Date	E(P)*	Obs. P	Hypothetical Pair	Subj. P of Pair
11/7	.00037	.00048	5 Spades & 9 Diamonds	.00048
18/7	.00037	.00106	Ace Hearts & 5 Clubs	.00107
25/7	.00037	.00018	4 Clubs & Jack Hearts	.00018
8/8	.00037	.00022	10 Diamonds & 2 Spades	.00022

Table Nine: HYPOTHETICAL PAIRS OF CARDS WHICH MIGHT HAVE PRODUCED SPURIOUS EFFECTS IN TELEVISION EXPERIMENT
The observed values of P are computed from Table Six. The subjective probabilities follow the conventions given in the preceding paragraph.

* The expected value of P is based on random sampling from an open deck. This method has nothing to commend it and was almost certainly misunderstood by the subjects. If this method was really followed, the chance of a card being repeated in a pair was 1/13, and this would have been bound to produce a spurious ESP effect.

D - A Joint Experiment with Professor Hansel

The final example is a joint experiment which I performed with the leading critic of parapsychology, C.E.M. Hansel, then of the Psychology Department of Manchester University. (Abrams 1963, pp. 25-6) On the 18th of October 1962 I gave a talk on ESP to the Psychological Society of Manchester University. In a reply delivered at my invitation, Hansel said that critics of ESP had had few opportunities, if any, to participate in joint experimental studies with parapsychologists. He took up the same point the next evening in a lecture to the O.U. Scientific Society. In the public discussion following this talk, I invited Hansel to join

with me in a brief experiment the next morning, October 20th.

This challenge was accepted, and Hansel duly appeared at the Unit of Biometry, accompanied by C.C., a former student of his, then at Oxford. My team consisted of David Owen Williams (BNC), Mark Wigan (Hertford) and John Moon (BNC) - all third year science undergraduates.

The experimental plan was put together very quickly, and there was no time available for pre-testing. Thus there was no question of employing a mature experimental design. Rather the experiment had to be tailored to the conditions and facilities immediately available, including the particular abilities of two subjects who could be recruited on very short notice.

Several assumptions about psychological conditions favourable to ESP were introduced into the experimental plan. The generalized form of ESP was to be tested, allowing the incidence of both clairvoyance and telepathy. The stimulus material was arranged to allow the transfer of moods or emotional states as well as a visual content. The sender and receiver were both hypnotized. Finally, 'yes'/'no' verbal reinforcement was to be administered after each trial. But the purpose of the study was not to make an explicit analysis of these psychological factors. It was rather a case of throwing several irons into the fire in the hope of melting a well known critic of parapsychology, who was to be a collaborator and allowed to modify the experimental conditions as he saw fit.

The experiment was to involve the transmission of binary targets between separate non-adjoining rooms. Hansel was to run the sending end from the front room of the basement laboratory with the assistance of C.C. Shades were drawn across the windows, the doors were shut, and there was to be no direct communication with the receiving team. The receiving area was two floors above in the Library of the Unit of Biometry.

The targets were a black card and a white card, alternated in random order. In experiments performed in 1934, Professor L.L. Vasiliev of Leningrad employed a similar stimulus form, with 'black' and 'white' targets consisting of two discs rotated on a vertical rod. (Vasiliev 1962 a, p. 68) In these experiments the sender's task was to transmit the personal 'feeling tones' associated with 'black' and 'white', rather than the colours alone. Unfortunately, the strength of the emotive factor could not be assessed, for want of adequate control series.*

* According to my notes, Vasiliev told me that the addition of an emotive factor had produced an improvement in scoring.

In the Oxford experiment, the specific connotations of the emotionally toned stimuli had a personal significance for the sender and receiver, and were arrived at by private agreement between them.

Synchronization and reinforcement were handled with a two-way intercom (Labgear Guardian). The master unit was operated by C.C. in the laboratory, and picked up the guesses called aloud in the library. By depressing a button and

holding it dpwn, C.C. reversed the circuit and could be heard in the library, and was thus able to call out 'right' or 'wrong' after each guess. He was also to keep a record of the order of targets. Another duplicate record of the calls was kept upstairs. A tape recording was made of the entire proceedings on a Telefunken stereo 97 machine in the laboratory. A direct recording of part of the proceedings in the library was made on a Grundig TK 1 battery operated recorder.

The subjects, A.T. and P.P., were both undergraduates. They had been previously employed by Williams in experiments in hypnosis, and ESP and hypnosis combined. Neither had shown a real talent for either ESP or hypnosis. But the receiver, A.T., had an apparent unconscious bias against both ESP and hypnosis, and he had produced unusual psi-missing effects in an exploratory experiment performed by Williams.

The raw data for this experiment are given in Table Ten. There were two departures from the experimental plan. After 250 trials the reinforcement was dropped, as I felt that any gain from this proceeding was being off-set by the role of feedback in patterning the call sequence. In addition, the receiver was dissatisfied with the procedure, and C.C. was having trouble coping with his fairly involved role. The second variation was that C.C. only recorded success or failure, rather than the actual target. Of course, success or failure could later be converted to B or W by reference to the order of calls. This departure was necessary because Hansel was preparing the card order as he went along. Hansel

merely pointed with a biro to the target card, no word being spoken; so that C.C. had to observe the target card, record success or failure and then (during the first half of the experiment) announce 'right' or 'wrong' over the intercom.

```
(1)  WBBWBBBWWBBBWBBBBBWBWBBWBBBWWBWWBWWWBWBBBWBWBWBWBW  T
     WWWBBWWBBWWBBBWBBWWBWWBBWBWBWWBWWWWBBBBWWWWBBBWBWB  G

(2)  BWBBWWBWWBBWWBWWBWBWBWBWBBBBBBWWWBWBBBWBWBBBWBBBBW
     BBWWBBWBWBWBWBWWBBWBWBWBWBWBBBWWBWBBWWWBWWBBWWBWW

(3)  BBBWWBBBBBBWWWWWBBBBBWBBWWWWBBWBBBWBBWBBBWWWWWBBWB
     BWWWBBWWBWBWBWBBWBBWWBWBBBWBWWBBWWBBWBWWWBBWWBBWWW

(4)  BBWBBBBBWWBBBBBBBBBWWBWWBWBWBBBBWBBWBWBBBBWBBBWBB
     BBWBBWWBBWWBBBWWBBBBWWWBBBBBWBBBWWBBBWWBWWWBBWWBWW

(5)  WBBBBBWWWBWBBBBBBBWWBBBBBBWWBWBBWWWWBWWWBWBBWBWWBB
     BBBWBBWBBWBWWBBWWBWWBWWBBBWWBBWWWBBWBBWWBBWBBWWBBB

(6)  WWBWWBBWWBBWBBBBWBBWWBBBBBBWBBBWBBBWBWWWBBBWBWWWWW
     BWWBBWWBWWBWBWBWBWWBBBWBWBBBBWBWWBWBWBWBWWBWBWWBWB

(7)  BWBBWWBWBWWBBWBBWBWWBWBBBBWBBBWWBWWBWWBWBWBBWWWWBB
     BWBWBBWBWBBWWBBWBBWBBWWBBWWWBWBBWWBWWWWBBWWWBWWBBW

(8)  BWWBBWWBBBWBWBBWBWBWBWBBWWBWWBBWWWBBWWWWWBBWBBBBBB
     BBWBWBBWBWBWWBWBBBWBWWBWWBWBBWWBBWBWBWBBWBWBWWBBW

(9)  WBBBBBBBWBBWBBBBBBBBWBWWWWWBWWWBWBBWWWWBWBWBBBBBWB
     BWBWWBBWBBWBWBWBBWBWWBBWWBBWBWWBBWWBBBWBWBBBWWBBBW

(10) BBBBBBWBWBBWWBBWBBBWWBWBBBBBWWBWBBWWBWBWWWBBWWBBBW
     BWWBBWWBBWWBBWBBWBWWWBWBWWBWBBWBBWBBWBWWBWWWWBBWBW
```

Run	1	2	3	4	5	6	7	8	9	10	
Score	19	21	17	26	27	20	20	19	23	20 =	212

CR = 38/11.18 = 3.4, $p < .0007$

Table Ten: RAW DATA FROM JOINT EXPERIMENT WITH C.E.M. HANSEL, OXFORD, 20 OCTOBER 1962

The normal approximation test gives a significantly <u>negative</u> result, with $p < .0007$. This finding was not too surprising in view of the subject A.T.'s history of 'psi-missing'. A cross-check was made on the adequacy of

randomization by matching the guesses against the targets of the following run, run 10 being matched against run 1. This yielded a chance score of 255.

We were immensely pleased by the result, and Hansel, who left before the analysis was completed, must have been acutely uncomfortable. However, further analysis of the data, revealed a source of error which probably invalidates the evidence for ESP.* This came to light when the data were displayed in a 2 x 2 contingency table, as in Table Eleven.

* Discovered independently by Hansel and myself.

		Guess		
		White	Black	
Target	White	82	125	207
	Black	163	130	293
		245	255	500

χ^2,1 df = 14.99
$p < .0001$

Table Eleven: DATA FROM TABLE TEN DISPLAYED AS A 2 x 2 CONTINGENCY TABLE

Two facts emerge from this presentation. There was a disproportionate number of black targets, amounting to 59.5% of the total, and exceeding the proportion of incorrect guesses.** Then, taking into account the observed proportions of white and black targets, it is seen that the negative scoring is entirely concentrated on the black targets. Of the

** This invalidates the test of significance given in Table Ten. However, the significance of the result increases when the correct χ^2 analysis is made.

white targets, 39.6% were guessed correctly, which is an excellent fit to the 6:4 ratio. But only 44.4% of the black targets were correctly matched, giving a deficiency of 44.

The 6:4 proportion of black to white targets can be explained on the hypothesis that Hansel erred in transposing decimals to binary digits through treating 0 as an odd number. This hypothesis conserves the ESP result. But there is a better explanation for the deficiency of hits on black targets. It may be assumed that on a number of occasions C.C. recorded white-white matchings as being wrong. The targets in each case would be deduced as black. Allowing for 43 errors of this kind, the result would agree closely with that observed in the experiment. See Table Twelve.

		Guess	
	White	Black	
White Target	(122.5) 89.5	(127.5) 129.5	(250) 207
Black	(122.5) 165.5	(127.5) 125.5	(250) 293
	(245) 245	(255) 255	

Table Twelve: RESULT OF THE HANSEL EXPERIMENT ACCOUNTED FOR BY RECORDING ERROR ON THE PART OF C.C.
The figures in parentheses represent the null hypothesis with no ESP and the numbers of black and white targets equal.

This hypothesis may be an over-simplification, but it is difficult to envisage an alternative to some explanation along these lines. Hansel did not keep a record of the portions of the random number table which he used. An attempt

to reconstruct the random sequence by matching the target runs against rows of fifty digits in the Fisher and Yates table was unsuccessful.* Thus there could be no check on

* This table is quite brief, consisting of 10,000 digits arranged in 200 rows of 50. However, Hansel skipped about from row to row, and read some rows backwards.

C.C.'s recording, and as stated above he was hard-pressed to keep up with all he had to do in the experiment.

On the 3rd of November the experiment was repeated by Williams and myself, working with the same two subjects. This time the random sequence was prepared in advance, and the experimental procedures were tightened up. There were 254 correct guesses in 500, a chance result.

Repeatability

The question of deliberate fraud has not been among the criticisms of ESP research considered up to this point. Fraud is an unpleasant topic, and one that can usually be side-stepped by appealing to the generally recognized honesty of scientists. Yet it does occur in scientific research, and it is much more to be expected in a field such as parapsychology, which provides powerful incentives for deception. The fraudulent parapsychologist, if such there be, may wish for something beyond ill-gotten scientific recognition or an undeserved degree. He may feel that the end justifies the means. He may be guided by what he believes to be a higher moral purpose in perpetrating a form of deception whose laudable aim is to preserve the most cherished virtues