Transcription of John Templeton's Journals

The John Templeton archive is held by the Ulster Museum. The Museum copied the Templeton Journals in half-yearly segments on microfiche (released in PDF) and have made them available to the Belfast Naturalist Field Club to facilitate a project to transcribe these remarkable handwritten Journals into a digital format and make them available to a wider readership.

The result is an accurate, uncorrected and unedited line by line transcription of the pdf copy of the Journals, preserving Templeton's original spelling, erratic punctuation, insertions and layout. The number in bold on the left relates to the Ulster Museum's PDF page number so it is easy to navigate back to the original text. The next number is the date given in the Journal. Occasionally Templeton numbers his Journal pages and where present these are given on the right in brackets. Editorial comment is in square brackets, Latin names have been italicised. A fully edited version with footnotes and summary appendices is in preparation.

Templeton Journal 1808 Fiche No 2
18 August to 31 December

Initial transcription
108 pages, 12362 words

PDF DAY MONTH/YEAR JOURNAL PAGE

1

(113)

August 1808

to Botanize on Mourne Moun-

-tains

Whether Changed a fine day

Barley and Oats a reaping, ap

-parently good crops but wheat

uniformly spoiled except on very

airy fields.

Chenopodium urbicum very com

-mon about Newry.

18 Very pleasant day with a trifling

shower about 2 P.M.

Proceeded on our excursion about

the Shore going to Narrow water

Saw a Gull with a fumginous band about the breast

and fumginous on other parts is perhaps the brown head

ed Gull of

Montague.[George Montagu 1753-1815 pub Ornithological Dictionary 1802]

Found *Statice limonium*

Salicornia radicans En B.1691

Chenopodium maritimum

Thlaspi campestre

Anagallis caerulea

Found near Rostrevor

Glaucium luteum

Fucus ciranoides in fruct

Found

2

(114)

August 1808

Found *Jungermania*

Pinguicula lusitanica

Anagallis tenella

Papaver Cambricum On the

Rocky parts about

the River at the head of the

Glen in Plenty

Thymus Serpyllum fruticosa

about the same place

Descending the Rostrevor Mountain

towards Kilkeel

Scirpus multicaulis

Carex fulva

----- *dioica*

On the Roadside

Bidens cernua

On Walls at Lord Kilmurrys [Kilmorey, Mourne Park]

Poa nemoralis

Don In. 247

Papilio Paphia about
the lower part of the Glen.

19

3

(115)

August 1808

19 Pleasant Morning Fine clear day
About Kilkeel River
Radiola Millegrana on a
barish Pasture
Sium repens in the River
Fucus

Papilio Cedusa
-------- *cardui*
Going to the Mountains
Lichen Bellidiflonus
Erica vulgaris
cinerea With White flowers
Tetralix
Drosera anglica
longifolia Very abundant
rotundifolia in Wet places
Drosera longifolia had the stalk scar
-cely longer than the leaves, and the
capsule constantly three valved
Lo-

4

(116)

August 1808
Lobelia Dortmana Abundant
Schoenus albus in every wate
Scirpus multicaulis -ry place ascen

Littorella lacustris ding Kilkeel ri-
-ver Valley.

Pteris crispa

Polypodium Phegopteris

Salix herbacea entire leaved

------ -------- *crenated* leaved

Vaccinium Vitis Idea undulatated [undulated]

---------- ----- ---- *plain leaved*

In the Crannies of the rocks of
Slieve Beignian [Binnian]

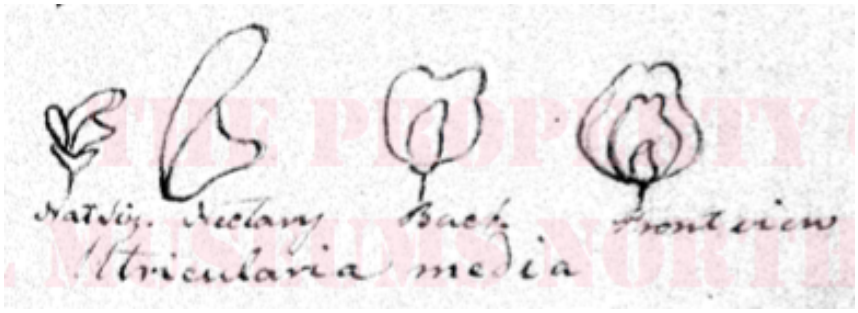
Utricularia media In a peat hole

20 Fine Clear day

Found *Thalictrum nova* Ascend-
-ding Slieve Beeignian [Binnian] among
stones.

Grimmia stricta In the crannies
of the Rocks in several places

[illustration]



Nat Sirz. Nectary Back Front view
Utricularia media

5

(117)

August 1808

21 A Trifling shower.

Merulius Chantirellus Common
in Tullamore [Tollymore] Park

A bright yellow small *Merulius*

among the rocks on the top of
Beignian on the 19.
Hypnum umbratum On the
rocks in Tullamore river [i.e. Shimna]
Phaloena Euonymella Don. In 355.4

6

(118)

August 1808

22 Fine Clear warm day
Papilio Paphia very common
about Tullamore [Tollymore] Park and
a small one like it

Buxbaumia foliosa on the
rocks in the River about the
waterfalls of the Southern
branch of the River [probably the Spinkwee/Cascade River]
Aspidium Oreopteris Com
-mon on the hills and throughout
the whole valley in which Tulla-
-more river flows
Polypodium Phegopteris On the
rough ground south of Slieve Croob
Elatine Hydropiper E.Bot 955 On the
border of the lake of Ld. Anselys [Annesley]
demesne near Castlewellan.
Sparganium natans in the
Lake [Castlewellan Lake].

7

(119)

August 1808
A *Hydnum* like *Boletus perrenis*
of Sowerby

Riccia glauca On Slieve Croob
Pinguicula lusitanica In all the
Hypericum elodes marshy pla
Anagallis tenella ces from Clan
newhillian Mountain [Clonachullion, J315310 above Trassey River] toward
Slieve Croob *Anagallis* mostly out
of Flower other two about half done

Received from Mr Underwood
Linnœa Borealis
Primula farinosa
Pisum maritimum
Asperula Cynanchica
Silene acaulis
Cistus scabrosus seed
3 New *Poa*s
From Tullamore Park
Pinus clanbrasiliensis
Pyrus torminalis
Coriaria myrtifolia

8

(120)

August 1808
23 Fine Warm Clear day
Ceratophyllum Submersum
In fructification in the Lake at
Ballynahinch [possibly Ballykine Loughs, J355537]
About 3 O Clock PM arrived home
From this tour through Mourne
Mountains, and have reason to
believe that the report of the
Acorus gramineus having been

found there is not true [The Lesser Sweet Flag occurs in Surrey, *Acorus calamus* spread from having been planted in Rawnsley's garden in Moira]

24 Fine day

25 Fine day

26 Fine day till about 5 PM when a trifling shower fell

27 Clear fine morning Ther at 9 AM. 53 a great deal of Thun -der and rain towards the S.E

9

(121)

August 1808

28 Saw Papilio Cedusa going to- -wards Comber

Colchicum variegatum Fl. some days

Swallows gathering in Flocks on the tops of houses.

28 Brilliant Morning Ther at 9 AM. 49.

29 Brilliant Morning Ther at 8 AM. 52, A slight shower Cloudy day.

Agaricus contiguus growing at the side of a Bush, side of Ma- -lone road

30 Ther at 8 AM. 59. Very Wet morn -ing.

31 Ther at 8 AM. 60 Very heavy Showers

10

(122)

September 1808

1 Ther at 8 AM. 59. Slight Showers

2 Ther at 8 AM. 59. Fine Day with a
trifling shower.
Swift gone *Hirundo Apus*

3 Ther at 9 AM. 57
Utircularia Vulgaris In Flower
Examining the plant which I found in the
Lake near Killaleagh [Killyleagh] Sepr 20 1804 and which I
had growing in my pond since that I find it
to agree in the Calyx leaves and anthers with
Ceratophyllum demersum E. Bot. 947.
[illustration]

In one specimen from which the above was taken
the only one I found at this time in fruitification
I found only 6 anthers
Stem and disk- leaves di- tri- or tetra chotomus [ous]
and the teeth very conspicuous.

11

(123)

September 1808

4 Ther at 8 AM. 59. Pleasant dry
day.
Colchicum autumnalis plane Fl.
Dianthus superbus. Fl.

5 Ther at 8 AM. 60. Trifling showers

6 Ther at 8 AM. 54. Gentle showers

7 Ther at 8 AM. 55. Slight Showers
Robin (*Motacilla rubecola*) Singing

Alanda arborea Wood Lark Singing
More feathers appearing in the
Peacock's tail given me by Mr.
Joseph Stevenson.

8 Ther at 8 AM. 53. Heavy Showers
Made a drawing of *Fucus confer-*
-voides & *inflexus* & *Conferva*
elongata var

12

September 1808

9 Ther at 8 AM. 54. Brilliant bree-
zy day *Arbutus Unedo* Fl.
Swallows mostly gone

10 ---------- Warm bril-
-liant day. Cloudy and a few
drops of Rain about 5 PM.
A Flock of Swallows in Malone
over my Garden
Chelone obliqua Red Chelone
Received from Mr Tennant
Davallia canariensis}
Trichomanes canariensis}
Phalana libatrix caught by Ellen T
this seldom appears before October as
marking the approach of Winter called Herald
moth See Don 216

11 Ther at 8 AM. 58. Brilliant
day
Hibiscus Syriacus Fl.

12 Slight shower about 8 and 10AM
Went to Portmore Park from
Seymourhill.

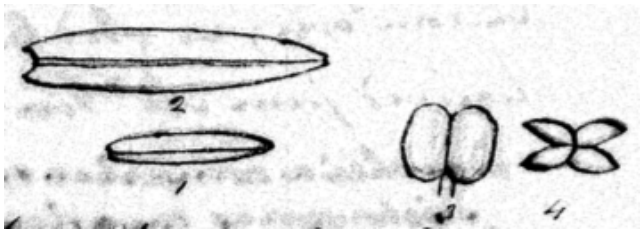
Found *Riccia glauca* [writing obscured]
-tion on the shore of [writing obscured]
In

13

(125)

September 1808
In the drains abundance of *Hydro-*
Charis and *Sagittaria*.
At the side of the Lough what I
have hitherto reckoned *Callytriche*
autumnalis.

Capsule 4 celled 4 winged 4 seeded
[illustration]



Callitriche autumnalis. C. with the
leaves linear lanceolate, apice [apex] slight-
-ly emarginate.
C. vernalis C. with the lower leaves
linear emarginate, superior spa-
-tulate and oval
1 leaf Natural size 2 magnified
3 capsule magnified sidewise
4 capsule magnified viewed from
[writing obscured]

14

(126)

September 1808
In the drain running from Lough Beg
Potamogeton pectinatum collected

on weeds
Gnaphalium minimum Common on
the loose sand.
Spergula nodosa on the Shore in
plenty a few flowers yet appearing

Carex stricta & *Athyrium Thelyp*
teris among the bushes on the southern
side of the Isthmus.
On alder stumps *Agaricus*
with the Pileus light orange brown
gills 4 in a set bright cinnamon
Stipes with a volva, above which it
was lightest.
Pileus from 4 to 5 inches diameter
Stipes about 3 inches high.
On the shore a very slender Moss
And in the Osier beds a Willow like
S. Russelliana but the [writing obscured]
and midrib red.

15

(127)

September 1808

13 Brilliant warm day Busy
Putting in grain –
Clethra alnifolia F

14 Ther at 8 AM. 60

15 Pleasant dry day
Barnacle come but Mr Wm Tennant
thought he saw them on the 12.

16 Ther at 8 AM. 57 Brilliant
warm day

17 Ther at 8 AM. 57. At 3 PM. 65

Brilliant day –
Aster mutabilis Fl.
Made a drawing of *Riccia glauca*
Found in Fructification on the shore
of Lough Neagh Sept 12. Near Port
-more Park

18 Ther at 8 1/2 AM. 57. Pleasant
dry day

16

(128)

September 1808

19 Ther at 8 AM. 57. Dark morning
With gentle shower afterwards
a fine warm pleasant day

20 Ther at 8 AM. 54 Mist morning
after apparently frosty night
Widgeon to sell in the Market of
Belfast
Fine Brilliant day
Swallows gone

21 Ther at 8 AM. 48
Brilliant day
A Tom Tit singing
Found *Chenopodium olidum*
on the Dunghill in Flower.

22 Ther at 8 AM. 58. Misty rain
most part of the day
Saw about 15 Swallows at the
Linen hall

17

(129)

September

23 Ther at 8 AM. 50. Brilliant breezy

Morning

24 Ther at 8 AM. 48. Pleasant but
cool day with a trifling shower

25 Ther 65 at 3 PM. Cloudy but
Pleasant day with a trifling Show
-er
Made a drawing of Aranca Scenica
Caught about the 14 on the wall of
the Belfast Linen Hall See the
Figure

26 Ther at 8 AM. 58. A trifling shower,
cool day.

27 Ther at 10 AM. [blank] heavy showers
mixed with small hail
Made a drawing of *Jungermania Julaeca*

28 Ther at 8 AM. 40 Cold Misty rain during
the forepart of the day
Some Swallows

18

(130)

The exact position of the eyry is ou [ob?]
-viously marked by a horizontal fis-
-sure, which resembles a pair of large
extended wings. During the breeding
season, the birds may occasionally
be seen from the river; and if alarm-
-ed by shouts or by firing a gun,
they will launch themselves into
the air, and there remain, hovering
over the rock, at an immense height
with steady unmoved wing. To what
particular species the eagle which
frequents this rock belongs, does not

appear to be exactly ascertained.
by some it has been asserted that
the osprey or fishing eagle is the
only one seen in Ireland, but
amongst the mountains of Kerry
I have myself remarked several
kinds, particularly two of a very
dark brown and Ash colour.
From descriptions that have been
received, it is probable that the
golden

Golden eagle has also been seen in
the south of Ireland. The fishing
eagle is by much the most common
and on the sea coast where there
are large shoals of fish he may
be generally observed very actively
employed. He is easily distinguish
-ed among the large flocks of sea fowl
by his heavy wing superior size
and strong flight; and also by his
manner of fishing which differs
from that of the web footed tribes.
The latter take the fish in their
beaks, and devour them upon
the water, whereas the eagle always
strikes with his talons, and, having
secured his prey, hastens to some
rock and enjoys his repast

Welds Killarney 131

The Red Deer still run wild at Glena

and perpetuates its race, amidst
its native woods alike unprotec-
-ted

20

(132)

-ted and uncontrolled by Man

Welds Killarney 117

Some years ago the deer descended
from the mountains in great num
-bers, swam across the river, and com
-mitted such depredations amongst the
young plantations at Mucross,
that the proprietor of that beau-
-tiful domain was obliged to or-
-der all the interlopers to be shot.
this reception soon taught the
herds to keep within the bounds
of their own forests. To other
dangers I have not heard that
they are exposed; even the ma
-rauders of the country, except
in rare instances are said to
respect them.

Welds Killarney 120 4 to 8d

London 1807

The materials were principally collected in 1806

21

(133)

[blank]

22

(134)

29 Cool dry Brilliant day

30 Ther. at 8 AM. 45 Cold Showers

but on the whole a fine day
Potatoes stalks killed by frost
Also *Magnolia tripetala*, and several
other shrubs tops
Found *Hypnum riparium* in Fruc
-tification at Ballygamon River [? Ballygowan – Blackwater river]
with Plenty of *Carex pendula*.

October

1 Ther at 9 AM. 45 Brilliant morn
-ing, Slight Shower.
Common Wren & Robin singing

2 Ther at 9 AM. 46 Slight Rain
Observed a Drake and duck courting
the both seemed equally desirous.
can these acts have any influence
on fertilizing the egg laid in Spring.

23

(130)

October 1808

3 Ther at 8 AM. 42 Brilliant
Morning slight rain about 3 PM.
Leaves of the Sycamore (*Acer Pseudo*
Platanus) falling
Found near Seymour hill
Jungermannia pusilla En Bot 1775
In Fructification

4 Ther at 8 1/2 AM. 47. Pleasant dark dry
day
In the Lambeg Moss *Blasia pusilla* with
dark dots on the lower side of the
leaves.

5 Ther at 8 AM. 52. Bright pleasant

day Elm Beech and Ash changing
colour

6 Ther at 8 AM. 49 Very fine dry day
This Morning we observed that the

24

(131)

October 1808
Badger which I got last season had
got the door of his yard open and
got away

7 Ther at 8 AM. 49 heavy rain with
great squalls of wind, continued
through the night, and blew bran
-ches off trees, and the old ash in the
Highway Field the Orangemens King Wil
liam
Accompanied Mrs Ross as far as
Coopers Nursery on her way home
Saw several Swallows at Mount Pottin
-ger

8 Ther at 9 AM. 49. Showery Morning
windy with heavy squalls through
the day

9 Ther at 9 AM. 47 – Nearly calm.
Dry Robin & Wren Singing
Ther at 3 PM. 52

25

(132)

October 1808

10 Ther at 8 AM. 54 Stormy night
fine morning dark
dry day - breezy, the wind from the 7th
A swallow [blank] about NNW.

11 Ther at 8 AM. 52 Rain during
the fore part of the day
2 or 3 Swallows
Turnips - Mr Saunders thinks the
small animals, which breed often are
more profitable than Oxen, the hog
kind come first under this head; Pigs,
he observes from the age of three weeks,
and in every intermediate state up
to the latest growth are fit for the
table. There can be no better eating
than a porker, from six weeks up to
two, three, and four months old, a
sow also will produce her young much
under the age of a twelve month,
and her fecundity is alike remark
-able

26

(133)

October 1808
-able: the superiority of Hogs dung for a
manure is likewise incontestable.
On the same principle he recommends
keeping large stocks of Rabbits in places
properly prepared for them, and men-
-tains that it matters not if the animals
be of small dimensions provided there
be no defect of numbers. Diminutive as the
Rabbit is in comparison with the stately
Ox it should not on that account be rejected
This will be manifest when the prodigious
difference in the consumption of food of the
two animals is considered. A Bullock

will consume in twenty four hours what
will maintain 200 Rabbits. A Bullock
will eat in one day 200 pounds of turnips
and the same weight would maintain 200
full sized rabbits throughout the day.
An acre of turnips drawn, making about
40 loads, will only fatten a single Ox, in
addition to straw; and that on good land,
and on inferior soils they must be assis
-ted

27

(134)

October 1808

-ted by hay and generally by corn also.
The number of Rabbits that an acre
of Turnips would fatten on a moderate
conjecture would not be less than 3600.
The Ox is many years arriving at matu-
-rity, but Rabbits at seven weeks old
from a doe not quite so many months
old and fit for the table. They breed
seven times in the year, and may have
eight young ones everytime, and their
skins when good will sell from 6d to
10d and their flesh for as much more
at least.
The Turnips greens agree perfectly well
with them, and as a proof the general
wholesomeness of the tops of the plant.
Mr Saunders states that he has sub-
-sisted from one hundred to two hundred
head of Swine, and a small stock of
Rabbits, principally on them for many

weeks together

Athenæum 3. p. 478

28

(135)

October 1808

12 Ther at 8 AM. 44 Brilliant morn
Showers

13 Cave hill Whitened
with hail or Snow during the Night
Dined with Mr Smithson Tennant at
Mr Wm. Tennents yesterday

14 Ther at 8 AM 43. Windy night
Very rainy day

15 Ther at 8 AM 44. Dry Clear day
Wind Northerly
3 or 4 Swallows

16 Ther at 9 AM 47. Squally with
heavy showers. Wind West

17 Ther at — — Squally night
Mountains white about halfway
down. Showers through the day
3 Swallows

29

(136)

October 1808

18 Ther at 9 AM 42. heavy rain
during the fore part of the day
Made a drawing of *Jungermannia*
pusilla Found the 3$^{d.}$
Also, of *Conferva atra* almost wholly
Covered with spiculœ from Kil-
-keel river among the mountains
it was growing like *C. glomerata*

in other rivers

19 Ther at 8 AM 41. Windy wet night
showers
7 Swallows

20 Ther 8 AM 42. Wet day
wind at night
[obscured] flying southerly

21 Ther. at 8 AM 39. Brilliant
morning Showers
3 Swallows

30

(137)

October 1808

22 Ther at 8 AM. 36. Slight Show
-ers
Common Wren singing

23 Ther at 9 AM. 42. Rainy day
Made a drawing of *Blasia pulsilla*

24 Ther at 8 AM 38. Fine forenoon
but very wet from 2 PM.

25 Ther at 8½ AM. 44 Very wet
windy morning. Great squalls and
heavy showers through the day

26 Ther at 8½ AM. 46½. Very windy
night and Morning. Morning dry and
bright - pleasant day

27 Ther at 8 AM. 43. Brilliant dry
morning - and find pleasant day
About 9 PM observed a fine Lunar [--?]

31

(138)

October 1808

28 Ther at 8 AM. 37 Brilliant warm

day for the season. Rain commen
-ced about 4 PM and continued
to 9

29 Ther. at 8 AM. 44. Misty morning
wet for part of the forenoon

30 Ther at 8 AM 35. Brilliant
morning with hoar frost Pleasant
warm dry day, Vallies hid in
Mist
Bat flying in the evening about
Seymourhill

31 Ther at 8 AM. 36. Very misty
morning Very fine day.
Put into the Green house the tender
plants.
Robin Wren & Woodlark singing
No Swallows this some days

32

November 1808

1 Ther at 8 AM 40 Misty morning
pleasant warm day
Wagtails in much greater numbers
than I ever saw them before

2 Ther at 8 AM. 41½. Misty morning
dark dry pleasant day
Redwing come Woodlark singing

3 Ther at 8 AM. 44½ dark day
Morning - Pleasant dark day
Scarabæus stercorarius. Dor
or Bum Clock Flying about this
evening.

4 Ther at 8 AM. 44 ½ Dark breezy

morning. Cool dark dark day

5 Ther at 8 AM. 40 Slight rain
Fieldfare. *Turdus pilaris* come
Sowing Wheat in the Spring Field
the far half was sown about 3
weeks before but not up yet.

33

(140)

November 1808

6 Ther at 8 AM. 41. Showers during
the forepart of the day
Crocus sativus Flow and *Astor*
grandiflorus

7 Ther at 8 AM 41½ Pleasant
dark dry day

8 Ther at 8 AM. 40 Pleasant day
with a trifling shower in the morning
Dun diver *Mergus Castor* and
Lesser Guillemot *Uria minor* in Belfast mar
-ket yesterday made a drawing of the
latter today

10 Ther at 8 AM. 44½ pleasant dark
day Ivy going out of flower

11 Ther at 8 AM 44½ dark dry plea
-sant day

12 Dark dry pleasant
cool day

34

(141)

November 1808

13 Ther at 8 AM. 35 Pleasant mild
day with some sunshine
Found *Agaricus cinnamomeus* under

the trees at the Osier garden.

14 Ther at 8 AM. 45 Mild Sunshine
morning & through the day.
Crocus nudiflorus Flowering
This morning observed again a
Bird Mistletoe Thrush *Turdus viscivorus*
This is the 2^{d} or 3^{d} time
That it has been on a Hawthorn
bush at the highway field gate
it makes a kind of Crackling
noise, and appears very quarrel
-some
The Redwing (*Turdus Iliacus*) &
Fieldfare (*Turdus Pilaris*) are
in uncommon numbers for
so early in the season

35

(142)

15 Ther at 8 AM. 50 Squalls in the
night - mild calm misty Morning
with Slight misty rain through the
day

16 Ther at 8 AM. 57. Stormy wet
night Pleasant dark day
with a breeze
Made a drawing of the *Agaricus cinna*
- *mommeus* found on the 13th

17 Ther at 8 AM. 48. Slight rain
during the night breezy dark
Morning a trifling shower about
2 PM

18 Ther at 8 AM. 46 rain during the
night dark morning Cold bleak day

19 Ther at 8 AM. 33 a Slight snow
shower during the night, a Brilliant
morning. A trifling shower or two
20 Ther at 8 AM. 35 Fine pleasant day
until about 5 when rain commenced
followed by a Stormy night

36

(143)

Agricultural Report for November
The business of securing the Grain
is now completly over even in our
most elevated situations, and it is
worthy of remark that the usual
difference of time between the ri-
-pening of grain in the low and
high lands did not take place
this year, and many fields deem
-ed by some English writers on A-
-griculture, as far above the region
at which oats will grow have pro-
-duced good crops this season. Our
low and rich lands owing to the
bad weather which has prevailed
in the latter part of July and in
August have been those from which
the worst returns are expected and
we hear from every quarter of the
injury which the wheat has sus-
-tained from Mildew. a disease now
gen-

37

(144)

generally allowed to be an atten-

-dant on moist weather during the
Period of its ripening, whether it
could be guarded against by any
alteration in our time of sowing
has not yet been ascertained, but
this we can say almost with con
-fidence that it begins its attack
when the straw begins to
change from green to yellow, and as
showery weather commences one year
out of four or five about the middle
of July perhaps by early sowing we
might have our Wheat advanced be-
-yond the period for receiving injury
before that time.
We know that our mode of sowing
Wheat after the Potato crop is remo-
-ved renders such early sowing as is
very generally practised in England
on fallows impracticable, But in
some districts in Ireland where fallow-
-ing is practised there appears nothing

to

to prevent early sowing, but an
opinion which prevails among
farmers in several places in this
neighbourhood that it is time en-
-ough if wheat is sown in the dark
of the moon before Christmas, this
practice we would particularly
wish to discourage, and if it is

not in the farmers power to sow
his Wheat before the middle of
November we have reason to
think it would be better to defer
it even to the beginning of March.
The forgoing was written for the *Bel-*
-fast Monthly Magazine but Mr
Christys report coming in time
This was not Published -

39

(146)

[blank]

40

(147)

Powder of dryed roots of the *Hyacinthus non-*
Scriptus answered the purpose of fixing
the Calico printers' colours equally as
well as Gum arabic and in the
same proportion of an ounce and
a half of the powder to four ounces
of the mordant.
About march April & May the pro-
-per time for taking up the roots

Phil Mag XV. 104.

The torpedo differs from other fishes
of the same genus by a very consi-
-derable interval between the carti
-lage which borders the pectoral fin
and the head. All this large vacuity
is filled up by prisms of six, five and
sometimes four planes. These prisms
adhere by their bases to the skin
above and to that below. They are

arranged parallel to each other,
follow the projecting and irregular
contours of the head and branchiœ,
and externally form a semi-elliptic
stratum. When the skin is removed
all the prisms, the bases of which
are then observed exhibit the ap
-pear

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-pearance of a honey-comb. They are
so many small cubes filled with
a substance which by chemical
analysis I found to be a compound
of gelatin and albumun. The texture
of these tubes is aponeurotic, and
they are united to each other by a
kind of lax reticulation formed of ten-
-denous fibres which envelope them
in every direction: in the last place,
they are covered and shut by an a-
-poneurotic membrane, and above
these coverings the skin is applied.
This apparatus is furnished with nerves
remarkable for their large size. There
are distinguishable four principal
trunks which are distributed to
all the tubes, and which at length
penetrate into their substance and
expand in it.
Though Rays, in which the cartilage
of the pectoral fin immediately bor
-ders the contours of the head, were

not like the torpedo, in a condition
to exhibit prisms or vertical tubes
they did not differ from them so
much

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much as might be expected. In the
Rays, as well as the Torpedoes, there
issues from the cranium, a little
behind the ear, a nerve so large that
it surpasses the volume of that which
proceeds to the eye. This nerve proceeds
laterally, creeps over the superior sur-
-face of the masseter, and expands
below, between that muscle and
the first branchia, in a mass which
on the first view might be taken
for a gland,
but which is really the focus from
which proceed, in several bundles,
a great number of tubes analogous
to those of the Torpedo. A bundle
proceeds towards the nose, another
spreads over the belly, a third as
-cends on the masseter and terminates
behind the occiput, and a fourth
extends over the muscle of the pectoral
fin. In this respect there are some
differences according to the species:
but these tubes, in the Ray as well
as in the Torpedo, allways adhered to
the

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the skin above and to that below; only,
instead of being vertical, which is im
-possible, for want of room, they fol-
-low the contour of the head, extend
over the exterior muscles, and are
longer according as they have a lar-
-ger circuit to make before they
are inserted in the skin. These
long tubes seem to be of the same
nature as those of the torpedo, and
contain a gelatinous and albumi
-nous substance entirely similar.
Hitherto we observe in this res-
-pect no other differences between
the common Rays and the Tor-
-pedo, except that the tubes in the
latter are very short, vertical, close
to each other, and parallel; while
in the other Rays they are much
longer, bend around the principle
muscles of the electrical machines,
and divide into several bundles
formed of diverging radii.
But if these organs do not vary in
each species but by a different ar-
-rangement of parts, it is not to be
ap-

apprehended that we may fall into
a consequence contrary to the facts
observed, and ought we not to suppose

that all Rays are more or less en-
-dowed with the electric powers
of the Torpedo? Such indeed would
be the opinion which we ought
to form, if these organs were
not distinguished by a character
on which depend, in part, the
astonishing properties of the Tor-
-pedo. The tubes in the common
Rays open on the outside of the
skin by orifices peculiar to them,
and are so many excretory organs
of the gelatinous matter which
they contain. In the Torpedo all
these tubes are completely shut,
not only by the skin, which has
no perforations, but also by apo-
-neuroses which
extend over
the whole surface of the electric
organ. As the gelatinous matter
cannot escape, it is forced to be ac
-cumilated in these tubes: hence
no

no doubt, the greatness of their dia-
-meter, and on this account also their
number increases at the different
periods of life. Valst and Hunter
found this progressive augmentation.
They counted more than hun
-dred of these tubes in young sub

-jects, from four to five hundred
in adult Torpedoes, and even tw-
-elve hundred in an individual
of a large size.
It is to John Hunter, as already
said, that we are indebted for
the best description of the electric
organs of the Torpedo*. Munro,
in his *Physiology of Fishes*, has
also described the corresponding
apparatus found in other Rays;
but I flatter myself that I am
the first who compared these
organs, who proved their identi-
-ty, and reduced them to the
same system of organization.
The electric organ of the Torpedo
is really an organ of touching,
furnished with an apparatus
as extensive as that of seeing and
smel-

-ling. The nerves which proceed thi-
-ther are so large that their vol-
-ume appeared to Hunter as ex-
-traordinary as the Phoenomena
to to which they gave rise. They
suddenly expand in a gelatinous
mucous, and nothing impedes
their free communication with
external bodies. There can be
no doubt that they perform a

very considerable part in the
electric phœnomena. Hunter was
of opinion that they are destined to
form, collect, and direct the nervous
fluid. Their influence however is
proved, since it is known that the
concurrence of the will of the ani-
-mal is indispensably necessary
for giving shocks. This evidently
results from the observations of M.
Valst, and from those which I had
occasion to repeat myself.
However, since these nerves are
found in other Rays distributed
nearly in the same manner as
in

in the Torpedo, it must be allowed
that they are not alone sufficient
for the production of electricity, and
that for this purpose they must also
be in a certain relation with the sur-
-rounding parts. Do the apertures of
the tubes in the Rays favour the
issue of the nervous fluid? Or, as in
the Torpedo, do the nerves require
a larger quantity of gelatinous sub-
-stance to enable them to expand
in numerous rami, and to become
proper for acting with more ener-
-gy.
The examination of the electric of

organs of the Torpedo, *Gymnotus electricus*, and *Silurus electricus*, which I have compared with each other, necessarily conducts us to some in-
-teresting results respecting the kind of modification which organs com-
-mon to all fishes ought to under
-go to develop in some species e-
-lectric properties. We find 1st, that the part where the electric batter-
-ies

-ies are lodged is a matter of indiffer-
-ence, as they are diffused all around the *Silurus electricus*, collected in the tail of the *Gymnotus*, and united in the sides of the head in the Tor-
-pedo. 2d That no branch of the nervous system is particularly set apart for these organs, since the nerves distributed thither are all different. 3d That the form of the cells is also of little importance, as this form varies in each species; but in other respects it is found also that the electric batteries, which on the first view we might be tempted to believe to be so different, have how-
-ever a great many relations with each other, and may be reduced to the same system of organization. This will appear evident, when it is con-

-sidered that the electric fishes
are the only ones in which we find
aponeuroses so extensive, and so mul
-tiplied in their surfaces, with so
con-

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considerable an accumulation of ge-
-latine and albumen in cells formed
by these aponeuroses, and nervous
rami so large and of such a length.
It is by the union, indeed, of these
simple instruments that the elec-
-tric organ is constituted; and in
this state, according to the judici-
-ous remark of my colleague Lace-
-pede, (*Histoire Naturelle des Pois*
-*sous* Vol. II. Description of the *Gym*
-*notus electricus* p.166.) it may be
compared to the Leydon flask, or an
electric picture, since it is alterna-
-tely composed of bodies which con
-duct the electric fluid (the nerves,
and the albumous - gelatinous pulp
to which the action of the nerves
is continued), and of non-conduc-
-ting bodies, such as the aponeurotic
lamina, extended through this mass
of albumen and gelatine. What proves
that it is on the mechanical arrange
-ment of these idio-electric and non-
electric elements that the properties
of the Torpedo depend, is the existence

of the same parts in other Rays though

these

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these fishes are not capable of producing the
same effects. These parts similar in re-
-gard to their intimate nature and tex
-ture, are disposed in a manner entire-
-ly different. The nerve of the fifth
pair in the Rays and *Squali* is of a
considerable volume, and expands in
a medium from which flows a great
quantity of albumino-gelatinous serositys
but this gelatine either is lost on the out-
-side by tubes which open without the
skin, or is accumulated in a mass on
the sides of the bones of the nose. In the
latter case, the gelatine whatever be
its quantity, is of no use for the produc
-tion of electricity. This no doubt, must
be ascribed to the want of aponeuroses,
which divide it into small insulated
portions - in the same manner as
the Leyden flask, or Electric Picture,
would fail of their effect is deprived
of the glass laminæ interposed be-
-tween the metallic coatings.
The electric organ, being formed of nerves
and aponeurotic laminae, interlanded,
if I may use the expression, with al-
-bumen and gelatine we ought not to

be

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the astonished at meeting with it in
Families altogether different. All ani
-mals have nerves which are lost un-
-der the skin; all those immediately
below it are more or less provided with
cellular tissue: all then have, in some
some measure, the rudiments of an
electric organ. If we now suppose
that nourishing vessels deposite
albumen and gelatine between the
leaves of the cellular tissue which
fixes the skin to the exterior muscles,
we shall easily form an idea of the
manner in which this deposition
may give rise to the existence of
an electric organ. All this may
take place without the influence,
at least in an immediate manner,
of the other organs essential to
life. It is a development which
takes place almost without the
animal, and which has no action
but on the skin and parts which
depend on it; and hence the rea-
-son

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-son why species which exhibit
alone a development so extraordi-
-nary belong, however to a nume-
-rous Genus without presenting
any striking anomaly.

I have thought it necessary, for
the benefit of naturalists, who ap-
-ply to the study of natural rela
-tions, to insist on this remark.

Fig 1 The Torpedo (*Raia torpedo*)

a, electric organ composed of tubes

b, the upper skin turned back
on the side to show the elec-
-tric organ.

Fig 2 red Ray (*Raia rubus*)

a.a aponeurotic tubes which com-
-municate on the outside of the
skin by peculiar orifices.

b. the skin of the flanks turned back
at the sides

n nerve of the fifth pair.

i focus in which the nerve of the
fifth pair expands, and from
which proceed, in a radiated form,
in several bundles, the Tubes which
open

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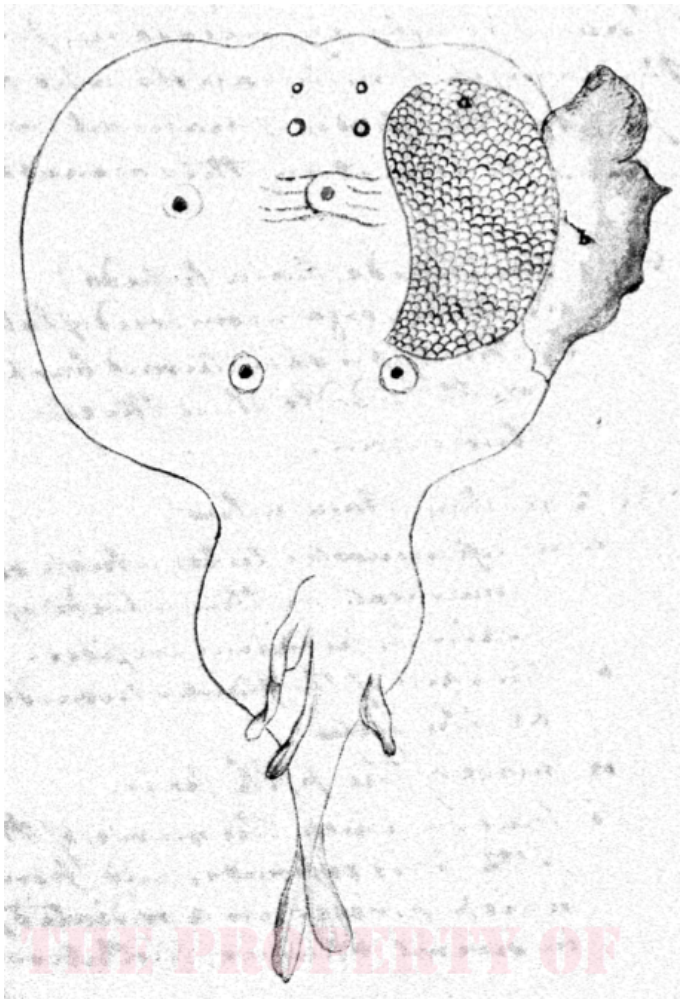
open on the outside of the skin.

Memoir on on the electric organs
of the Torpedo &^{c} By E. Geoffroy-
Tillocks Phil. Mag. 15.126.

[illustration]



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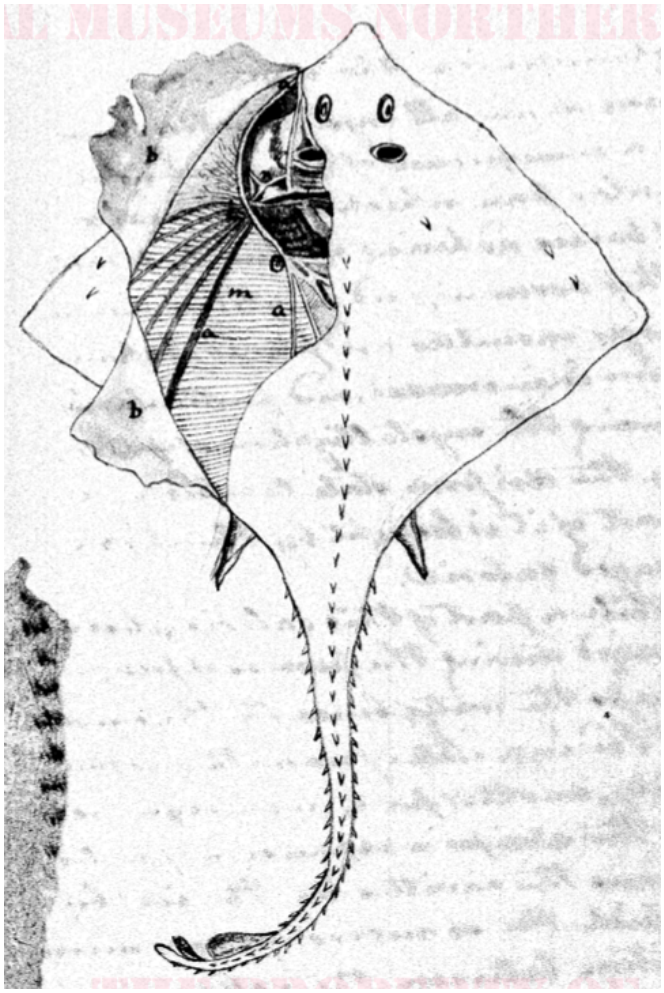
[illustration]



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Observations on Freezing water by Pro-
-fesser Driessen

Expansion is a phenomenon com-
-mon during all crystallization, and
is a consequence of the peculiar re-
-gular form which the moleculœ
of bodies adhering mutually to each
other assume, and by which means
larger vacuities are formed. Expan-
-sion is increased, and particularly
during the crystallization of water,
by the aëriform state to which a
part of it is brought by the disen-

-gaged caloric.
While a part of this caloric, disen-
-gaged during the process of freezing,
keeps the water beneath the crust
of Ice in a state of warmth and flui-
-dity, another part, in consequence
of the aëriform expansion of water,
forms the cavities in the ice by
which the so necessary communi
-cation between the external air
and

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and the fluid water is mentained, in
order to support the life of those beings
which reside in it.
And what would be the case with ve-
-getation if ice were a body imperme
-able to air? While the warmth of the
earth is maintained as far as possible
under its hard surface by the power
of congelation, the air continually pe-
-netrates through it; by which means
the principles of germination are
preserved in the seeds, and prepared for
development.
My experiments have also shown that
icewater produced by a slow thaw contains
more air water which has not been
frozen during the same time.
But snow water in particular contains
much more air than common rain water;
and this air contains more oxygen than

the air obtained from rainwater.
Besides this larger quantity of air, and
particularly oxygen gas, snow water
contains much fewer extractive par-
-ticles then rain water; and from
these

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these two circumstances we can ex-
-plain properties by which this
water distinguishes itself from rain
water, as a medicine, as drink, and
in many œconomical uses.
It is need to inquire, why this water
is sometimes hurtful in cases of in-
-flamation of the eyes? Why it occa
-sions colic, griping pains, and other
affections, when drunk cold? But
without enlarging further on this sub-
-ject I shall here mention a remark-
-able effect of the wise dispensations of
Nature. As Snow water contains ox-
-ygen united with little caloric, it
thereby possesses a stronger tendency
to communicate its oxygen to bodies
susceptible of oxygenation. No sub-
-stance in nature deprives water
of its oxygen with more avidity
than fertile earth. Snow water mix-
-ed with vegetable mould and exposed
to the solar light, improves the
mould in a short time. Almost
as soon as a lively fish placed in

a Glass of water containing oxy-

-gen

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-gen makes the superfluous oxygen
disappear, and fills the water with
Carbonic acid gas in its room, is the
oxygen taken up by the earth as-
-sisted by the influences of the light.
Pure earths do not exhaust snow
water of its oxygen; nor do they at-
-tract the oxygen of the atmosphere,
as asserted by Von Humbolt.
I have long been convinced of the con-
-trary, from various experiments.
It appears, in particular, that car-
-bon is the principal whose strong
affinity for oxygen produces so many
important phœnomena, and which
nature continually employs in the
composition and decomposition of organ
-ic bodies; and consequently frees it
from what renders it prejudicial to
health, and unfit for the purpose of
life.
That which is prejudicial to us is
improved by the ground, and at the same
time gives power and activity to the
mould

When

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When the snow covers the earth, it tends

to keep it warm: the snow, as a body
which cannot conduct caloric in a
very small degree, prevents, by its in-
-terposition, the cold air from taking
the caloric from the earth. But this
does not appear to be the only cause
of its fertilizing powers The snow mel-
-ting and penetrating into the softened
earth communicates to it oxygen,
promotes by these means the germi-
-nation of seeds: the young plant grows
with more vigour, because the carbon
of fertile earth combining with the
oxygen is converted into carbonic acid,
and thereby acquires more solubility;
while the water, by its stimulating pro-
-perty, contributes to excite that acti-
-vity which had been rendered dor-
-mant in the roots by cold.
This fertilizing in power of snow, which
was before ascribed to nitrous particles,
but the presence of which was never
proved, seems thus, according to the
idea of Ingenhousz [Jan Ingenhousz, 1730-1799] Hassenfratz [Jean Henri H.,
1755- 1827]
and other naturalists, to be explain
-ed

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-ed in a more satisfactory manner

Phil. Mag 15. p254

These explanations of the freezing of wa
-ter throw aside a very prevalent opi-

-nion that fish must die if the wa
-ter was completely frozen all over
This however my observations led
one to conclude wrong. I have often
known fish survive the freezing of
a pond when there was not the
smallest probability that any air
reached the water but what passed
through the Ice, and I have seen them
apparently active and not at all
incommoded for want of air swim
-ming immediately under the Ice.
Although some effect may be pro-
duced by the oxygenation of snow
water yet this cannot account
altogether for the superior fertili-
-zing of the soil after snow has
layen upon it for some time. It
perhaps derives the greatest ad-
-vantage from the gradual perco-
-lation

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-lation of the water when the snow
melts by slow degrees, and the
water instead of flying off, is im-
-bibed by the soil, and the fertilizing
particles mixed among the earth.
That a thaw without rain is the
most useful to the Husbandman
has often been observed.

The common suffrage of all nations

confirms it, that the Dutch herrings
are the best. No other cause can be
assigned for this general preference
than the scrupulous adherence to
the regulations and provisions
just now mentioned, it being by
no means true, that the art of
curing salting, and packing her-
-rings is confined to the Dutch
alone.

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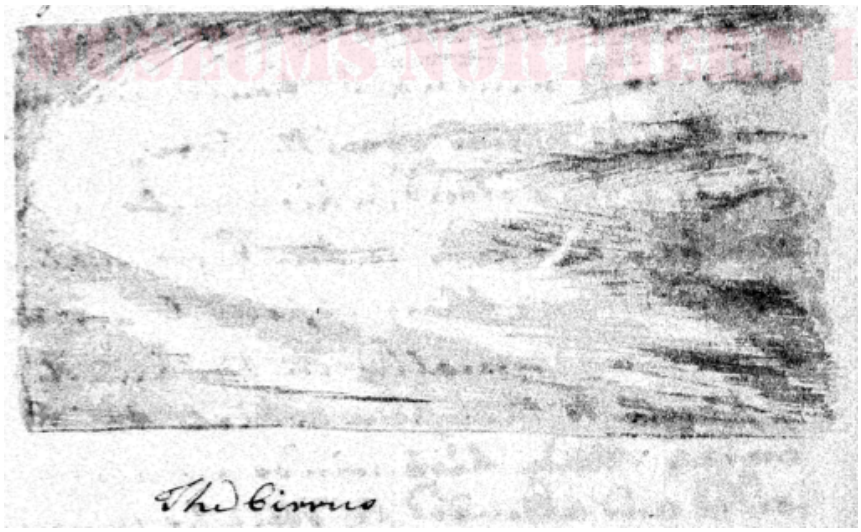
On the Modification of Clouds -
By Luke Howard.
[illustration]



The Cirrus

This modification although in appear-
-ance almost motionless is intimately
connected with the variable motions
of the Atmosphere. Considering that
clouds of this kind have long been
deemed a prognostic of wind,
it is extraordinary that the nature of this

connection should not have been stu-
-died, as the knowledge of it might have
been productive of useful results.
In fair weather, with light variable breezes
the sky is seldom quite clear of small
groups of the oblique cirrus, which
frequently come on from the lee
ward

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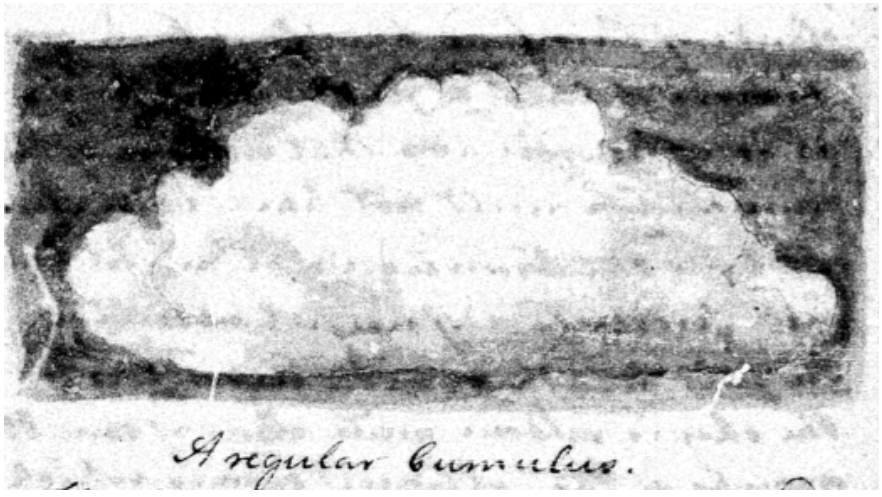
-ward, and the direction of their in
-crease is to windward. Continued wet
weather is attended with horizontal
sheets of this cloud, which subside
quickly and pass to the Cirro-stratus
Before storms they appear lower and
denser, and usually in the quarter
opposite to that from which the storm
arises. Steady high winds are also pre-
-ceded and attended by streaks running
quite across the sky in the direction
they blow in.
[Illustration]



A regular Cumulus.

Their appearance [Distorted copy], and
disappearance in fair weather,
are

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are often periodical, and keep pace
with the temperature of the day. Thus
they will begin to form some hours
after sunrise, arrive at their max
-imum in the hottest part of the
afternoon, then go on diminishing
and totally disperse before sunset,
But in changeable weather they par
-take of the visitudes of the Atmos-
-phere, sometimes evaporating al-
-most as soon as formed, at others
suddenly forming and as quickly
passing to the compound modifica
-tions.
The Cumulus of fair weather has
a moderate elevation and extent,
and a well defined rounded surface.
Previous to rain it increases more
rapidly, appears lower in the
Atmosphere, and with its surface
full of loose fleeces or protruberan
-ces.
The formation of large Cumuli to
leeward

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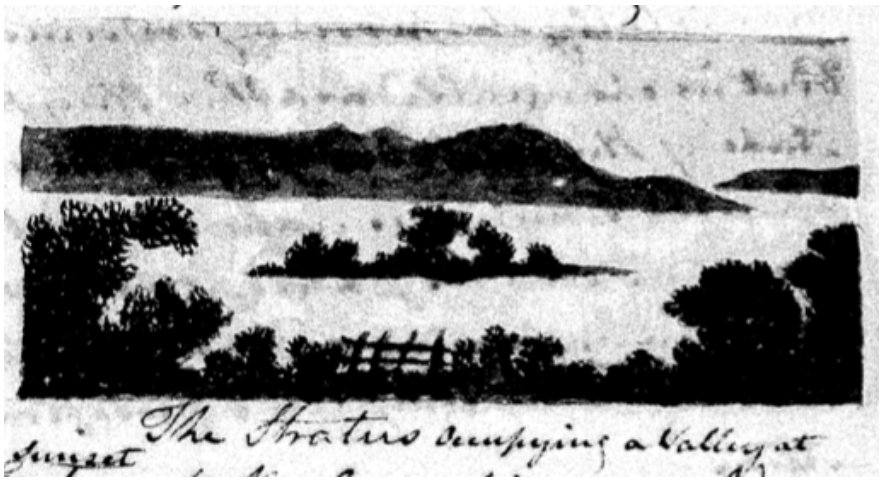
leeward in a strong wind, indicates
the approach of a calm with

rain. When they do not disap-
-pear or subside about sunset,
but continue to rise, thunder is
to be expected in the night.
[Illustration]



The Stratus occupying a Valley at
Sunset

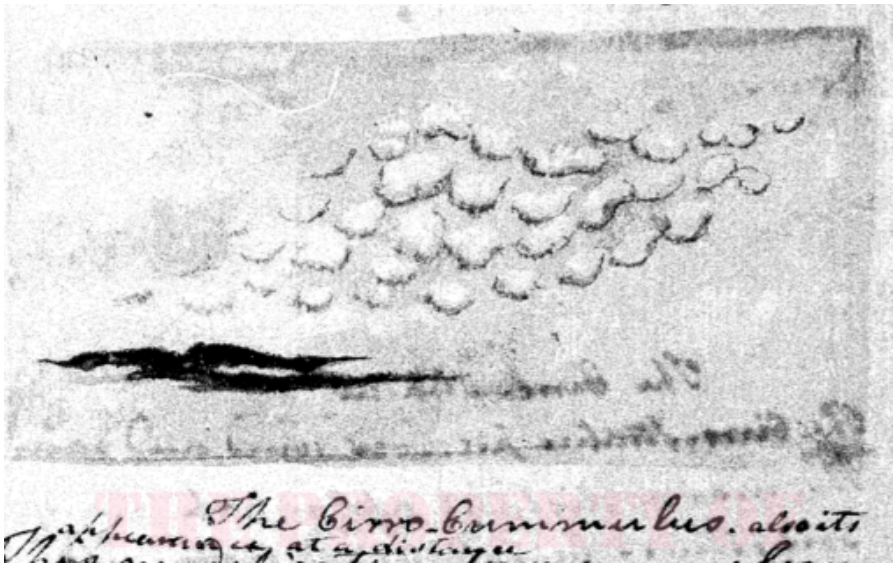
Contrary to the last which may be con
-sidered as belonging to the day, this
is properly the cloud of night; the
time of its first appearance being a-
-bout sunset. It comprehends all those
creeping mists which in calm even-
-ing ascend in spreading sheets (like
an inundation of water) from the
bottom of valleys and the surface of
lakes, rivers &c.

Its

Its duration is frequently through the
night.

On the return of the Sun the level sur-
-face of this cloud begins to put on the

appearance of cumulus, the whole at
the same time separating from the
ground. The continuity is next des-
-troyed, and the cloud ascends and eva-
-porates or passes off with the appear-
-ance of the nascent cumulus.
This has been long experienced as a
prognostic of fair weather, and in-
-deed there is none more serene than
that which is ushered in by it.
[Illustration]



The Cirro-Cummulus also its
appearance at a distance

This modification forms a very beau-
-tiful

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-tiful sky, sometimes exhibiting nu-
-merous distinct beds of these small
connected clouds, floating at differ-
-ent altitudes. The cirro-cumulus
is frequent in summer, and is at-

-tendant on warm and dry weather.
It is also occasionally and more spa-
-ringly seen in the intervals of show
-ers, and in winter. It may either
evaporate, or pass to the cirrus or
cirro-stratus.
[Illustration]

The Cirro-Stratus

The Cirro-Stratus precedes wind and rain
the near or distant approach may
sometimes the estimated from its
grea-

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greater or less abundance and perma
-nence. It is almost always to be seen
in the intervals of storms. Sometimes
this and the cirro cumulus appear to-
-gether in the sky, and even alternate
with each other in the same cloud,
when the different evolutions which

ensue are a curious spectacle, and a
judgement may be formed of the weather
likely to ensue by observing which
modification prevails at last. The
cirro-stratus is the modification which
most frequently and commonly exhi-
-bits the phœnomena of the solar and
lunar halo, and (as supposed from a
few observations) the parhelion and
paraselene also. Hence the reason
of the prognostic for foul weather,
commonly drawn from the appear
-ance of halo

---

66 a light and a dark cirro stratus; the former
taken just before the commencement of wet
weather, the latter in the twilight of the even
-ing, when the dew was falling the smal-
-ler ones show its appearance in the
distance: see page

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[illustration]

The Cumulo-Stratus Mixed and
Distinct the latter in its most regular state, a. some-
-times seen at the approach of thunderstorms and after
showers
The distinct cumulo-stratus is formed
in the interval between the first ap-
-pearance of the fleecy cumulus and
commencement of rain, while the
lower atmosphere is yet too dry;
also during the approach of thun-
-der storms: the distinct ap-
-pearance is chiefly in the longer
or shorter intervals of showers of
rain, snow or hail.

A distant showers comming from behind
an elevated point of Land in which are
represented the superior sheet stretching
in different parts to windward, and cumu
-li advancing towards and entering the mass
the whole of which constitutes the Nimbus

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[illustration]

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Of the Nimbus, or Cumulo-Cirro-Stra-
-tus.

Clouds in any one of the preceding modi-
-fications, at the same degree of elevation,
or in two or more of them, at differ-
-ent elevations, may increase so as com-
-pletely to obscure the sky, and at
times put on an appearance of den-
-sity which to the inexperienced
observer indicates the speedy com
-mencement of rain. It is neverthe
-less extremely probable, as well from
attentive observation as from a consi-
-deration of the several modes of their
production, that the clouds while in
any one of these states do not at any
time that fall rain.

Before this effect takes place they have

been uniformly found to undergo a
change, attended with appearances
sufficiently remarkable to constitute
a distinct modification. These ap-
-pearances, when the rain happens
over our heads are but imperfectly
seen

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seen. We can then only observe, before
the arrival of the denser and lower
clouds, or through their interstices,
that there exists at a greater altitude
the thin light veil, or at least a hazy tur-
-bidness. When this has considerably
increased we see the lower clouds
spread themselves till they visit in
all points and form one uniform sheet.
The Rain then commences, and the
lower clouds, arriving from the windward,
move under this sheet and are successive
-ly lost in it. When the latter cease to
arrive, or when the sheet breaks, every
ones experience teaches him to expect
and abatement or cessation of rain.
But there often follows, what scenes
hitherto unnoticed, an immediate and
great addition to the quantity of clouds
At the same time the actual obscuri-
-ty is lessened, because the arrangement,
which now returns, gives free passage
to the rays of light: for on the cessation
of rain the lower broken clouds which

remain rise into cumuli, and the su-

-perior

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-perior sheet puts on the various forms
of the cirro-stratus, sometimes passing
to the cirro-cumulus.
If the interval be long before the next
shower, the cumulo-stratus usually
makes its appearance, which it also
does sometimes very suddenly after
the first cessation.
But we see the nature of this process
more perfectly in viewing a distant
shower in profile.
If the cumulus be the only cloud
present at such a time, we may ob-
-serve its superior part to become
tufted with nascent cirri. Several
adjacent clouds also approach and
unite naturally by subsidence.
The cirri increase, extending them-
-selves upward and laterally, after
which the shower is seen to com-
-mence. At other times the converse
takes place of what has been des-
-cribed relative to the cessation of
rain. The Cirro- Stratus is previously
formed above the Cumulus, and their

sud-

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sudden union is attended with the

production of cirri and rain.
In either case the cirri vegetate, as it
were, in proportion to the quantity
of rain falling, and give the cloud a
character by which it is easily known
at a great distance, and
to which, in the lan
-guage of Meteorology, we may appro-
-priate the Nimbus of the Latins.
When one of these arrives hastily with
the wind it brings but little rain, and
frequently some hail and driven snow.
In heavy showers, the central sheet
once formed, is as it were, wraped to
wind ward, the cirri being propagated
above and against the lower current,
while the cumuli arriving with the
latter are successively brought to and
contribute to reinforce it.
Such are the Phœnomena of showers.
In continued gentle rains it does not
appear necessary for the resolution
of the clouds that the different mo-
-dification should come into actual
contact.

It

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It is sufficient that there exist two stra-
-ta of clouds one passing beneath the
other, and each continually tending
to horizontal uniform diffusion. It
will rain during this state of the

two strata, although they should
be separated by an interval of many
hundred feet of elevation.
As the masses of clouds are always blen
-ded and their arrangement des-
-troyed before rain comes on, so the
reappearance of these is the signal
for its cessation. The thin sheets of
cloud which pass over during a wet day,
certainly receive from the humid at-
-mosphere a supply proportionate to
their consumption, while the latter
prevents their increase in bulk.
Hence a seeming paradox, which yet
accords strictly with observation, that
for any given hour of a wet day, or
any given day of a wet season, the
more cloud the less rain.

Tillock Phil. Mag 16. p97 -

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A defence against fire

Prof Palmer, of Hamburgh, has lately
discovered a means by which all inflam-
-mable matters, such as wood, paper, linen
& ^{C}, can not only be sucured from burning,
but also be speedily extinguished when on
fire. These means consist in a powder
composed of one ounce of Sulphur,
one ounce of red ochre, and six ounces
of copperas water. To render wood
incombustible, it is first daubed
over with cabinet-makers glue, after

which the powder is strewed over it:
and this operation, when the wood be-
-comes dry is three or four times repea-
-ted. When the powder is to be applied
to linen or paper, plain water is
employed in room of glue; in other
respects the process is the same, with
this difference alone, that the opera-
-tion is performed once or twice. When
the powder is used for articles already
on fire, two ounces are sufficient
to extinguish a square foot of surface.

A

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A trial of this powder was made at Wol-
fenbuttel on the 11 of Dec, and it fully
answered the expectation which had
been formed of it

Tillocks Phil mag 16. p91 for 1807.

Letter from Mr Humboldt to C Delambre.

It has hitherto been believed at Quito that
2470 toises is the greatest height at which
men could resist the rarity of the air.
In the month of March 1802 we spent
some days in the plains which surround
the volcano of Antisana at 2107 fathoms
where the oxen, when hunted, often vomit
up blood. On the 16 of March we found
out a passage over the snow, a gentle
aclivity, on which we ascended to the
height of 2773 toises. The air there con-
-tained 0.008 of Carbonic acid, 0.218 of

oxygen, and it was not at all cold, but
the blood issued from our lips and eyes.
The situation did not permit me to
make a trial of Borda's compass but
in a grotto lower down at the height
of 2467 toises: the intensity of the mag
-netic

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netic forces was greater at that height
than at Quito in the ratio of 230 to 218;
but it must not be forgotten that the
number of oscillations often increases
when the inclination decreases, and
that this intensity is increased by the
mass of Mountain, the Porphyry of which
affects the magnet. In the expedition
I undertook on 23 June 1802 to
Chimborazo, we proved that with pa-
-tience it is possible to sustain a
greater rarity of the air. We ascended
500 toises higher than Condamine (on
Corazon) and on Chimborazo we car-
-ried our instruments to the height of
3031 toises, where we saw the barome-
-ter fall to 13 inches 11.2 lines: the
thermometer was at 1.3° below zero.
We still bled at the lips, our Indians
deserted us as usual; C Boupland and
M. Montufar, were the only persons
who remained. We all experienced an
uneasiness, debility, and desire to
vomit, which certainly arose as

much from the want of oxygen in
these

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these regions as from the rarity of the
air. At that immense height I found
only 0.20 oxygen.

Two geodosic operations
gave me for Chimborazo 3267 toi-
-ses above the level of the sea; but
the calculations must be rectified by
the distances of the sextant from
the artificial horizon and by other
circumstances

Tillocks Phi Mag 16. p168

Experiments to ascertain the value of
steeps in curing the Smut in Wheat,
and promoting its growth. By Mr. B.
Bevan.

Copy of a table of results in a set of
experiments made principally with a
view to ascertain the value of different
steeps in curing the Smut in Wheat, and
promoting its growth; with 12 samples of
good Wheat A, and 12 samples of very Smut-
-ty Wheat B; each sort steeped in 12 differ
-ent solutions of substances most easily
procured.

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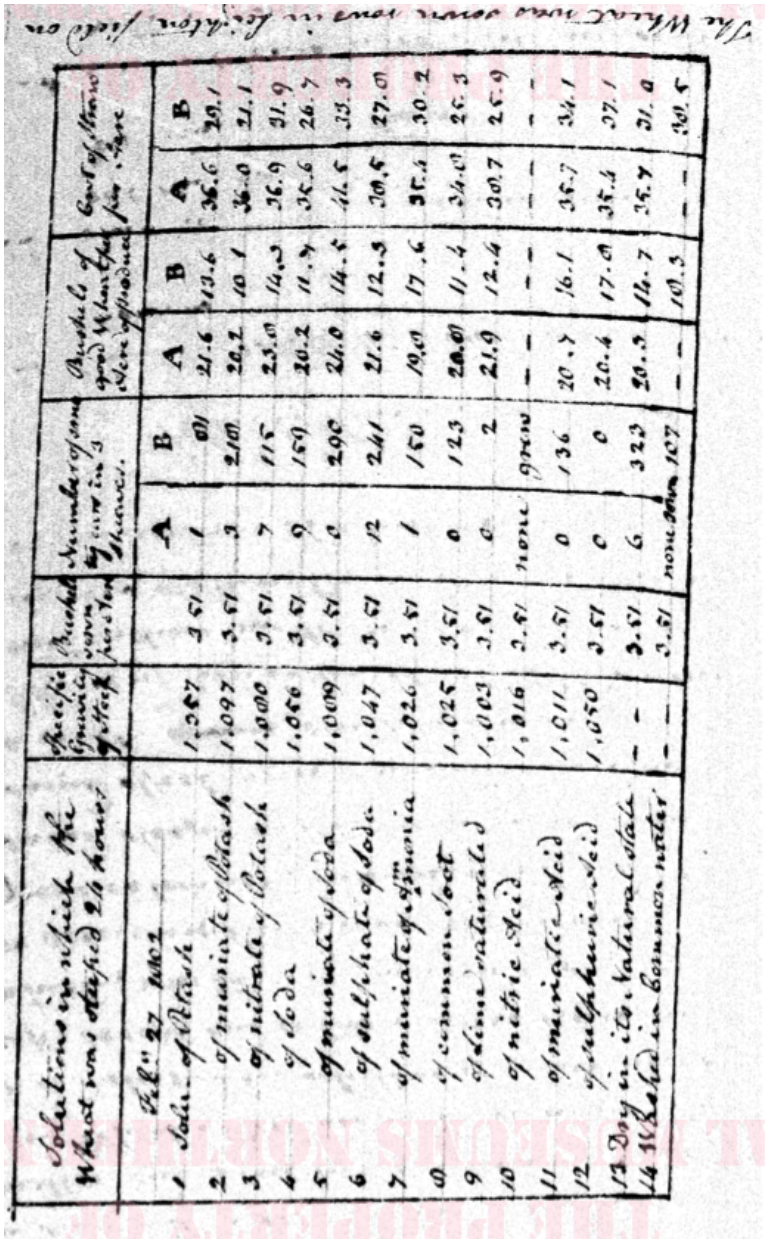

[table]

The wheat was sown rows in Leighton field on

a

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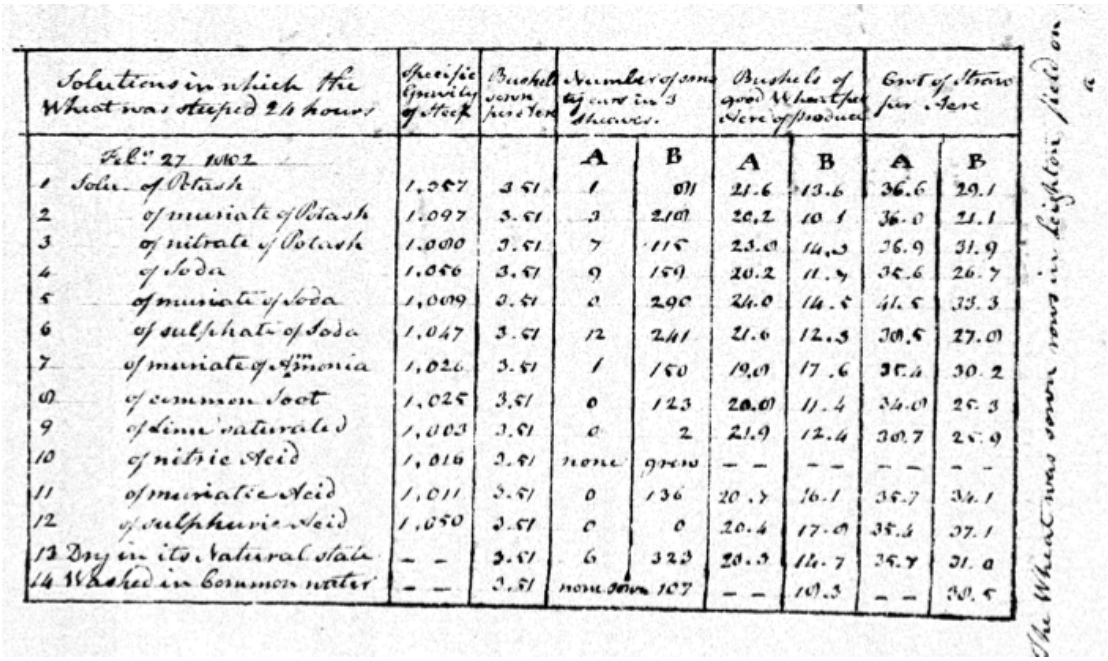
[repeat of page 187]



Solutions in which the Wheat was steeped 24 hours	Specific Gravity of Stock	Bushels sown per Acre	Number of corns to an ear in 3 Shares.		Bushels of good Wheat per Acre of produce		Cost of Straw per Acre	
Feb.r 27 1802			A	B	A	B	A	B
1 Solu.n of Potash	1.007	3.61	1	011	21.6	13.6	36.6	29.1
2 of muriate of Potash	1.097	3.61	3	210	20.2	10 1	36.0	21.1
3 of nitrate of Potash	1.000	3.61	7	116	23.0	14.3	36.9	31.9
4 of Soda	1.056	3.61	9	159	20.2	11.4	36.6	26.7
5 of muriate of Soda	1.009	3.61	0	290	24.0	14.5	41.5	33.3
6 of sulphate of Soda	1.047	3.61	12	241	21.6	12.3	30.5	27.0
7 of muriate of Ammonia	1.026	3.61	1	150	19.0	17.6	35.4	30.2
8 of common Soot	1.025	3.61	0	123	20.0	11.4	34.0	26.3
9 of lime saturated	1.003	3.61	0	2	21.9	12.4	30.7	25.9
10 of nitric Acid	1.016	3.61	none	grew	— —	— —	— —	— —
11 of muriatic Acid	1.011	3.61	0	136	20.3	16.1	35.7	34.1
12 of sulphuric Acid	1.050	3.61	0	0	20.4	17.0	35.3	37.1
13 Dry in its Natural state	— —	3.61	6	323	28.3	14.7	36.7	31.0
14 Washed in Common water	— —	3.61	none	sown 107	— —	10.3	— —	30.5

The Wheat was sown 1000 in Leighton field on

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November 1808

a sandy soil mixed with little or no calcareus
matter, and is but indifferent land for bear-
-ing Wheat. Neither of the samples that
were steeped in solution of nitric acid came
up, except one or two singles corns; and
which, whether by having more room,
or receiving but a less degree of stimulus
grew extremely luxurious. I tried the
same steeps with barley, and found the
same effect from the nitric acid, as not
a single one came up.
The very powerful effect of this solution
will induce me to try it again in different
degrees of strength and should the result
be important, I shall make it public

B. Bevan

Tillocks Phil Mag. 16. 228.

21 Ther at 8 AM. 43 Brilliant day with showers

22 Ther at [blank] Misty rain through-out the Day
Ivy going out of Flower

23 Ther at 8 AM. 43 Mild pleasant day with a Shower.

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November 1808

24 Ther at 8 AM. 39 Pleasant dark mild day

25 Ther at 8 AM 45. Misty rain
Common Wren & young thrushes sin--ing

26 Ther at 8 AM. 50 Dark breezy Morn ing Misty rain

27 Ther at 8 AM. 40 Very wet night
Misty Morning Wet until 1 PM
Thrush singing

28 Ther at 8 AM 30 Misty morning
Ice near a Quarter of an inch
Misty day

29 Ther at 8 AM.39. Wet night very misty Morning afterwards a Wet day

30 Ther at 8 AM. 40 Windy Brilliant Morning. with showers
made a drawing of *Podiceps minor* or Little Grebe bought in Bel--fast

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December 1808

1 Ther at 8 AM. 40 1/2 Brilliant breezy
and Showery Morning, and day

2 Ther at 8 AM. 43. Brilliant breezy
showery

3 Ther at 8 AM. 44 Very stormy wet
night Brilliant Breezy Morning
with heavy showers

4 Ther at 8 AM. 35. Brilliant morning
Pleasant day

5 Ther at 8 AM. 51. Rain in the
night dark Misty Morning

6 Windy night
Showery day
Received from Mr Cowper Nurseryman
1 Lucombe Oak 1 Willow leaved thorn

7 Ther at 8 AM. 38. Cool day with
slight showers

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December 1808

8 Ther at 8 AM. 41. Mild pleasant
day with a trifling misty shower
Wren and thrush singing

9 Ther at 8 AM 45 Rain during
the night
Thrush singing & Wren
Caught on Nettle Butterfly *Papilio*
Urtica in Belfast.

10 Ther at 8 AM 43. Dry pleasant
mild day

Bat flying in the evening

11 Ther at 8 AM.33. Misty morning
Thick mist throughout the day
Thrush and Wren singing

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At the height of the peramo of Assuay,
an elevation of 2300 toises, are the magni-
-ficent ruins of the Inca's highway. It
conducted almost to Cuzco, was entire-
-ly constructed of cut stone, and very
straight, and resembled the most
beautiful of the Roman roads.

Humbolt's Travels in South America

See Tillock Phil. Mag 16 - 245

Essay on the Herring Fishery from the
Dutch.
"I have already, and the common
suffrage of all nations confirms it,
that the Dutch herrings are the
best. No other cause can be assign
-ed for this general preference, than
the scrupulous adherence to the re-
-gulations and provisions just men
-tioned, it being by no means true,
that the art of curing, salting, and
packing hearings is confined to the
Dutch alone.

Tillocks Phil. mag. 16 - 47.

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Dr Mitchill of New York. Account of
the Anatomy and Physiology of the

Shark.

About two years ago, as I was engaged in
a fishing party in one of the bays on the
south side of Long Island, a shark be-
-tween four and 5 feet in length,
was taken in the Seine, and secured
in our boat, without receiving any
material injury. Upon examination,
this animal was found to be a female
whose uterus contained 11 young
ones. Besides these young ones that
had advanced thus far in their
growth, there were contained a large
number of ova within the body of the
fish, in different degrees of evolution
and size, some of them resembling the
full-grown eggs of the tortoise, and others
similar to the smaller rudiments of
eggs found in the ovaria of laying hens.
On opening the uterus with a knife
the young fishes, were found each
connected with an egg, dependent
from

from that part of the belly which may
be considered as the umbilicus, and
appearing in the form of a very large
hernia. The hernia, on examina-
-tion, proved to be a true ovum, fil-
-led with yolky substance, evident-
-ly intended for its nourishment:
and what was very remarkable, the

young animal, though grown to
a considerable size, and connected
in this manner with its egg, had
no connection whatever by means
of an umbilical cord, a placinta,
or by vessels of any kind, to the u-
-terus of its dam; but it was so
completely organized as to derive
no sustenance to its body, nor to
receive any renovation of its blood
from its parent.

Tillock Phil Mag. 15. 264.

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December 1808

12 Ther at 8 AM 41. Pleasant dark
day dry
Made a drawing of *Tremella Boletiformis*

13 Ther at 8 AM 43. Pleasant dark
dry day
Wren and thrush singing

14 Ther at 8 AM. 42_ A trifling shower
towards the latter part of the day
Clear and Cold
and thin Ice

15 Ther at 8 AM. 35 - Hoarfrost ^ in
the Morning a mild pleasant day

16 Ther at 8AM. 30 Ice about 1/4 of an
inch thick Snow falling ground cover
-ed 2 inches deep by 3 O Clock

Extracts from L^{d}_ Teignmouths life
of Sir W. Jones

Do you think I have discovered
the true use of the fine arts, name-
-ly

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-ly, in relaxing the mind after toil?
Man was born for labour; his con-
-figuration, his passions, his rest-
-lessness, all prove it; but labour
would wear him out, and the
purpose of it be defeated, if he had
not intervals of pleasure; and un
-less that pleasure be innocent,
both he and society must suffer.
Now what pleasures are more harm-
-less, if they be nothing else, than
those afforded by polite arts and
polite literature.

Vol.1_ p. 426

From a speech to the inhabitants of
London. Westminster and the Borough
of Southwark, assembled to consider
on the means of procuring a reforma-
-tion of Parliament.
"The People of England can only ex-
-pect to be happy, and most glorious,
while they are the priest, and can
only become the priest, when they
shall be the most virtuous and most
enlightened of nations

Vol.1. p. 409

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On the people depend the welfare,
the security, and the permanence of
every legal government; in the peo-
-ple must reside all substantial pow
-er; and to the people must all those,
in whose ability and knowledge we
sometimes wisely, often imprudently
confide, be always accountable for
the due exercise of that power with
which they are for a time entrus-
-ted.
If the properties of all good govern-
-ment be considered as duly distri-
-buted in different parts of our limi
-ted republic, goodness ought to be
the distinguished attribute of the
crown, wisdom of the aristocracy,
but power and fortitude of the peo-
-ple.

Vol. I. p. 431

"in this word constitution, are in-
-cluded the original and fundamen-
-tal law of the Kingdom from
whence all powers are derived,

and

and by which they are circumscribed;
all legislative and executive authority,
all those municipal provisions,
which are commonly called laws;
and lastly, the customs, manners,
and habits of the people. These

joined together do I apprehend,
form the political, as the several
members of the body, the animal
economy, with the humours and
habit, compose that which is
called the Natural constitution."
…… Whatever these relates to
the rights of persons, either abso-
-lute rights, as the enjoyment of
Liberty, security, and property
or relative, that is in the public
relations of magistrates and peo-
-ple, makes a part of that ma-
-jestic whole which we pro-
-perly

-perly call the constitution.
Vol. I. 435.
What is the Boasted Liberty of En-
-glishmen. Is it to be the tools of
an imperious nobility, holding
themselves distinct from the
people, making laws to uphold
an usurped power by assembling
under the name of representi-
-tives of the people a number
of associates in their will or-
-ganized system of Despotism
and plunder, who must obey their
masters and speak at their nod.
And by a Nicely regulated plan
of imposition the people are made

to believe that it is they themselves
who possess all power, that it is
they who send representatives to
parliament to speak there will,
that

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December 1809
that it is they who give power
to the King, elect Sherifs, Ma-
-gistrates, and Constables, and that
it is they who make the laws
and vote away their property

17 Ther at 8 AM. 38 Squals with
large flakes of Snow. Continual
snow through the day.

18 Ther at 8 AM. 31 Snow showers
continue through the day

19 Ther at 8 - 27 Feeble sunshine
in the forenoon Wind north and
Cold
Boys on the Ice of M^{r} Joys dam

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20 Thur at 8 AM. 24 Calm pleasant
About Sunrise the clouds exhibi
-ted those beautiful tinges so much
admired in Italian pictures, and
the Golden red mistyness through
which hills were seen gave an Idea of
the glowing atmosphere of a south
-ern climate

21 Ther at 8 AM. 34 A trifling

Shower and the thaw apparently
commenced

22 Ther at 8 AM. 29. Clouds beauti
-fully tinged Pleasant day

Received from M[r] Mackay from Dublin

1 *Veronica longifolia*	6 *Veronica incisa*
2 _____ *incana*	7 _____ *Teucrium*
3 _____ *Gentianoides*	8 _____ *prostrata*
4 _____ *pinnata*	9 _____ *orientalis*
5 _____ *laciniata*	10 _____ *multifida*

Ver.

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December 1808

11 *Veronica urticifolia*	19 *Chelone nulloides*
12 _____ *latifolia*	20 Dble purple Rocket
13 _____ *paniculata*	21 Dble White
14 *Iris lutescens*	22 Dble yellow *Chrysanthemum*
15 ____ *Chinensis*	23 Dble buff. *Chry* -
16 ____ *biflora*	24 *Acorus grameneus*
17 ____ *virginica*	25 *Gentiana verna*
18 ____ *ochroleuca* eynanchica	26 *Asperula eynanchica*
	27 *Anthyllis Vulneraria B*

23 Ther at 8 AM. 32. Dark mild morning
Snow Showers
Found in Belfast Market the
Tringa Squaterola Grey Plover

Tringa Interpres Turnstone and
Podicips obscurus with
Arias Creeca

24 Ther at 9 AM. 35. Clouds rising
Snow Showers
Made a drawing of *Mergus Caster*

25 Ther at 8 AM. 34 Dark morning
Some Snow falling through the day

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December 1808

26 Ther at 10 AM. 35 Some snow fal-
-ling in large flakes several times
during the day
Made a drawing of *Iringa interpres*
and *Iringa Squaterola*

27 Ther at 8 AM. 35. Dark calm dry
day
Made a Drawing of *Anas Creeca*

28 Ther at 9 AM. 39. Dark calm
dry day

29 Ther at 8 AM. 40 Dark pleasant
dry day

30 Ther at 8 AM. 40 Calm Wet day

31 Ther at 8 AM. 41 Wet day
Wren Singing Saw about 20 Swans
Flying Westward about 8 1/2 AM.

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December 1808

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Extract from the Novel of Corin
-na By Madam de Stael Holstein

Corinna
Being in England educated in Italy
her mother who was an Italian being
dead her father married again to an
English woman gives her his advice
to lay aside her vivacity, and adopt
the uniform taciturnity of the En-
-glish character.
"In hearing my father talk thus, I recal-
-led his image, full of grace and vivacity,
such as I had known him in my infan-
-cy, and I beheld him now bending beneath
that leaden cloak which Dante describes
in the infernal regions, and which me-
-diocrity throws on the shoulders of
those who fall beneath its yoke; the
en

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enthusiasm of nature, of sentiment, and of
the fine arts, all vanished from my sight,
and my soul like an useless fire, having
nothing to feed it from without, preyed
on myself. As I am naturally meek
my mother in law had no reason to
complain of my conduct to her, and
my father much less, for I loved him
tenderly; and it was only in his con-
-versation that I could yet find pleasure.
He was resigned to his fate, but sen
-sible of it; whilst the greater part
of our country gentleman, drinking
hunting and sleeping, think they lead

the wisest and most pleasant life in
the world. _____ I asked myself
whether it was not my own mode of
thinking that was foolish; and if ex-
-istence, entirely corporeal, as free
from thought as from pain, from
reflection as from feeling, was not
preferable to my mode of being.
Vol 4 p.9.
There is nothing so easy as to assume
a very moral air in condemning all
that

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that depends on an elevated mind.
The duty the most noble destination
of Man, may be perverted like every
other Idea, and became an hostile
weapon for narrow minded men; for
the self satisfied sons of mediocrity
to impose silence on talent, to rid
themselves of enthusiasm of genius
of every thing in fact which is inimi
-cal to them. One would say, in hear
-ing, that duty consists in the sacri
-fice of those distinguished faculties
which we must expiate in leading
precisely the same life as those who
lack it. But is it true that duty pre-
-scribes to every character similar rules?
Are not great thoughts and generous sen-
-timents, in this world, the debt of those
capable of discharging it? Ought not

every woman, as well as every man, to
open a path for herself agreable to her cha
-racter and her talents? And is it neces-
-sary to immitate the instinct of Castors,
whose generations succeed each other
with

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without difference or distinction.

Vol.4. p 13

It is always something that a nation
has existed its inhabitants, at least,
blush for their actual condition; but
in countries that history has not
never consecrated, man does not even
suspect that there is any destiny be-
-yond that servile obscurity which has
been transmitted to him by his An-
-cestors.

Vol.4. p.156

The World is in the wrong to fear supe-
-riority of mind and elevation of soul-
this superiority is very moral; for
expensive comprehension renders
us very indulgent, and profound feel-
-ing inspires great goodness of heart.

Vol.5. p.120

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Now Morn, unconscious of the comming fray
That soon shall storm the crystal cope of day,
Glows o'er the heavens, and with her orient
breeze

Fans her fair face and curls the summer
seas.

Columbiad a Poem by J. Barlow
See Monthly Mag. 26. p.519

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