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About 5300 words

MAY

[Picture: Mayfly on an Aspen Leaf]

FAT OF THE LAND

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FAT OF THE LAND

Fertility is fragile still, hyaline wings and blue petals and aspen rustling her crinolines, daring you into the dressing room. The buds have opened on twigs nearest the sun. You can walk through limbs with perfect leaflets brushing your face, whispering, quaking in a gust. You can stand by pale, living skin. Alone among trees on our farm, the aspen has a bark that turns sunlight into energy.

The hot days will be next and then things with strong stalks, barley and partridges. After that will come deer, pheasants, and me hunting the deer and pheasants -- walking oil fields all of us, sun's energy stored in fat. Now is when we build up the deposits. "Joys of spring," Anna calls them, using an Irishism for rambunctious males. The feeling can come at any time but in May it scarcely lets up. Every man is a fathead now, thick sunny yellow joys between skull and brain.

May brings the first summer clouds too, big fluffy ones and polka dots, clouds rain-streaked and sun-sparked, guerrilla clouds rushing down to fluster the pond and move on. There is soft murmurous thunder, no heat, and barely enough rain for the hay. For a farmer, these clouds do not amount to much.

Water is on the way, nevertheless, as sun thaws the high country. Three hundred inches of snow have fallen up there since

September. That's four times my height, but I wasn't wading around in it. Nothing could make a living there but blue grouse eating fir needles, snow sifting quietly. The grouse are following snow-melt downstream now to mating season, and the water is liberated too. Molecules that made a snowflake in January are bounding down the slopes, surging toward the Missouri River, headed for New Orleans.

Melting snow makes this a bad time to walk on the highest peaks, but a good time to see them. They will hide behind their foothills in summer -- a trick of perspective -- and you will need the mind's eye of an Albert Bierstadt to separate high, bare, distant mountains from outriders that are below the timber line, but much closer. Postcard exceptions are the Tetons a hundred-odd miles south of us, which seem to spring from Jenny Lake. They do not, however, look remotely like <u>tétons</u>. He must have been a lonely trapper who saw femininity in those icy crags.

Here at home, spring makes white peaks stand above shoulders draped in dark firs. The clouds help too. I see these mountains every day, sweat on them sometimes, and take them for granted till they dress in gauze -- peaks above, peaks beside, peaks peeking out.

ENERGY AND THE STREAM

Our spring-creek is separated from this rowdy season by a filter: dirt, miles of it, through which the snow-melt must pass before reaching us. The river to our east is running over its banks while here, just two fields away, the spring creek remains almost as low as it was in February.

The stream is waking, nevertheless. Midday sun pulls up mayflies; mayflies pull up trout; trout pull an angler out of the house. None of us are sun-lovers, exactly. Trout and flies are usually most active under mild gray skies, and so am I, but in May we need warmth to beam over the mountains and get us going.

Energy is Eternal Delight.

William Blake

Everything on the place rises and shines, now that the sun has its strength back. Brewer's blackbirds perch atop alders and catch light in beady eyes. Little saurian heads lift from the robin's nest on our front porch. Worms climb toward the warmth and mother robin catches them for her brood. A pintail drake

stands tall on a green peninsula, looking big as a goose with the light reflecting from his white breast. Four, five, six yearling deer splash across the stream in their new red summer coats. The mature does are back in the brush somewhere, waiting. Soon they will nurse dappled fawns with the sun's milk.

For those of us who live in air, the stream's workings are harder to parse, but sun is the source of energy there too. Warmth is reaching into the bars of mud below my wing-dams and pulling up watercress leaves the size of mouse-ears. Water buttercup (Ranunculus) and three kinds of pondweed (Potamogeton) are sprouting from the gravelly bed. These are the plants that anglers like to talk about -- big ones. I cannot even see the specks of algae that feed the mayflies, which feed the trout, which in turn feed the herons.

Anna and I enjoy fish dinners too, but not from this spring creek. The trout taste like their food chain.

GEOLOGY AS DESTINY.

Sun is universal, geology individual. I could walk from here to the mountains and fish under the same light, but in an utterly different stream.

- The spring creek is flat, silent, and meandering, though nothing stands in its way but soft black soil. The mountain stream is steep, noisy, and direct, though it must push aside boulders.
- Insects in the spring creek are small, individually, and divided into few species, but these few are so successful that the biomass is great. The mountain stream has more species and some of the individual flies are large in size, but the biomass is smaller.
- In the spring creek, you see big trout feeding in water that barely covers their backs. In the mountain stream, most trout are small even in the deepest pools.

Geology accounts for the differences, and geology is a hard language for me, though I grew up hunting carnelians and geodes. I can spot a chunk of petrified wood with rings in it from the time before Genesis, but I can't tell you much more than that. Our teachers should have given us children geology as poetry, not grammar. We needed order but not an order so hard. Geology

squeezes human history between layers of rock and human culture into a thin layer of sediment above the strata. The world's greatest epic ends like all the rest, heroes dead.

> Lakes are so ephemeral that they are seldom developed in the geologic record. They are places where rivers bulge, as a temporary consequence of geology.
>
> John McPhee, Rising from the Plains[1]

You need some distance from geology to see what it means. I climbed a ridge last week, for no bigger reason than to spy on the mating season, and saw the whole story. The small of it was a cock grouse strutting on a fir-needle stage. I crawled toward him, wondering if he would take me for a rival, and he seemed more inclined to court my blue visor. He could hoot with his bill closed -- which struck me as a good trick -- but he did not recognize the big picture spread at our feet.

The glacial lake was two thousand feet below us, thousands of years back in time, and still aqueous when clouds lent their shadows. I imagined races of giant trout cruising below me in what was, geologically, the Recent. I caught vertigo from both altitude and time. And then I hiked back down to reality, if that is what the Present is.

Dig far enough into our home acres and you find the old lake hiding in gaps between rocks and particles. There is a little of everything down there, from old river-gravel to fist-sized lumps

of a conglomerate with veins of chalk. This is not the pure white stuff of English chalkstreams -- I have a piece of that for comparison -- but calcium carbonate in any form does good things for trout water.

> And the earth is shallow; there is not a great deal of it before you come to the rock. And the earth dont want to keep things, hoard them; it wants to use them again.
>
> William Faulkner, The Old People

Our fertility starts in ancient seas. To keep from being eaten, small soft creatures evolved hard exoskeletons, died in their time anyhow, fell to the bottom, were compressed into limestone strata, rose with the Rocky Mountains, washed downhill during some other May, and are now building the chitin of a mayfly's exoskeleton. This is the small picture -- the one with consequences for trout and me.[2]

- The geology produced a fertile stream with relatively even flows and temperatures.
- The stream in turn produces a nutritious soup composed of living diatoms and fine particulate organic matter.
- The organic matter nourishes large numbers of a few species of mayflies which roam the stream's bed for food.
- The mayflies attract trout which, though not so specialized as the insects, do well in spring creeks.
- The trout attract people of an angling culture that used

to be small, but is today flourishing.

You would not enjoy a broth of fine particulate organic matter. Its parts are less than one millimeter in diameter -- so small that you (or at least I) cannot say whether they are animal, vegetable, or algal. Yet from this chowder springs the beauty of the mayfly.

Even people who are squeamish about other insects learn to love this one, which preys on no other living animal and is preyed upon by all. In its winged form, the mayfly does not even eat. It mates, lays eggs, and dies. It is perfectly innocent, which is to say perfectly stupid. It sits on your finger without protest until you, in order to study it, drown it in alcohol and put its wing under a lens.

Look away from this death, if you are not made of coarse particulate organic matter. I don't know how mayflies feel, but I know how they struggle when they are caught by alcohol or spider. I know how they look on their mating flight too, dancing in the sun. The only emotions involved may be mine -- yet I know when mayfly nymphs want to leave their husks. I can feel it happening. They are under water and I am breathing air through screen doors, but we get the same message. Sky darkens. Breeze stirs. Weather lifts the nymphs. I hatch too, emerging from this husk of a house.

THE TROUT'S ECONOMY

> The principle upon which the trout conducts his living is one of the strictest economy, such as would put an Aberdonian to shame.... One may be pretty sure that what he is doing at a given moment is that which is most profitable.
>
> G.E.M. Skues[3]

Trout are in the recycling business. Sun warms the meanders; insects hatch; fish make gentle circles on the glassy surface. The scene seems lazy and poets over the centuries have been soft observers, choosing not to look beneath the surface.

The stream is busy converting sunlight into life. Dip a fine-meshed net in the current and it comes up full of mayfly nymphs, mayfly subimagoes (duns), mayfly adults (spinners), midge pupae, occasional caddisflies, and other aquatic insects of the season. I cannot measure the thermodynamics but suspect that our marshy creek is the best food-factory on the place -- more efficient than grass, alfalfa, trees, barley, or brush. And the abundant nutrients produce intense competition.

Trout are the largest predators that live in the stream full-time, yet they subsist on insects almost as light as air. To

catch enough mayflies, the fish must occupy feeding lies -- positions in which trout can spend little energy while intercepting food drifting with the current. This is a riskier diet than that of, say, a garter snake, which can catch one sculpin and then take a long digestive break under the porch. Every mayfly caught in the surface film exposes a trout to predators from the air-breathing world. The reward is abundant and nutritious, but it selects for the supertrout -- one in a thousand that learns to eat often without being eaten even once. Survivors of this food-fight become bigger and stronger than fish of the same species in a hard-rock stream.

There is a painting that reminds me of a spring-creek trout. The subject is a cavalry officer from Kipling's time. He lounges on a couch, uniform elegant, pose insolent. He is alone because no solid Victorian would let his daughter near the man. Even in repose, he seems to be challenging you to a duel. He died in Africa, run through by a spear.

Herons spear the spring-creek trout; you accept a challenge which, in real life, your prey did not intend to offer. You do not rush. You do not look over the side of a pool to see if there are trout present. (There were, till they saw your hat.) You stalk upstream along the banks, eyes focused far ahead, looking for the ring-on-water made by a trout taking an insect. You tie on an imitation with a hook -- an artificial fly that looks like the natural and will behave naturally on the stream.

Then you enter the water and kneel in it, keeping yourself

below the fish's line of sight. You wait till your prey is feeding steadily. You cast, aiming for a spot upstream of the trout's lie, and your fly drifts downstream. If the trout does not take, you wait for another rise before you cast again, and watch your fly disappear in a dimple on water.

What follows is shocking in a scene so placid. Your prey feels itself caught, bolts upstream, and flings itself out of the water three, four, five times. Do you know the sound of a rainbow trout vibrating in air? You can hear it above Humility's gentle flow, much like a mallard's wingbeats.

SOURCES

> And yet, at the very least, he will have his wholesome and merry walk at his own ease, and also many a sweet breath of various plants and flowers that will make him right hungry and put his body in good condition. He will hear the melodies of the harmony of birds.... And if the angler catches the fish with difficulty, then there is no man merrier than he is in his spirit.
>
> The Treatyse of Fishing with an Angle[4]

Fly-fishing attracts us because it is close to nature, which is to say archaic. Modern humans have invented devices for casting weights at the end of thin lines, but no one in the age of the automobile would have tried to cast an artificial fly, which is essentially weightless, on the buggy-whip principle.

Early in the second millennium, however, fly-fishing evolved at least three times -- in Macedonia, England, and Spain -- as a way of getting around the fragility of a trout's natural food. Mayflies and other winged insects would not stay long on a hook, but they could be simulated with feathers cast on a horsehair line tied to a wooden rod. Over centuries, the technology evolved into polypropylene dubbing, nylon leaders, and carbon-fiber rods. We perfected what we loved and we loved our whispering lines even as we made them shiny and plastic.

Of course protein could be produced more efficiently. We

could, for example, raise catfish in a pond and net them out. But we do not want efficiency. We want to stalk like bushmen and cast with an eye/hand coordination that evolved to guide spears. We want to catch beautiful fish under the rules of fair chase, which give our prey a chance to evade capture.

Study to be quiet.

Izaak Walton

Though I grew up near the spring creek in Montana, I did not see it till I had fished a chalkstream in England. The two are chemically similar and must have resembled each other physically once, because both flow through fertile bottomlands. But such lands are as good for agriculture as for trout, so it was inevitable that both streams would be affected by human works.

- The Montana spring creek is still in its original channel, though the banks were damaged during a few decades of grazing in the twentieth century.
- Much earlier, a section of the River Itchen had been moved upslope into a new channel dug by muscle-power. The stream's original meandering bed became a water-meadow for sheep, which produced wool for the clothing of the resident monks.

In both places, the changes made economic sense. Montana was new, spacious, and lightly populated, so even fertile land was

cheap. Montanans, therefore, let cattle use the stream as a natural watering-trough. Call this laissez-faire agriculture.

In England, on the other hand, fertile bottomland had to be managed intensively -- first for the sheep and later for fish. River-keepers learned the needs of trout, insects, and the stream itself.

In the Abbotts Barton water, where I fished, the artificial main channel of the Itchen no longer had sweeping meanders like those of the Montana spring creek. In compensation, there were man-made sidestreams called carriers, which -- unlike most irrigation ditches in Montana -- provided good fishing. One of the carriers was about the size of Humility Creek, but with banks in better condition.

Do not conclude that nurture had triumphed over nature. Nature still provided the cool clear alkaline water, the weeds and insects growing in it, the partridges nesting on the banks, and a snipe winnowing the twilight. The wildness of the place came as a surprise, given its history. Humans had lived there forever, as we know time, and yet you could wander in water meadows with the stars coming out and look for a way around the soft spot that swallowed a horse. You could circle the duck's-nest spinney twice before spotting a faint path back to the fishing hut.

The hut had no name on the door, but it was one of a line descending from Piscatoribus Sacrum, where Charles Cotton and Izaak Walton met on the River Dove -- not far away as Americans

measure distance but far off as we measure time. This was my refuge: a squatter's shack for one Montanan in a half-wild remnant of what England used to be.

> ... the present generation has messed up things good and proper with their modern farming practices, the widespread use of herbicides, pesticides, slurry, fertilisers, silage, and spray irrigation.... The water authorities too have played their part in threatening the future ... through abstraction [of water] both from the rivers and aquifers.
>
> Mick Lunn[5]

The Itchen had been saved by its value on the market. In Hampshire, chalkstreams became important to anglers in the nineteenth century, and by the time I got there, fly-fishing was a substantial part of the Itchen's economy.

In hindsight, the 1970s may have been the end of a golden age. Not that the British economy has collapsed since then. On the contrary, it has grown, and the population with it. What has been good for the post-industrial economy, however, has been bad for the rivers. Mick Lunn's report from the English Front suggests that postwar prosperity may be harder on the chalkstreams than all the wars in history.

With one sixty-sixth of England's population -- and three times the area -- we Montanans can afford to use some of our abundant land to buffer our streams. We have more time too, and history to learn from. We could get our priorities straight in

Montana. We could.

In old Hampshire, time may be running out. There are many streams, but not enough to do all that they are called upon to do. There are big streams, but none too big to suck dry. A modern society has the power to plunge its beak into the aquifers and drain them of trout, angler, and snipe alike.

As well demolish the Winchester Cathedral. The Itchen runs by its side; Izaak Walton lies under its floor. At this level, all anglers are English.

Snipe Dun (April and May)

Wings & Legs: A full Snipe's underside wing feather.
Body: Blue Rabbit's down, twisted on yellow silk.
Silk: Yellow.

John Turton[6]

The snipe tastes good, and its feathers make good trout flies. Humans learned of these virtues when the shotgun slimmed down to a graceful design. The hunting would have been as difficult then as now, but there were many more snipe in the early nineteenth century, before the marshes were drained, and a few determined hunters were up to the slog.

By then too, it was possible to buy small, graceful hooks on which to tie the snipe's feathers. The Snipe Dun appears in John Turton's The Angler's Manual, published somewhere in Britain in 1836. Americans were interested in bigger game then, but in

Britain it would have been natural to eat your snipe in October, save its feathers, and use them to dress flies for May.

This is very broad ecology, so do not pin me down. I have, in fact, reasoned backwards from present facts to what may be history. The snipe and the trout fly seem to have evolved together, as human artifacts.

What I know is that the Iron Blue Duns in my Irish/English fly box are decent representations of a Montana mayfly of the same genus (Baetis). Both hatch, moreover, in the same merry month and are accessible to the same peripatetic anglers. An angler from Hampshire could fly one-third of the way around the world today, Iron Blue Dun on his leader, exposing himself to jet lag but not nature shock. He would find the same fish feeding during the same blustery weather on what looks very much like the same insect.

The next two months would present no great surprises either. After the Baetis peak in Montana will come Ephemerella and Centroptilum mayflies, which correspond to the same Old World genera. Only in late summer will there be a fly -- genus Tricorythodes -- that would surprise a chalkstream angler, and then not for long.

In this case, then, culture agrees with nature across seven time zones.

FLYING FISHERS

I am not sure that the great horned owl on our chimney catches trout but it could, and it would not let me know. It is a philosopher by day and a predator on things that quiver in the dark. One day, perhaps, I will get accurate information from the pellets -- regurgitated inedible parts of the prey.

The osprey, on the other hand, is no spook. It is a shotgun. It thinks fast, fixes target with both eyes and lets go, more in faith than certainty. The plunge seems life-threatening to both fish and fish-hawk. Once in every few tries, however, the osprey emerges and flounders off with a trout flopping in locked talons. The victim is likely to be a bold young rainbow that was too far from cover, rising for mayflies.

And after all that work, the osprey may lose its catch to the bald eagle, which Benjamin Franklin called "a bird of bad moral character ... too lazy to fish for himself". I watch eagles flying over the farm looking for prey, but in May I seldom see them eating anything except previously owned trout and young ground squirrels. Eagles plunder the osprey, gormandize the gophers, and perch to recover. I cannot swear that I hear the sound of burping.

Eagles do not, unfortunately, deter the pelicans. They too

are a formidable spectacle, massive white triangles soaring out of the Cretaceous. There is no other species that I would rather watch -- at high altitude. Fortunately, they make several passes before splashdown, giving me time to hit the "save" key on my laptop computer and bound out the door. Usually they decide that this creek is not big enough for all of us.

I have watched the pelicans at work, however, on big water where they operate like a fleet of trawlers -- clumsy at all but the one thing in which they specialize. They surround their fish, push them to the middle of the circle, and scoop them into capacious pouches. We did not know how effective the method could be, when I was growing up. Pelicans were scarce then, and therefore valuable, and we did not imagine how abundant they would become.

Kingfisher is merely the squire of fly-fishers on this place. He is built for survival on short rations, small and bright and perky. Well, semi-perky. This particular kingfisher does not sit on the end of a limb and brag, like kingfishers in places with fewer raptors. He perches in the willows by our screen doors, looking for small fry, and when he spots prey, he flits. The word was made for him. He reaches a vantage point over the stream and hangs there, body motionless, wings moving like a hummingbird's. You can line the kingfisher up with a peak in the distance and find that they are equally steady.

Kingfisher is a rifleman aligning his sights. The shot always comes close, I suspect, but does not always hit its tiny

target. Perhaps one try in four succeeds.

Somewhere along the banks, there is a better hunter than any of us. The heron moves in sun time. It gets from one place to another, but you cannot keep up with its slowness. Your attention wanders. Then when you look again, the great gangly bird has a squirming trout or a duckling shrieking for its mother. Sometimes you spook the heron from sedges where baby mallards hide, but it sneaks back, skinny as Don Quixote and far more deadly with a spear.

Heron is the teacher. He does not hunt on general principles and neither do you, his student -- not unless you want a humility lesson. You stalk one particular trout till you can see its fins. You note that it is taking duns in the surface film, and then you offer the fly it expects to see. Your weapon reaches ten times farther than that of the great blue heron, which means that you are one-tenth the hunter. You lack the infinite stealth and the spear that strikes faster than a trout can move. But you know how to learn.

I spent yesterday with the heron, though not by intention. It was on the pond when I woke up, almost invisible but for a horizontal beak against vertical cattails. Ducks stayed away from that spear, as usual, but one pair of mallard drakes may have been distracted by their mating duel. I doubt that either was clever enough to push its rival toward the heron. An hour later, though, I saw a white blob and went out for a look. The blob was the belly of a drake. Its neck was broken and its head twisted

back under the body. Placement of the body -- on the bank near the water -- fit the heron's method, but I wrote the case down as not proven.

Then at midday, I hiked out to see if the trout were rising. They were not, perhaps because the sun was too bright for mayflies to emerge. By the Echo Pool, however, a rainbow glistened in death. The heron stood back from its kill, no longer interested. The trout had two stabs on its back near the head -- deep punctures made by the lower beak. Those were the fatal blows. Underneath, behind the throatlatch, were two smaller stabs made, I guessed, by the parted beak when the heron lifted its prey.

The rainbow was about as big as they get, in this stream: twenty-two inches long and three pounds ten ounces in weight after being drained of blood. I had caught the same trout in some previous year and trimmed its adipose fin as a marker for research. I had tried to catch the trout this spring, too. It rejected me twice.

I opened the fish's stomach and found nymphs that were recognizable individually, near the front, and just excreta near the vent. A few midge pupae were mixed in, but most of the trout's calories were coming from two mayflies: the olives (Baetis) hatching now and the sulphurs (Ephemerella) due soon. Altogether, the nymphs would have numbered into the thousands.

The great blue heron's needless kill was not unusual. In winter, when the weeds die back, it regularly spears fish that

are too big to swallow, and by spring, most large surviving trout carry the heron's brand. One fish -- the record-holder -- had four healed beak-marks. It may have had a lie in water deep enough to blunt the force of the stabs.

> ... we are, in effect, prewired to act in certain ways because that is how we have been molded by millions of years of evolution.
>
> Meredith Small[7]

Many trout run downstream to bigger water for the winter months, and the heron may have something to do with this migratory pattern. The big bird kills because:

- It is a predator, hard-wired to hunt.
- It has nothing to lose.

The energy budget is important to understanding. Heron spends time stalking a pool and -- having sunk its investment -- might as well strike, even if its prey is too big to eat.

Most other predators on this stream kill only for food. They are, however, not virtuous but thrifty. The osprey, for example, wastes energy in its dive and might even be drowned if its talons lock in a big trout. Owl, pelican, and kingfisher also have something at risk.

I don't. My energy, like the heron's, has been invested before I see the trout rising. I have the desire, too -- same tense neck when I see the trout, and same eager strike.

You know what I mean, Mr. or Ms. Predator. I'd rather have you here than the heron because you might release your big trout, if you do not intend to eat it. But the feeling is there. I am a heron. You are a heron.

THE MEETING PLACE

> Is it really worth while to spend our time, the time which escapes us so swiftly, in gleaning facts of indifferent moment and of highly contestable utility?
>
> J. Henri Fabre

Three lives come together in a circle on the water. A mayfly nymph climbs from the gravel, swims toward unaccustomed light, and is beginning the winged life when a trout pulls it down. Another fly then floats by, but this one has a hook in it. Trout rises gently. Angler swallows deep.

These are matters of life and death. The mayfly might have finished its sundance, but for the trout. The trout might have stored fat for the winter, but for your fly with a sting. And you there, at the top of the food chain: What brings you here? What drew you to the edge of the stream?

You are here to walk, but not for the exercise, and to sweat off some flab, though nobody could pay you to work this hard. You are here to crouch in cold water, cast to a trout and catch it or put it down, then stretch the cramp in your thigh and move on up

and up where the stream runs small and its fish never saw a fly they didn't like.

You keep going because your prey believes in you. The trout is still dappled to hide when you pass, still swift to flee from your clumsy feet. The mayfly believes in the trout, too, and unfolds wings clear as air. You kneel by the river, shoot your line, and hit the ring of the rise. You and fish and fly meet where you have always met, in that window between stream and sky.

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MAY

(1) NY:Farrar, 1986.

(2) My main scientific sources for this chapter are papers titled
(a) "The Evolution of Salmonid Stream Systems", by Burchard H. Heede, and
(b) "Sunshine, Bugs, and Trout", by C.E. Cushing. The latter was published in Trout magazine, Spring 1995.
See also Hunter, Christoper J. Better Trout Habitat. Washington, D.C.: Island Press, 1991.

(3) Overfield, T. Donald. London: Benn, 1977. p.113. First published in the Flyfisher's Club Journal, Summer 1932.

(4) This modern transcription from John McDonald. Quill Gordon. NY: Knopf, 1972. p.153. The Treatyse goes back at least to the early 15th century.

(5) Lunn is long-time head keeper of the River Test, which is a chalkstream not far from the Itchen. The quotation comes from Conrad Voss Bark's "Letter from England" in the (New York) Angler's Club Bulletin, Spring 1996.

(6) Lawrie, W.H. A Reference Book of English Trout Flies. London: Pelham, 1967. p.352. Turton meant his readers to use the feather of a snipe like those we have in America, as opposed to the smaller jacksnipe (which we do not have.)

(7) Natural History magazine, 9/95. pp. 8,9.

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[Picture: Mayfly on an Aspen Leaf]

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Melting snow makes this a bad time to walk on the highest peaks, but a good time to see them. They will hide behind their foothills in summer -- a trick of perspective -- and you will need the mind's eye of an Albert Bierstadt to separate high, bare, distant mountains from outriders that are below the timber line, but much closer. Postcard exceptions are the Tetons a hundred-odd miles south of us, which seem to spring from Jenny Lake. They do not, however, look remotely like tétons. He must have been a lonely trapper who saw femininity in those icy crags.

Here at home, spring makes white peaks stand above shoulders draped in dark firs. The clouds help too. I see these mountains every day, sweat on them sometimes, and take them for granted till they dress in gauze -- peaks above, peaks beside, peaks peeking out.

ENERGY AND THE STREAM

Our spring-creek is separated from this rowdy season by a filter: dirt, miles of it, through which the snow-melt must pass before reaching us. The river to our east is running over its banks while here, just two fields away, the spring creek remains almost as low as it was in February.

The stream is waking, nevertheless. Midday sun pulls up mayflies; mayflies pull up trout; trout pull an angler out of the house. None of us are sun-lovers, exactly. Trout and flies are usually most active under mild gray skies, and so am I, but in May we need warmth to beam over the mountains and get us going.

Energy is Eternal Delight.

William Blake

Everything on the place rises and shines, now that the sun has its strength back. Brewer's blackbirds perch atop alders and catch light in beady eyes. Little saurian heads lift from the robin's nest on our front porch. Worms climb toward the warmth and mother robin catches them for her brood. A pintail drake

stands tall on a green peninsula, looking big as a goose with the light reflecting from his white breast. Four, five, six yearling deer splash across the stream in their new red summer coats. The mature does are back in the brush somewhere, waiting. Soon they will nurse dappled fawns with the sun's milk.

For those of us who live in air, the stream's workings are obscure, but sun is the source of its energy too. Warmth is reaching into the bars of mud below my wing-dams and pulling up watercress leaves the size of mouse-ears. Water buttercup (Ranunculus) and three kinds of pondweed (Potamogeton) are sprouting from the gravelly bed. These are the plants that anglers like to talk about -- big ones. I cannot even see the specks of algae that feed the mayflies, which feed the trout, which in turn feed the herons.

Anna and I enjoy fish dinners too, but not from this spring creek. The trout taste like their food chain.

GEOLOGY AS DESTINY.

Sun is universal, geology individual. I could walk from here to the mountains and fish under the same light, but in an utterly different stream.

- The spring creek is flat, silent, and meandering, though nothing stands in its way but soft black soil. The mountain stream is steep, noisy, and direct, though it must push aside boulders.
- Insects in the spring creek are small, individually, and divided into few species, but these few are so successful that the biomass is great. The mountain stream has more species and some of the individual flies are large in size, but the biomass is smaller.
- In the spring creek, you see big trout feeding in water that barely covers their backs. In the mountain stream, most trout are small even in the deepest pools.

Geology accounts for the differences, and geology is a hard language for me, though I grew up hunting carnelians and geodes. I can spot a chunk of petrified wood with rings in it from the time before Genesis, but I can't tell you much more than that. Our teachers should have given us children geology as poetry, not grammar. We needed order but not an order so hard. Geology

squeezes human history between layers of rock and human culture into a thin layer of sediment above the strata. The world's greatest epic ends like all the rest, heroes dead.

> Lakes are so ephemeral that they are seldom developed in the geologic record. They are places where rivers bulge, as a temporary consequence of geology.
>
> John McPhee, Rising from the Plains[1]

You need some distance from geology to see what it means. I climbed a ridge last week, for no bigger reason than to spy on the mating season, and saw the whole story. The small of it was a cock grouse strutting on a fir-needle stage. I crawled toward him, wondering if he would take me for a rival, and he seemed more inclined to court my blue visor. He could hoot with his bill closed -- which struck me as a good trick -- but he did not recognize the big picture spread at our feet.

The glacial lake was two thousand feet below us, thousands of years back in time, and still aqueous when clouds lent their shadows. I imagined races of giant trout cruising below me in what was, geologically, the Recent. I caught vertigo from both altitude and time. And then I hiked back down to reality, if that is what the Present is.

Dig far enough into our home acres and you find the old lake hiding in gaps between rocks and particles. There is a little of everything down there, from old river-gravel to fist-sized lumps

of a conglomerate with veins of chalk. This is not the pure white stuff of English chalkstreams -- I have a piece of that for comparison -- but calcium carbonate in any form does good things for trout water.

> And the earth is shallow; there is not a great deal of it before you come to the rock. And the earth dont want to keep things, hoard them; it wants to use them again.
>
> William Faulkner, The Old People

Our fertility starts in ancient seas. To keep from being eaten, small soft creatures evolved hard exoskeletons, died in their time anyhow, fell to the bottom, were compressed into limestone strata, rose with the Rocky Mountains, washed downhill during some other May, and are now building the chitin of a mayfly's exoskeleton. This is the small picture -- the one with consequences for trout and me.[2]

- The geology produced a fertile stream with relatively even flows and temperatures.
- The stream in turn produces a nutritious soup composed of living diatoms and fine particulate organic matter.
- The organic matter nourishes large numbers of a few species of mayflies called "gathering collectors," which roam the stream's bed for food.
- The mayflies attract trout which, though not so specialized as the insects, do well in spring creeks.

- The trout attract people of an angling culture that used to be small, but is today flourishing.

You would not enjoy a broth of fine particulate organic matter. Its parts are less than one millimeter in diameter -- so small that you (or at least I) cannot say whether they are animal, vegetable, or algal. Yet from this chowder springs the beauty of the mayfly.

Even people who are squeamish about other insects learn to love this one, which preys on no other living animal and is preyed upon by all. In its winged form, the mayfly does not even eat. It mates, lays eggs, and dies. It is perfectly innocent, which is to say perfectly stupid. It sits on your finger without protest until you, in order to study it, drown it in alcohol and put its wing under a lens.

Look away from this death, if you are not made of coarse particulate organic matter. I don't know how mayflies feel, but I know how they struggle when they are caught by alcohol or spider. I know how they look on their mating flight too, dancing in the sun. The only emotions involved may be mine -- yet I know when mayfly nymphs want to leave their husks. I can feel it happening. They are under water and I am breathing air through screen doors, but we get the same message. Sky darkens. Breeze stirs. Weather lifts the nymphs. I hatch too, emerging from this husk of a house.

THE TROUT'S ECONOMY

> The principle upon which the trout conducts his living is one of the strictest economy, such as would put an Aberdonian to shame.... One may be pretty sure that what he is doing at a given moment is that which is most profitable.
>
> G.E.M. Skues[3]

Trout are in the recycling business. Sun warms the meanders; insects hatch; fish make gentle circles on the glassy surface. The scene seems lazy and poets over the centuries have been soft observers, choosing not to look beneath the surface.

The stream is busy converting sunlight into life. Dip a fine-meshed net in the current and it comes up full of mayfly nymphs, mayfly subimagoes (duns), mayfly adults (spinners), midge pupae, occasional caddisflies, and other aquatic insects of the season. I cannot measure the thermodynamics but suspect that our marshy creek is the best food-factory on the place -- more efficient than grass, alfalfa, trees, barley, or brush. And the abundant nutrients produce intense competition.

Trout are the largest predators that live in the stream full-time, yet they subsist on insects almost as light as air. To

catch enough mayflies, the fish must occupy feeding lies -- positions in which trout can spend little energy while intercepting food drifting with the current. This is a riskier diet than that of, say, a garter snake, which can catch one sculpin and then take a long digestive break under the porch. Every mayfly caught in the surface film exposes a trout to predators from the air-breathing world. The reward is abundant and nutritious, but it selects for the supertrout -- one in a thousand that learns to eat often without being eaten even once. Survivors of this food-fight become bigger and stronger than fish of the same species in a hard-rock stream.

There is a painting that reminds me of a spring-creek trout. The subject is a cavalry officer from Kipling's time. He lounges on a couch, uniform elegant, pose insolent. He is alone because no solid Victorian would let his daughter near the man. Even in repose, he seems to be challenging you to a duel. He died in Africa, run through by a spear.

Herons spear the spring-creek trout; you accept a challenge which, in real life, your prey did not intend to offer. You do not rush. You do not look over the side of a pool to see if there are trout present. (There were, till they saw your hat.) You stalk upstream along the banks, eyes focused far ahead, looking for the ring-on-water made by a trout taking an insect. You tie on an imitation with a hook -- an artificial fly that looks like the natural and will behave naturally on the stream.

Then you enter the water and kneel in it, keeping yourself

below the fish's line of sight. You wait till your prey is feeding steadily. You cast, aiming for a spot upstream of the trout's lie, and your fly drifts downstream. If the trout does not take, you wait for another rise before you cast again, and watch your fly disappear in a dimple on water.

What follows is shocking in a scene so placid. Your prey feels itself caught, bolts upstream, and flings itself out of the water three, four, five times. Do you know the sound of a rainbow trout vibrating in air? You can hear it above Humility's gentle flow, much like a mallard's wingbeats.

SOURCES

> And yet, at the very least, he will have his wholesome and merry walk at his own ease, and also many a sweet breath of various plants and flowers that will make him right hungry and put his body in good condition. He will hear the melodies of the harmony of birds.... And if the angler catches the fish with difficulty, then there is no man merrier than he is in his spirit.
>
> The Treatyse of Fishing with an Angle[4]

Fly-fishing attracts us because it is close to nature, which is to say archaic. Modern humans have invented devices for casting weights at the end of thin lines, but no one in the age of the automobile would have tried to cast an artificial fly, which is essentially weightless, on the buggy-whip principle.

Early in the second millennium, however, fly-fishing evolved at least three times -- in Macedonia, England, and Spain -- as a way of getting around the fragility of a trout's natural food. Mayflies and other winged insects would not stay long on a hook, but they could be simulated with feathers cast on a horsehair line tied to a wooden rod. Over centuries, the technology evolved into polypropylene dubbing, nylon leaders, and carbon-fiber rods. We perfected what we loved and we loved our whispering lines even as we made them shiny and plastic.

Of course protein could be produced more efficiently. We

could, for example, raise catfish in a pond and net them out. But we do not want efficiency. We want to stalk like bushmen and cast with an eye/hand coordination that evolved to guide spears. We want to catch beautiful fish under the rules of fair chase, which give our prey a chance to evade capture.

Study to be quiet.

Izaak Walton

Though I grew up near the spring creek in Montana, I did not see it till I had fished a chalkstream in England. The two are chemically similar and must have resembled each other physically once, because both flow through fertile bottomlands. But such lands are as good for agriculture as for trout, so it was inevitable that both streams would be affected by human works.

- The Montana spring creek is still in its original channel, though the banks were damaged during a few decades of grazing in the twentieth century .
- Much earlier, a section of the River Itchen had been moved upslope into a new channel dug by muscle-power. The stream's original meandering bed became a water-meadow for sheep, which produced wool for the clothing of the resident monks.

In both places, the changes made economic sense. Montana was new, spacious, and lightly populated, so even fertile land was

cheap. Montanans, therefore, let cattle use the stream as a natural watering-trough. Call this laissez-faire agriculture.

England, on the other hand, had many times Montana's population in one-third the area, so fertile bottomland had to be managed intensively -- first for the sheep and later for fish. River-keepers learned the needs of trout, insects, and the stream itself.

In the Abbotts Barton water, where I fished, the artificial main channel of the Itchen no longer had sweeping meanders like those of the Montana spring creek. In compensation, there were man-made sidestreams called carriers, which -- unlike most irrigation ditches in Montana -- provided good fishing. One of the carriers was about the size of Humility Creek, but with banks in better condition.

Do not conclude that nurture had triumphed over nature. Nature still provided the cool clear alkaline water, the weeds and insects growing in it, the partridges nesting on the banks, and a snipe winnowing the twilight. The wildness of the place came as a surprise, given its history. Humans had lived there forever, as we know time, and yet you could wander in water meadows with the stars coming out and look for a way around the soft spot that swallowed a horse. You could circle the duck's-nest spinney twice before spotting a faint path back to the fishing hut.

The hut had no name on the door, but it was one of a line descending from Piscatoribus Sacrum, where Charles Cotton and

Izaak Walton met on the River Dove -- not far away as Americans measure distance but far off as we measure time. This was my refuge: a squatter's shack for one Montanan in a half-wild remnant of what England used to be.

> ... the present generation has messed up things good and proper with their modern farming practices, the widespread use of herbicides, pesticides, slurry, fertilisers, silage, and spray irrigation.... The water authorities too have played their part in threatening the future ... through abstraction [of water] both from the rivers and aquifers.
>
> Mick Lunn[5]

The Itchen had been saved by its value on the market. In Hampshire, chalkstreams became important to anglers in the nineteenth century, and by the time I got there, fly-fishing was a substantial part of the Itchen's economy.

In hindsight, the 1970s may have been the end of a golden age. Not that the British economy has collapsed since then. On the contrary, it has grown, and the population with it. What has been good for the post-industrial economy, however, has been bad for the rivers. Mick Lunn's report from the English Front suggests that postwar prosperity may be harder on the chalkstreams than all the wars in history.

We are much less crowded, in Montana, and can afford to use some of our abundant land to buffer our streams. We have more time too, and we have history to learn from. We know what has

mt

147, 138 mi. □

694,000 people

Eng 50,874

HG, 102,000

mt about 3 times the size

with 66 times ~~the~~ the

~~area~~ people.

happened in England, New England, California, and every other place that has run short of open space. We could get our priorities straight in Montana. We could.

In old Hampshire, time may be running out. There are many streams, but not enough to do all that they are called upon to do. There are big streams, but none too big to suck dry. A modern society has the power to plunge its beak into the aquifers and drain them of trout, angler, and snipe alike.

As well demolish the Winchester Cathedral. The Itchen runs by its side; Izaak Walton lies under its floor. At this level, all anglers are English.

Snipe Dun (April and May)

Wings & Legs: A full Snipe's underside wing feather.
Body: Blue Rabbit's down, twisted on yellow silk.
Silk: Yellow.

John Turton[6]

The snipe tastes good, and its feathers make good trout flies. Humans learned of these virtues when the shotgun slimmed down to a graceful design. The hunting would have been as difficult then as now, but there were many more snipe in the early nineteenth century, before the marshes were drained, and a few determined hunters were up to the slog.

By then too, it was possible to buy small, graceful hooks on which to tie the snipe's feathers. The Snipe Dun appears in John

Turton's The Angler's Manual, published somewhere in Britain in 1836. Americans were interested in bigger game then, but in Britain it would have been natural to eat your snipe in October, save its feathers, and use them to dress flies for May.

This is very broad ecology, so do not pin me down. I have, in fact, reasoned backwards from present facts to what may be history. The snipe and the trout fly seem to have evolved together, as human artifacts.

What I know is that the Iron Blue Duns in my Irish/English fly box are decent representations of a Montana mayfly of the same genus (Baetis). Both hatch, moreover, in the same merry month and are accessible to the same peripatetic anglers. An angler from Hampshire could fly one-third of the way around the world today, Iron Blue Dun on his leader, exposing himself to jet lag but not nature shock. He would find the same fish feeding during the same blustery weather on what looks very much like the same insect.

The next two months would present no great surprises either. After the Baetis peak in Montana will come Ephemerella and Centroptilum mayflies, which correspond to the same Old World genera. Only in late summer will there be a fly -- genus Tricorythodes -- that would surprise a chalkstream angler, and then not for long.

In this case, then, culture agrees with nature across seven time zones.

FLYING FISHERS

I am not sure that the great horned owl on our chimney catches trout but it could, and it would not let me know. It is a philosopher by day and a predator on things that quiver in the dark. One day, perhaps, I will get accurate information from the pellets -- regurgitated inedible parts of the prey.

The osprey, on the other hand, is no spook. It is a shotgun. It thinks fast, fixes target with both eyes and lets go, more in faith than certainty. The plunge seems life-threatening to both fish and fish-hawk. Once in every few tries, however, the osprey emerges and flounders off with a trout flopping in locked claws. The victim is likely to be a bold young rainbow that was too far from cover, rising for mayflies.

And after all that work, the osprey may lose its catch to the bald eagle, which Benjamin Franklin called "a bird of bad moral character ... too lazy to fish for himself". I watch eagles flying over the farm looking for prey, but in May I seldom see them eating anything except previously owned trout and young ground squirrels. Eagles plunder the osprey, gormandize the gophers, and perch to recover. I cannot swear that I hear the sound of burping.

Eagles do not, unfortunately, deter the pelicans. They too

are a formidable spectacle, massive white triangles soaring out of the Cretaceous. There is no other species that I would rather watch -- at high altitude. Fortunately, they make several passes before splashdown, giving me time to hit the "save" key on my laptop computer and bound out the door. Usually they decide that this creek is not big enough for all of us.

I have watched the pelicans at work, however, on big water where they operate like a fleet of trawlers -- clumsy at all but the one thing in which they specialize. They surround their fish, push them to the middle of the circle, and scoop them into capacious pouches. We did not know how effective the method could be, when I was growing up. Pelicans were scarce then, and therefore valuable, and we did not imagine how abundant they would become.

Kingfisher is merely the squire of fly-fishers on this place. He is built for survival on short rations, small and bright and perky. Well, semi-perky. This particular kingfisher does not sit on the end of a limb and brag, like kingfishers in places with fewer raptors. He perches in the willows by our screen doors, looking for small fry, and when he spots prey, he flits. The word was made for him. He reaches a vantage point over the stream and hangs there, body motionless, wings moving like a hummingbird's. You can line the kingfisher up with a peak in the distance and find that they are equally steady.

Kingfisher is a rifleman aligning his sights. The shot always comes close, I suspect, but does not always hit its tiny

target. Perhaps one try in four succeeds.

Somewhere along the banks, there is a better hunter than any of us. The heron moves in sun time. It gets from one place to another, but you cannot keep up with its slowness. Your attention wanders. Then when you look again, the great gangly bird has a squirming trout or a duckling shrieking for its mother. Sometimes you spook the heron from sedges where baby mallards hide, but it sneaks back, skinny as Don Quixote and far more deadly with a spear.

Heron is the teacher. He does not hunt on general principles and neither do you, his student -- not unless you want a humility lesson. You stalk one particular trout till you can see its fins. You note that it is taking duns in the surface film, and then you offer the fly it expects to see. Your weapon reaches ten times farther than that of the great blue heron, which means that you are one-tenth the hunter. You lack the infinite stealth and the spear that strikes faster than a trout can move. But you know how to learn.

I spent yesterday with the heron, though not by intention. It was on the pond when I woke up, almost invisible but for a horizontal beak against vertical cattails. Ducks stayed away from that spear, as usual, but one pair of mallard drakes may have been distracted by their mating duel. I doubt that either was clever enough to push its rival toward the heron. An hour later, though, I saw a white blob and went out for a look. The blob was the belly of a drake. Its neck was broken and its head twisted

back under the body. Placement of the body -- on the bank near the water -- fit the heron's method, but I wrote the case down as not proven.

Then at midday, I hiked out to see if the trout were rising. They were not, perhaps because the sun was too bright for mayflies to emerge. By the Echo Pool, however, a rainbow glistened in death. The heron stood back from its kill, no longer interested. The trout had two stabs on its back near the head -- deep punctures made by the lower beak. Those were the fatal blows. Underneath, behind the throatlatch, were two smaller stabs made, I guessed, by the parted beak when the heron lifted its prey.

The rainbow was about as big as they get, in this stream: twenty-two inches long and three pounds ten ounces in weight after being drained of blood. I had caught the same trout in some previous year and trimmed its adipose fin as a marker for research. I had tried to catch the trout this spring, too. It rejected me twice.

I opened the fish's stomach and found nymphs that were recognizable individually, near the front, and just excreta near the vent. A few midge pupae were mixed in, but most of the trout's calories were coming from two mayflies: the olives (Baetis) hatching now and the sulphurs (Ephemerella) due soon. Altogether, the nymphs would have numbered into the thousands.

The great blue heron's needless kill was not unusual. In winter, when the weeds die back, it regularly spears fish that

are too big to swallow, and by spring, most large surviving trout carry the heron's brand. One fish -- the record-holder -- had four healed beak-marks. It may have had a lie in water deep enough to blunt the force of the stabs.

> ... we are, in effect, prewired to act in certain ways because that is how we have been molded by millions of years of evolution.
>
> Meredith Small[7]

Many trout run downstream to bigger water for the winter months, and the heron may have something to do with this migratory pattern. The big bird kills because:

- It is a predator, hard-wired to hunt.
- It has nothing to lose.

The energy budget is important to understanding. Heron spends hours stalking a pool, sometimes, and -- having sunk its investment -- might as well strike, even if it cannot eat its prey.

Most other predators on this stream kill only for food. They are, however, not virtuous but thrifty. The osprey, for example, wastes energy in its dive and might even be drowned if its claws lock in a big trout. Owl, pelican, and kingfisher also have something at risk.

I don't. My energy, like the heron's, has been invested before I see the trout rising. I have the desire, too -- same

tense neck when I see the trout, and same eager strike.

You know what I mean, Mr. or Ms. Predator. I'd rather have you here than the heron because you might release your big trout, if you do not intend to eat it. But the feeling is there. I am a heron. You are a heron.

Enjoyed the tour.

THE MEETING PLACE

> Is it really worth while to spend our time, the time which escapes us so swiftly, in gleaning facts of indifferent moment and of highly contestable utility?
>
> J. Henri Fabre

Three lives come together in a circle on the water. A mayfly nymph climbs from the gravel, swims toward unaccustomed light, and is beginning the winged life when a trout pulls it down. Another fly then floats by, but this one has a hook in it. Trout rises gently. Angler swallows deep.

These are matters of life and death. The mayfly might have finished its sundance, but for the trout. The trout might have stored fat for the winter, but for your fly with a sting. And you there, at the top of the food chain: What brings you here? What drew you to the edge of the stream?

You are here to walk, but not for the exercise, and to sweat off some flab, though nobody could pay you to work this hard. You are here to crouch in cold water, cast to a trout and catch it or put it down, then stretch the cramp in your thigh and move on up

and up where the stream runs small and its fish never saw a fly they didn't like. Sounds like Big Rock Candy Mountain

You keep going because your prey believes in you. The trout is still dappled to hide when you pass, still swift to flee from your clumsy feet. The mayfly believes in the trout, too, and unfolds wings clear as air. You kneel by the river, shoot your line, and hit the ring of the rise. You and fish and fly meet where you have always met, in that window between stream and sky.

≈

MAY

(1) NY:Farrar, 1986.

(2) My main scientific sources for this chapter are papers titled
(a) "The Evolution of Salmonid Stream Systems", by Burchard H. Heede, and
(b) "Sunshine, Bugs, and Trout", by C.E. Cushing. The latter was published in Trout magazine, Spring 1995.
See also Hunter, Christoper J. Better Trout Habitat. Washington, D.C.: Island Press, 1991.

(3) Overfield, T. Donald. London: Benn, 1977. p.113. First published in the Flyfisher's Club Journal, Summer 1932.

(4) This modern transcription from John McDonald. Quill Gordon. NY: Knopf, 1972. p.153. The Treatyse goes back at least to the early 15th century.

(5) Lunn is long-time head keeper of the River Test, which is a chalkstream not far from the Itchen. The quotation comes from Conrad Voss Bark's "Letter from England" in the (New York) Angler's Club Bulletin, Spring 1996.

(6) Lawrie, W.H. A Reference Book of English Trout Flies. London: Pelham, 1967. p.352. Turton meant his readers to use the feather of a snipe like those we have in America, as opposed to the smaller jacksnipe (which we do not have.)

(7) Natural History magazine, 9/95. pp. 8,9.