Camb. Dy. 1872 Feb 2

My dear Sir

It gives me great pleasure to answer your question.

You have ten sets of 10000 numbers in each of which each digit should occur about 1000 times. This makes 100 numbers each of about 1000. The values of these 100 numbers should be distributed as follows.

Values	No. of numbers having these values.	Prob. Errors of last Column	Errors of last col. but one of which it is an even chance that not one in the whole column will be so large
0 to 940	2	±0+	±2½+
940 - 950	3½	±0½+	±2½+
950 - 960	4½	±0½+	±3½+
960 - 970	6½	±1+	±4+
970 - 980	9½	±1+	±5+
980 - 990	12½	±1½+	±5½+
990 - 1000	13	±1½+	±6+
1000 - 1010	13	±1½+	±6+
1010 - 1020	12½	±1½+	±5½+
1020 - 1030	9½	±1+	±5+
1030 - 1040	6½	±1+	±4+
1040 - 1050	4½	±0½+	±3½+
1050 - 1060	3½	±0½+	±2½+
1060 - 10000	2	±0+	±2+
Sum.	100		

The plus or after these numbers indicate that the real values are a little larger numerically.

It is an even chance that the number of errors in the second column which exceed the probable errors will be either 6, 7, or 8.

I have given the number of numbers having

the different values to halves because if

[illegible] the second column which exceed the greatest [illegible]
the errors will be either 6, 7, or 8.
I have given the number of [illegible]

---

the apparent [illegible] to [illegible] because of [illegible] exactly the limiting value it will be necessary to consider it as one half on one side & one half on the other side of the limit. A better way would have been to make the limits intermediate between two numbers.

The above table has been calculated by a rule given in all treatises on probabilities (See for example Encyclopaedia Britannica Vol 18 p620 §99) & therefore I would prefer you would not mention my name in your paper. The result is not rigidly correct, as it depends on an integral & not a finite sum of terms as it stands. Moreover, it has been assumed that the number of zero's is independent of the number of one's, two's etc which is not strictly the case. However the numbers I send you are nice enough & I don't doubt your countings will bear them out.

Yours very truly
C. S. Peirce

Prof. J. E. Hilgard
Assistant in charge C. S. Office
Washington D.C.

[illegible] reading your letter, it appears doubt[illegible]
[illegible] I have answered your question
[illegible] the probable error of the
[illegible] the number of cases a digit should occur
[illegible] $\frac{1}{10} \cdot \frac{1}{2} - \frac{1}{2} = 19+$. Which [illegible]

the different values to Laher because if a number has exactly the limiting value it will be necessary to consider it as one half with one side & one half on the other side of the limit. A better way would have been to make the limits intermediate between two numbers.

The above table has been calculated by a rule given in all treatises on probabilities (See for example Encyclopaedia Britannica Vol 18 p 620 §99) & therefore I would prefer you would not mention my name in your paper. The result is not rigidly correct, as it depends on an integral & not a finite sum of terms as it should. Moreover, it has been assumed that the number of zeros is independent of the number of ones, which is not strictly the case. However the numbers I send you are nice enough & I dont doubt your counts may will bear them out.

Yours very Truly
C. S. Peirce

Prof. J. E. Hilgard
Assistant in Charge
Coast Survey

P.S. On looking over your Table, I find I have answered your question. Perhaps you wish merely the probable error of the value 1000 as the number of cases a Still should occur in 1000. This is simply .674 $\sqrt{\frac{1}{10} \cdot \frac{9}{10} \cdot \frac{1}{1000}} = .674 \sqrt{\frac{9}{10000}} = .0202$ which agrees with my table.

VB3b#2

Paris, 21st June 1872

... second column ... the errors will be either 6, 7, or 8.

the different values to halves because if a number has exactly the limiting value it will be necessary to consider it as one half ~~not one~~ one side & one half on the other side of the limit. A better way would have been to make the limits intermediate between two numbers.

The above table has been calculated by a rule given in all treatises on probabilities (See for example Encyclopaedia Brittanica Vol 18 p620 §99) & therefore I would prefer you would not mention my name in your paper. The result is not rigidly correct, as it depends on an integral & not a finite sum of terms as it should. Moreover, it has been assumed that the number of zero's is independent of the number of one's, two's etc which is not strictly the case.

However the numbers I send you are nice enough & I don't doubt your countings will bear them out.

Yours very truly
C. S. Peirce

Prof. J. E. Hilgard
Asst in charge C.S. Office
Washington D.C.

P.S. On looking over at your letter, it appears doubtful if I have answered your question. Perhaps you want merely the probable error of the value 1000 as the number of cases a digit should occur in 10,000. This is simply $.674\sqrt{10000 \cdot \frac{1}{10} \cdot \frac{9}{10}} = 19+$. Which agrees with my table.

1.354
0.977
9.829
0.806

9

Paris 21st June 1872

nice enough & I dont doubt your count-
ings will bear them out.

Yours very truly
C. S. Peirce

Prof. J. E. Hilgard
Archd'ss charge C. S. Office
Washington D.C.

V[illegible]36 #2.

Paris, 21st June, 1872

My dear Sir,

I was very glad to receive yesterday your letter of 17th May, which was addressed to me at Brest, and bears the Brest stamp of May 31, when I was in that very place and inquired unceasingly for letters. There is no accounting for the stupidity of French officials.

My safest address is care of G. Bossange 16 rue du 4 Sept. Paris.

I will arrange for a supply of 36×44 chart-paper. But it is perfectly necessary to get meantime # a couple of reams of the American manufacture.

Your appointment as Assistant in charge of the Office during my

Your appointment as Assistant in charge of the Office during my

absence is entirely satisfactory to me. There never was on my part any objection to such an arrangement.

I had expected to send by this mail to the Supt. some suggestions in reference to increase of pay in the Office for the next fiscal year but I am prevented from doing so by the pressure of engagements. Next mail from Brest will do just as well. I go again to Brest tonight, having put the chronographic registration into good working order at the Paris Obsy. Exchanges with Greenwich are arranged and I presume that the Brest - St Pierre cable will have been repaired today.

Yours very truly

Chs. S. Peirce Esq. J. E. Hilgard

experimental investigation - with

VB36#20

Nov (2)

... arranged and it ... that the
Brick ... Pierce ... will have
been repaired to-day.
Yours very truly
J. E. Hilgard
Chs. S. Peirce Esq.

experimental investigation – Will
you please charge yourself with
it, find out what is the difficulty
and how it may be remedied?
Harrison can tell you the particulars
of the failure to do the proper work.
Yours,
J. E. Hilgard

C. S. Peirce, Esq.

VB3b#2

Nov (2)
Sat. morning

My dear Sir,
Our heating apparatus
worked very badly ~~today~~ yesterday –
cold air rushing up into many rooms,
especially those on the N. side of back
building. It will perhaps not do at
all the cold air in from that exposed
side at all – but take it in from
the interior space, the cellar under
instrument shops, providing some ducts
to let it come inside without chilling
the whole ~~place~~ floor – The draft seems
to be insufficient for both boilers –
the one that has done so well hitherto
was much less effective yesterday.
The whole matter wants an

VB-36#2

U. S. Coast Survey Office
Washington 6 Dec. 1872

Chas S. Peirce, Esq
Assistant U. S. Coast Survey

Dear Sir,

You will greatly oblige me by taking charge of the Electrotyping operations of the Office during such time as your other duties will permit.

In the conduct of these operations you will communicate directly with the Electrotypist and the chief of the Engraving Division, who will take your directions.

Please make a monthly report to me of the progress of the work.

Yours respectfully
J. E. Hilgard
Asst in charge of Office

VB 36 #2

U. S. Coast Survey Office

Washington, Jany 29 1873.

C. S. Peirce Esq
Assistant Coast Survey
Washington D. C.

Dear Sir -

Herewith I furnish the information asked for in your letter of the 13th inst, relative to Astronomical latitudes and longitudes

Yours respectfully

J. E. Hilgard

Assist in charge

☞ Give here full address to which reply should be sent: Johns Hopkins University Baltimore MD

U. S. Coast and Geodetic Survey,

Cambridge

Sep 22 1880

Prof T. E. Hilgard

Dear Sir

The following shows the inferences to be drawn from your comparison of German Normal Metre No. 49 with the steps of Saxton's comparator.

According to the statement forwarded to me from the office, the metre No 49 is longer than the step-metre by 365.0 μ at 72.8 F° and the step-metre, at 69.04 F°, equals the committee metre at 32 F°, and its coefficient of expansion is 9.84 μ per degree F.

In the Superintendent's '76 Report, pages 273–275, I have shown that the coefficient of expansion of No 49 is 18.83 μ per degree C = 10.46 μ per degree F. Then the expansion of No 49 over the step-metre is 0.62 μ per degree F. For the 3.76 F° of your comparisons over the standard temperature of the step-metre, we would make 2.3 μ to be subtracted from 365.0 μ, so that at 69.04, No 49 would be 362.7 μ longer than

☞ Give here full address to which reply should be sent : .....

U. S. Coast and Geodetic Survey,

Washington

March 26, 1883.

Professor J. E. Hilgard
Superintendent U. S. C. & G. S.
etc. etc. etc.

Dear Sir

The bill of Mr. Bandin has certainly been paid before this.

When it was first received, I applied to a Banker for a bill of exchange but was informed that none could be issued unless the name of the person in whose favor it was drawn was known. I then wrote to Mr. Bandin requesting him to make a draught upon one of the Second National Bank of New York (where the money has awaited him until a few days ago) or else to send his full name. He never did either, and I finally

afterwards gave the money to a friend who was going to Paris to pay in person. This friend returned after some months having neglected the commission. There was then a considerable delay during which I was waiting for some opportunity to meet Mr. Bandini's wishes in regard to the mode of payment. During all this time, this sum had been deducted on my book from my account in New York and was awaiting Mr. Bandini's draft. Finally Mr. Bandini began to be impatient and on Feb 25th I sent the money to the Legation and asked them to kindly pay it, and I am sure it cannot have been paid before this.

I would respectfully suggest that a copy of this statement be forwarded to Mr. Bandini.

Yours very respectfully

C. Rivière

Vice Consul