	12,502	2.76	304	0.0672
	4	1,751	6,074	3.47	108	0.0617
	5	-	-	3.21	-	0.0566

TABLE 4 (Continued)

SEPTEMBER

Year	Subscript	Hours T	±0.25g		±0.55g	
			Counts C	Counts/hour E	Counts C	Counts/hour E
1960	X	781	672	0.86	14	0.0179
	Y	822	1,450	1.76	30	0.0365
	Z	-	-	-	-	-
	1	539	672	1.25	14	0.0260
	2	255	1,450	5.69	30	0.1176
	3	-	-	-	-	-
	4	794	2,122	2.67	44	0.0554
	5			2.62		0.0544
1961	X	771	810	1.05	30	0.0390
	Y	1,075	2,126	1.98	54	0.0502
	Z	-	-	-	-	-
	1	532	810	1.52	30	0.0564
	2	333	2,126	6.38	54	0.1622
	3	-	-	-	-	-
	4	865	2,936	3.39	84	0.0971
	5			3.03		0.0892
1962	Z/3	2,904	7,119	2.45	148	0.0510
1963	Z/3	945	2,404	2.54	66	0.0698
All years	X	1,552	1,482	0.95	44	0.0284
	Y	1,897	3,576	1.89	84	0.0443
	Z	3,849	9,523	-	214	-
	1	1,071	1,482	1.38	44	0.0411
	2	588	3,576	6.08	84	0.1429
	3	3,849	9,523	2.47	214	0.0556
	4	1,659	5,058	3.05	128	0.0772
	5			2.84		0.0727

TABLE 4 (Continued)

OCTOBER

Year	Subscript	Hours T	$\pm 0.25g$		$\pm 0.55g$	
			Counts C	Counts/hour E	Counts C	Counts/hour E
1960	X	709	910	1.28	18	0.0254
	Y	655	1,176	1.80	32	0.0489
	Z	-	-	-	-	-
	1	489	910	1.86	18	0.0368
	2	203	1,176	5.79	32	0.1576
	3	-	-	-	-	-
	4	692	2,086	3.01	50	0.0723
	5			3.08		0.0743

1961	X	932	1,246	1.34	44	0.0472
	Y	1,068	1,782	1.67	42	0.0393
	Z	61	184		14	
	1	643	1,246	1.94	44	0.0684
	2	331	1,782	5.38	42	0.1269
	3	61	184	3.02	14	0.2295
	4	974	3,028	3.11	86	0.0883
	5			3.01		0.0865

1962	Z/3	2,628	6,804	2.59	178	0.0677
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1963	Z/3	264	636	2.41	14	0.0530
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All years	X	1,641	2,156	1.31	62	0.0378
	Y	1,723	2,958	1.72	74	0.0429
	Z	2,953	7,624		206	
	1	1,132	2,156	1.90	62	0.0548
	2	534	2,958	5.54	74	0.1386
	3	2,953	7,624	2.58	206	0.0698
	4	1,666	5,114	3.07	136	0.0816
	5			3.03		0.0807

TABLE 4. (Continued)

NOVEMBER

Year	Subscript	Hours T	±0.25g		±0.55g	
			Counts C	Counts/hour E	Counts C	Counts/hour E
1960	X	524	784	1.50	18	0.0344
	Y	465	846	1.82	16	0.0344
	Z	-	-	-	-	-
	1	362	784	2.17	18	0.0497
	2	144	846	5.88	16	0.1111
	3	-	-	-	-	-
1960	4	506	1,630	3.22	34	0.0672
	5			3.32		0.0688

1961	X	682	824	1.21	20	0.0293
	Y	709	1,228	1.73	30	0.0423
	Z	192	448	-	2	-
	1	471	824	1.75	20	0.0425
	2	220	1,228	5.58	30	0.1364
	3	192	448	2.33	2	0.0104
1961	4	691	2,052	2.97	50	0.0724
	5			2.94		0.0716

1962	Z/3	2,169	5,859	2.70	152	0.0701
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1963	Z/3	159	442	2.79	14	0.0881
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All years	X	1,206	1,608	1.33	38	0.0315
	Y	1,174	2,074	1.77	46	0.0392
	Z	2,520	6,749	-	168	-
	1	833	1,608	1.93	38	0.0456
	2	364	2,074	5.70	46	0.1264
	3	2,520	6,749	2.68	168	0.0667
All years	4	1,197	3,682	3.08	84	0.0702
	5			3.10		0.0707

TABLE 4 (Continued)

DECEMBER

Year	Subscript	Hours T	±0.25g		±0.55g	
			Counts C	Counts/hour E	Counts C	Counts/hour E
1960	X	565	1,240	2.19	64	0.1133
	Y	548	1,214	2.22	24	0.0438
	Z	-	-	-	-	-
	1	390	1,240	3.18	64	0.1641
	2	170	1,214	7.14	24	0.1412
	3	-	-	-	-	-
	4	560	2,454	4.38	88	0.1571
	5	-	-	-	-	-

1961	X	637	784	1.23	12	0.0188
	Y	547	726	1.33	12	0.0219
	Z	619	2,300	-	40	-
	1	440	784	1.78	12	0.0273
	2	170	726	4.27	12	0.0706
	3	619	2,300	3.72	40	0.0646
	4	610	1,510	2.48	24	0.0393
	5	-	-	2.56	-	0.0408

1962	Z/3	1,840	5,476	2.98	174	0.0946
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1963	Z/3	83	286	3.45	8	0.0964
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All years	X	1,202	2,024	1.68	76	0.0632
	Y	1,095	1,940	1.77	36	0.0329
	Z	2,542	8,062	-	222	-
	1	830	2,024	2.44	76	0.0916
	2	340	1,940	5.72	36	0.1062
	3	2,542	8,062	3.17	222	0.0873
	4	1,170	3,964	3.39	112	0.0957
	5	-	-	3.46	-	0.0961

TABLE 4. (Continued)

GRAND TOTAL

Year	Subscript	Hours T	$\pm 0.25g$		$\pm 0.55g$	
			Counts C	Counts/hour E	Counts C	Counts/hour E
	X	15,706	16,158	1.03	366	0.0233
	Y	16,884	38,923	2.31	760	0.0450
	Z	42,630	119,718		2,610	
	1	10,840	16,158	1.49	366	0.0338
	2	5,234	38,923	7.44	760	0.1452
	3	42,630	119,718	2.81	2,610	0.0612
	4	16,074	55,081	3.43	1,126	0.0701
	5			3.33		0.0683

TABLE 5 - Total mean acceleration counts for Comet 1 and Comet 2

NOTE X subscript denotes "records collected above 21,500 ft"
 Y subscript denotes "records collected below 21,500 ft"
 Z subscript denotes "records collected at all altitudes"
 to the sum of X and Y

Comet 1

Condition	Subscript	Hours	Counts at 0.77g level	Counts at 1.23g level	2x G1	Counts at 0.48g level	Counts at 1.52g level	2x G1
Climb and descent	X	416	489	817	1266	16	22	38
Cruise	X	1005	1377	1927	3258	71	102	170
Total	X	1421	1866	2744	4526	87	124	208
Climb and descent	Y	342	2357	4301	6368	142	166	308
Cruise	Y	15	562	913	1432	3	22	16
Total	Y	357	2919	5214	7802	145	188	330
Climb and descent	Z	758	2846	5118	7634	158	188	344
Cruise	Z	1020	1939	2840	4694	74	124	192
Total	Z	1778	4785	7958	12342	232	312	538

Comet 2

			0.75g	1.25g		0.45g	1.55g	
All climb and descent	X	147	224	255	478	6	10	16
Cruise	X	500	262	350	606	2	3	4
Total	X	647	486	605	1084	8	13	20
All climb and descent	Y	91	379	743	1062	4	13	14
Cruise	Y	6	9	33	34	0	0	0
Total	Y	97	388	776	1098	4	13	14
All climb and descent	Z	238	603	998	1552	10	23	30
Cruise	Z	506	271	383	644	2	3	4
Total	Z	744	874	1381	2098	12	26	36

TABLE 6 - Comparison of acceleration counts per hour for all records for Comet 1, Comet 2, Comet 4B and B.E.A. Viscount

Comet 1

Condition	Subscript	Hours	Counts c or numerator of F	Counts/hour E $\pm 0.23g$	Counts c or numerator of E	Counts/hour E $\pm 0.53g$
Climb and descent	X	416	1266	3.04	38	0.0913
Cruise	X	1005	3258	3.24	170	0.1692
Total	X	1421	4526	3.19	208	0.1464
Climb and descent	Y	342	6368	18.62	308	0.9006
Cruise	Y	15	1432	95.47	16	1.0667
Total	Y	357	7802	21.85	330	0.9243
Climb and descent	Z	758	7634	10.07	344	0.4538
Cruise	Z	1020	4694	4.60	192	0.1882
Total	Z	1778	12,342	6.94	538	0.3026

Comet 2

				$\pm 0.25g$		$\pm 0.55g$
Climb and descent	X	147	478	3.25	16	0.1088
Cruise	X	500	606	1.21	4	0.0080
Total	X	647	1084	1.68	20	0.0309
Climb and descent	Y	91	1062	11.67	14	0.1538
Cruise	Y	6	34	5.67	0	0
Total	Y	97	1098	11.32	14	0.1443
Climb and descent	Z	238	1552	6.52	30	0.1261
Cruise	Z	536	644	1.27	4	0.0079
Total	Z	744	2098	2.82	36	0.0484

TABLE 6 (Contd)

COMET 4B

			$\pm 0.25g$		$\pm 0.55g$
X	15,706	16,158	1.03	366	0.0233
Y	16,884	38,923	2.31	760	0.0450
Z	42,630	119,718		2610	
1	10,844	16,158	1.49	366	0.0338
2	5,234	38,923	7.44	760	0.1452
3	42,630	119,718	2.81	2610	0.0612
4	16,074	55,081	3.43	1126	0.0701
5			3.33		0.0683

VISCOUNT

			$\pm 0.25g$		$\pm 0.55g$
Z	162,940	560,078	3.44	12,316	0.0758

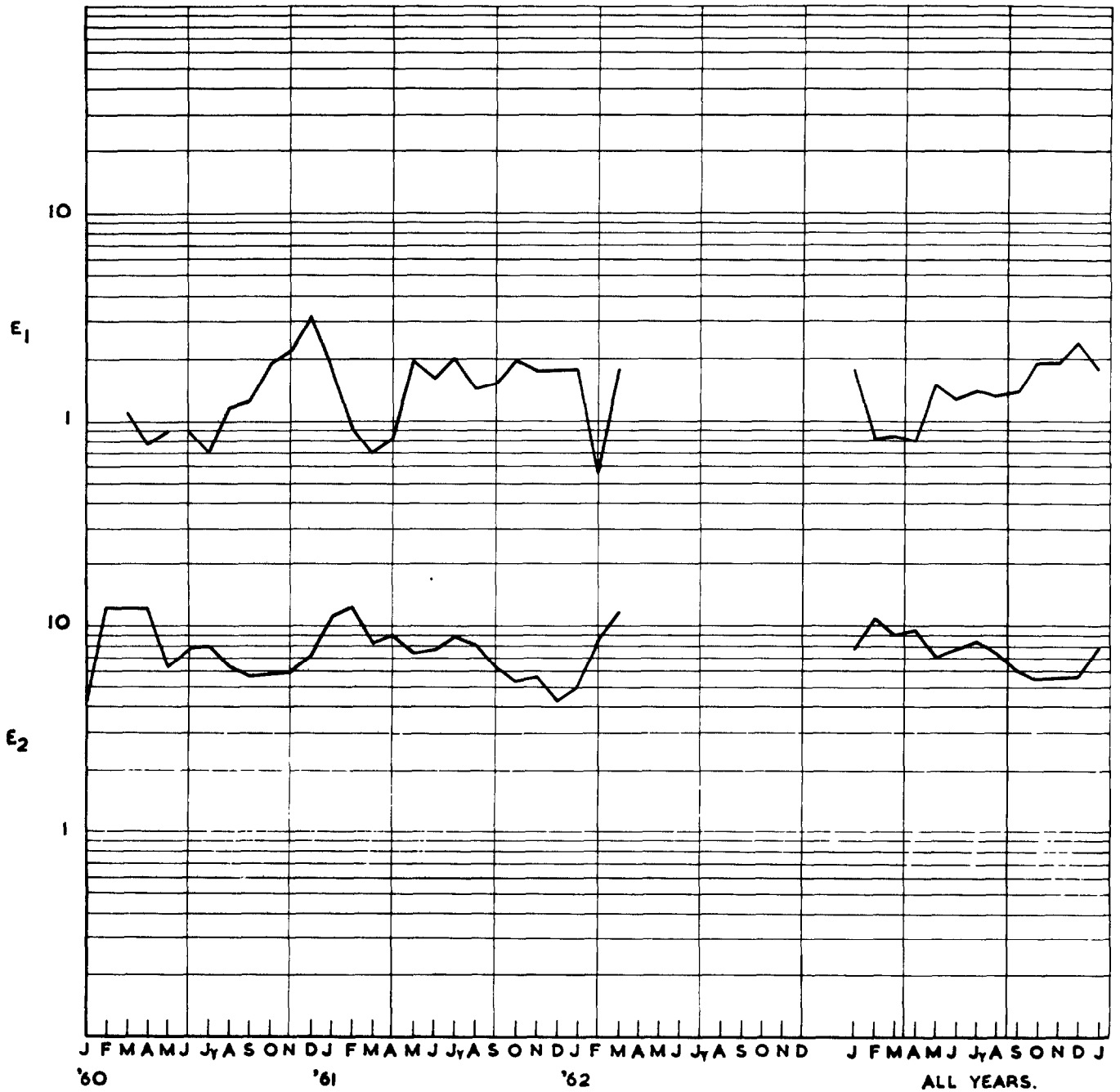


FIG. I. (a). ESTIMATE OF ACCELERATION COUNTS PER HOUR AT THE 0.25g LEVEL ABOVE AND BELOW 20,000 FT. (E_1 AND E_2).

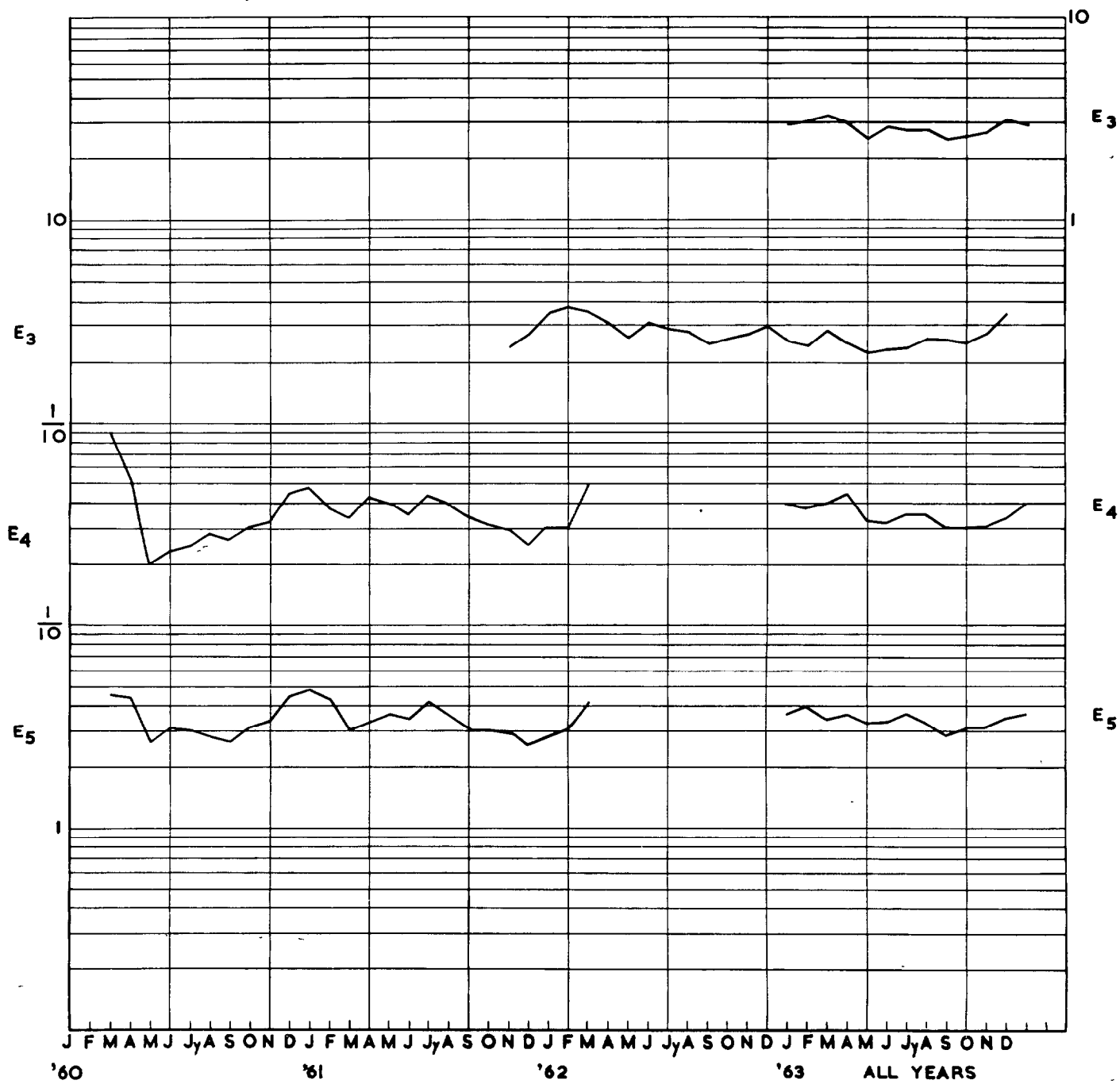


FIG. 1 (b) ESTIMATES OF ACCELERATION COUNTS PER HOUR AT THE 0.25g LEVEL OVER ALL ALTITUDES (E₃, E₄ AND E₅)

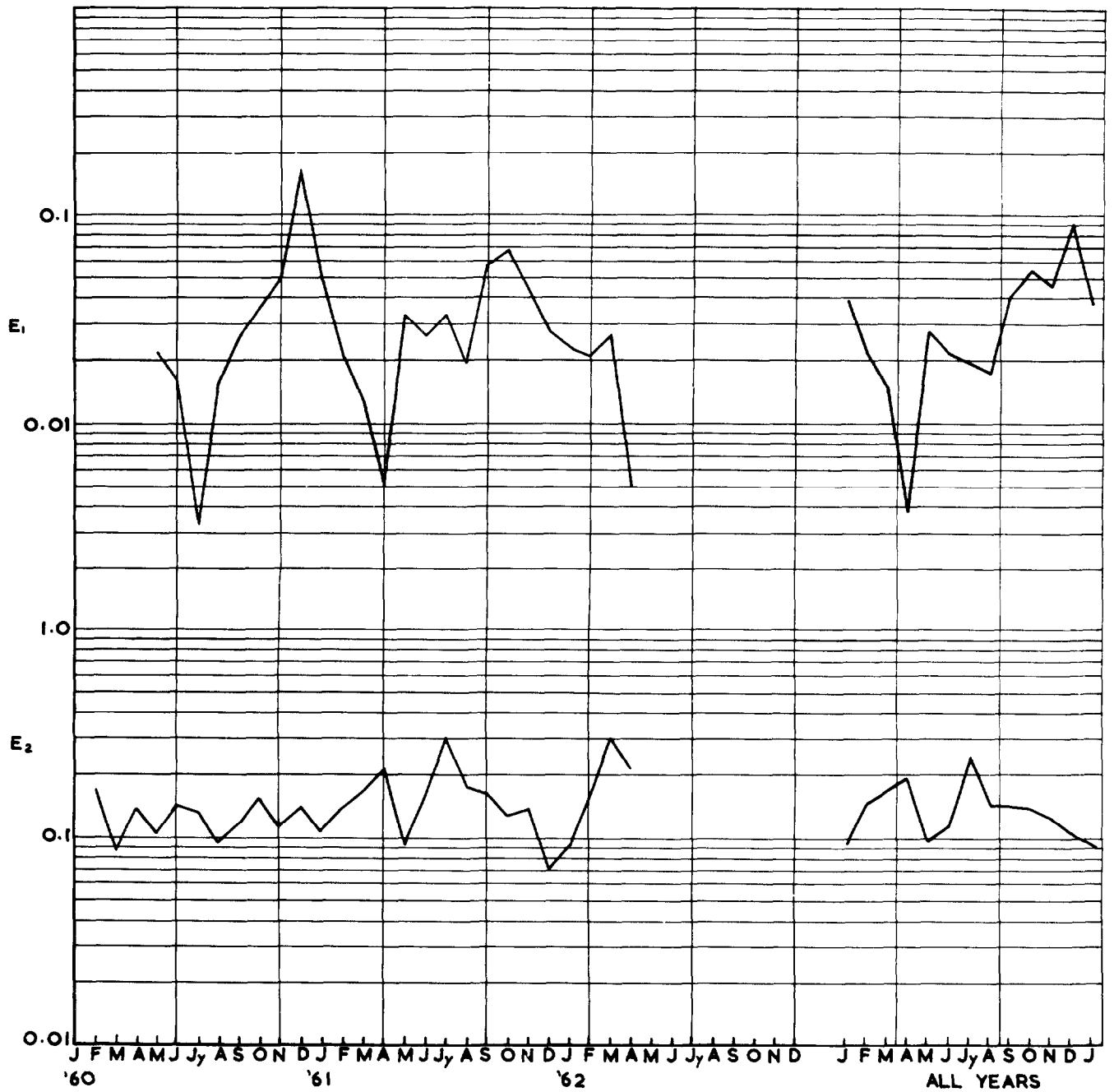


FIG. 2(a) ESTIMATES OF ACCELERATION COUNTS PER HOUR AT THE 0.55g LEVEL ABOVE AND BELOW 20,000 FT. (E₁ AND E₂)

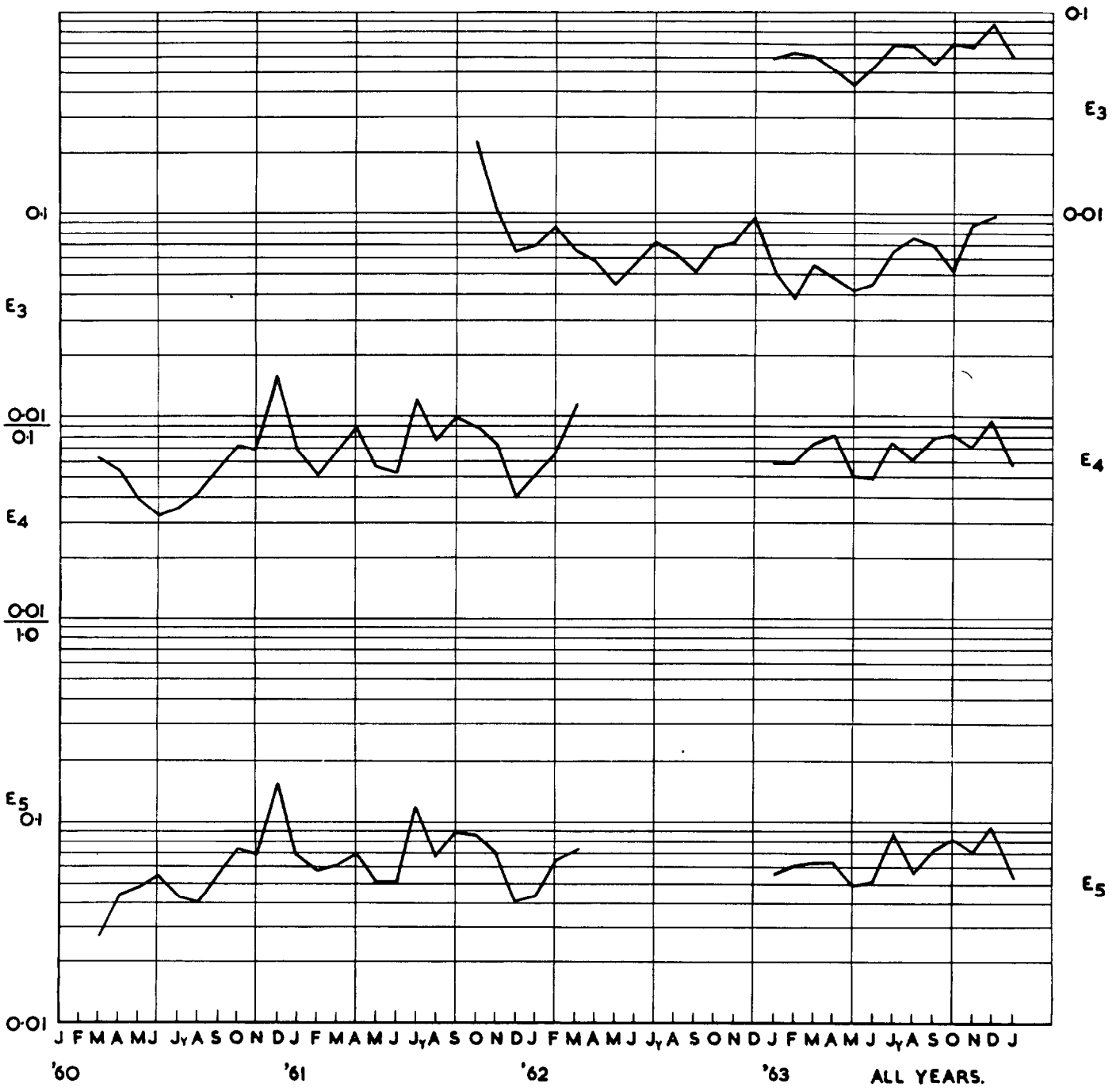
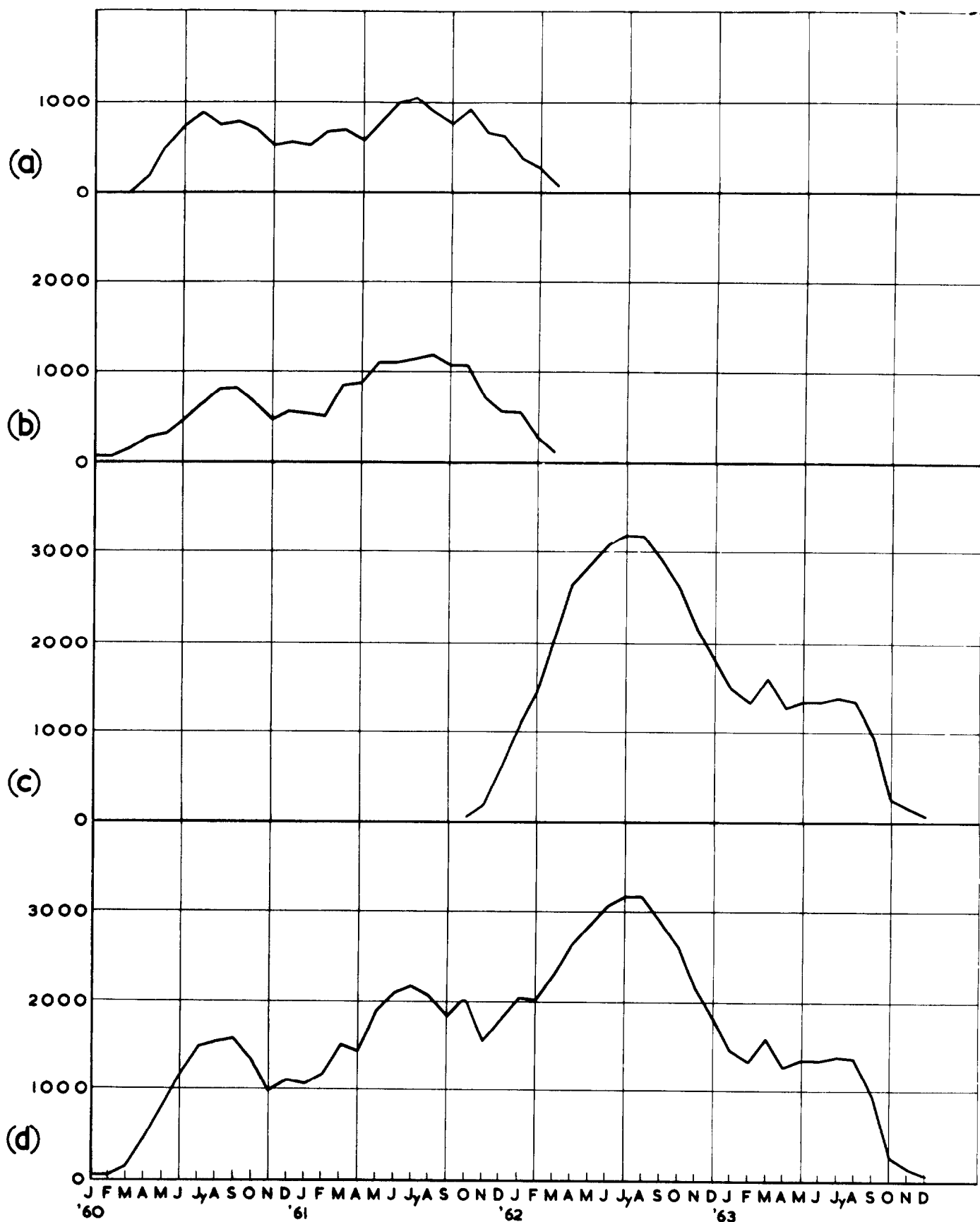
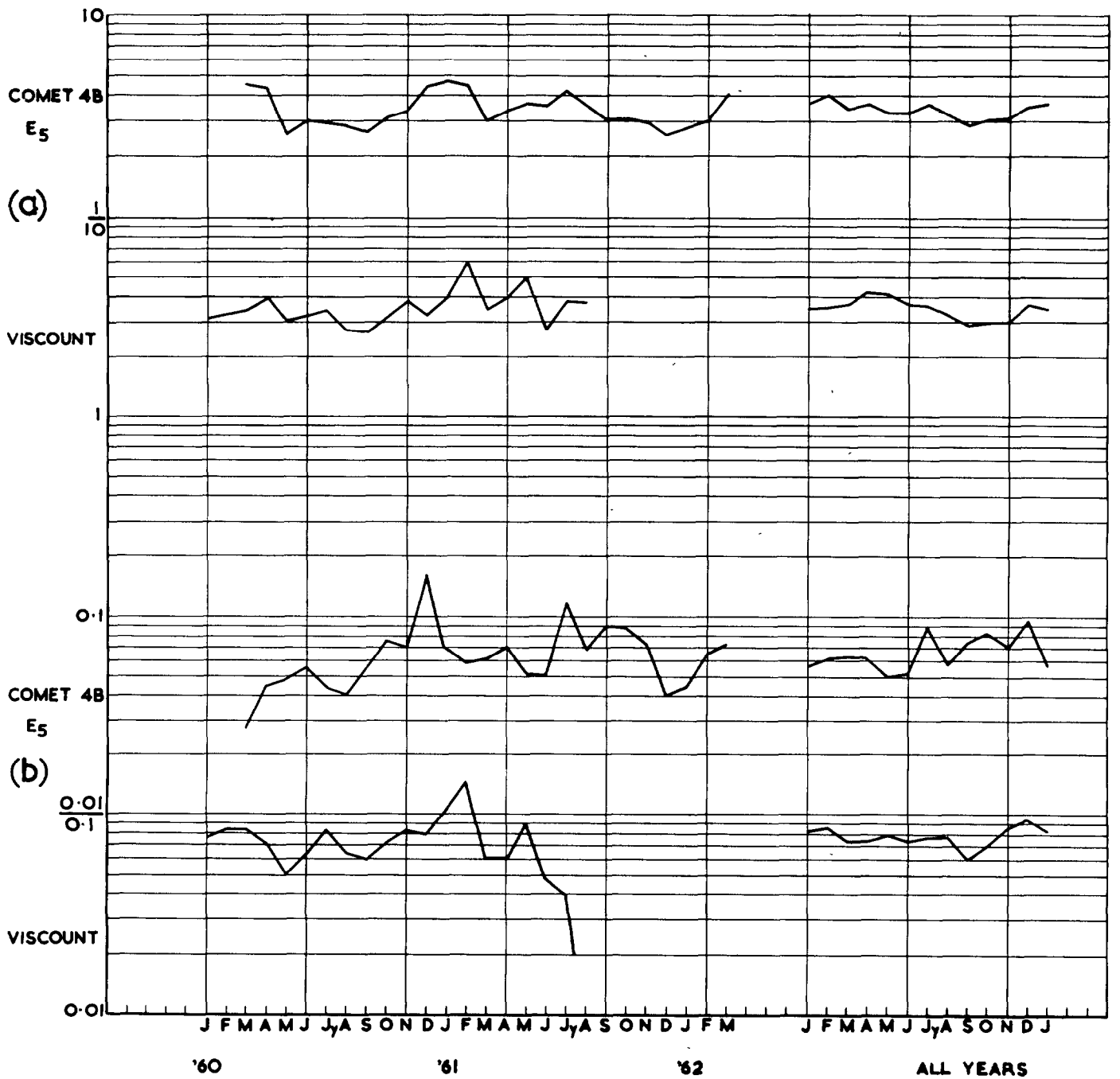


FIG. 2(b). ESTIMATE OF ACCELERATION COUNTS PER HOUR AT THE 0.55g LEVEL OVER ALL ALTITUDES (E₃, E₄ AND E₅)



- (a) FOR AIRCRAFT RECORDING OVER 20,000 FT.
- (b) FOR AIRCRAFT RECORDING UNDER 20,000 FT.
- (c) FOR AIRCRAFT RECORDING AT ALL ALTITUDES.
- (d) FOR ALL AIRCRAFT IRRESPECTIVE OF ALTITUDE.

FIG. 3. MONTHLY FLYING TIMES OF COMET 4B AIRCRAFT IN SUCCESSIVE YEARS.



(a) AT THE 0.25g LEVEL

(b) AT THE 0.55g LEVEL

FIG. 4. COMPARISON OF SMALL ACCELERATION COUNTS PER HOUR RECORDED ON COMET 4B AND VISCOUNT.

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[A1] (42) Comet 4B

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Hain Taylor, R. September 1964.

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