



FEDERATION of FLY FISHERS

April 12, 1991

Mr. Datus Proper
1085 Hamilton Rd.
Belgrade, MT 59714

Dear Datus:

Enclosed is the schedule which will be published in the booklet given to each participant at the FFF International Conclave in West Yellowstone, MT from August 7-10.

I attempted to schedule each presenter according to their first or second time choice. Should you need to change your time between now and the Conclave, please advise me at 419-474-2348. We will post notices at the FFF sign-up tent and at the high school, indicating the schedule change.

Thank you for your willingness to participate as a program presenter. Your effort makes a significant contribution to success of the Conclave.

If you haven't already done so, make sure your motel reservations as soon as possible.

Best regards,

Christopher Helm
6179 Barnstable
Toledo, Ohio 43613

CH/ds

Enclosure

About 20⁰/₃₀ words

Datus C. Proper
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DESIGNING FLIES

italics
First paragraph
Fishing? Me? Don't leap to conclusions, friend. True, I have waded in up to my tickles, but a cool spring creek is simply the most comfortable place to be in July. You noticed my out-of-state car? Then know that a nature-lover thinks nothing of rising at four and driving two hours, just to partake of dawn. Oh, I'm carrying a fly-rod, but you see my eyes wandering into the trees. I would as lief observe a yellow-crested twit as catch a slimy trout. Anyhow, those swarming mayflies are bloodthirsty and the dimples on the ^{water}~~surface~~ below are doubtless made by spawning suckers. But have you heard about the nice hole a half-mile downstream?

My monologue was not exactly a lie, being conducted in body

language, but it was definitely a failure. The lad with a red-and-white bobber bore down on me without mercy. Then, instead of dropping his float into the pool and scaring the trout, he shamed me. "I saw you catch that fish," he said. "Me and my buddy haven't had a bite. Do you mind if I watch?"

What could I say? Even if I were churlish, he could learn what he needed to know by watching.

Fly-fishing is by nature simple. You see a trout eating something -- which is usually an insect -- and then you try to put one on your hook. If it is a mayfly, it does not bite: lesson one in entomology. On the other hand, it is so fragile that it comes off your hook on the first cast (lesson two). You fashion an artificial insect of feather and fur, and the fish takes it. Lesson three, and already you have a miracle.

It feels like a miracle every time it happens. It is the most fun you can have legally. But what it really proves is that you are as clever as a trout.

Like a mayfly, then, the miracle is too fragile to stand much logic. Each of us has to work out his private way of nourishing the feeling. Perhaps you just tie on a proven old fly, fish down beautiful waters, and often enough catch both fish and miracle. Or perhaps you are most attracted to the tackle: some of it is so pretty that it seems almost a miracle, too. My way is no better. I love fiddling with tackle at home to remind me of fishing, when I cannot do it. On the stream, though, I want little technology, less weight, and as many flies as will fit in

one pocket. And then I want to talk to the trout.

It is less difficult than it sounds. We have already proven, you will recall, that we are not intellectually inferior to fish.

? A trout is as simple as nature, and as difficult. You hook the fish and the fish hooks you. It leads you down and down, through layers of things whose existence you did not suspect. You never quite make it to the bottom. You want to know more, so you read magazines and books when you get home. We have had good writing about trout for four hundred years. But when you can get back to the river, no book (even mine) is as good a teacher as the trout.

In the beginning, there must be a trout who will talk to you. You must know where to find him, and when. Not all trout will talk. The best are wild fish, stream-spawned, but a stocked fish will do if he has been in the stream long enough to learn how to eat real flies like a real trout. And then it helps if there are plenty of flies to eat.

In the spring creek where that young fisherman got me cornered (and in others coast-to-coast), a horde of little mayflies hatches every morning from July into October. Every trout wakes up and feeds. They eat all they can. As best I can see, that's all they eat. They don't look at worms, hardware, or other flies. They don't eat for the other twenty-two hours of the day: their stomach is already stuffed like a sausage, so all they

need to do is digest, conserve energy, and grow fat. If you don't give the fish what they expect, you don't catch any. If you do it right, you may catch lots.

I didn't want to catch lots with the kid looking -- figured he'd be back the next day with a fly rod -- but I didn't want to stop fishing at the peak of the rise either, and the trout couldn't leave the fly alone. There was one wild brown but the others, plus a couple of rainbows, were stocked fish with gullible genes. They made it look too easy. Fishing done, I had to match my audience's politeness by giving him a fly and telling him he could find more at any fly-shop, in the bin marked "tricos." If he'd been nasty, I'd have told him they were Tricorythodes, which is Latin with a lisp. That would have scared off any red-blooded American boy.

You don't have to use Latin names to go fly-fishing. The trout don't. If you listen very carefully, however, they will tell you of the things they want to see in your imitation fly before they try to eat it like a real insect. There are four of these things. If you can understand the trout, you have a good chance of tying or buying the right fly on the first try. And then you have a good chance of fishing it right. This is what the trout told me.

FIRST, and most important by far, the fly must behave like the natural insect the fish were expecting to eat. For example:

-- If they are looking for stonefly nymphs on the rocks, you will want a fly that gets down just as deep.

- Mayfly nymphs slipping off their weeds suggest a mid-water fly. (It's not true that trout feed almost entirely on the bottom or the surface, as anglers used to think.)
- Hatching flies tend to get stuck in the surface film, making them especially vulnerable. The trout know that.
- With tricos and some other insects, the trout feed most heavily on flies that fall spent after mating.
- Caddisflies often skitter on the surface, and many other insects do it occasionally.

In all of these cases (and there are others), the trout may not accept your fly -- or even see it -- if it fails to behave like the natural. Up to this point, then, the most innocent of trout are often selective. But if your fly does have the right behavior, you have a good chance of catching even educated wild fish, no matter what else is wrong. It's not difficult to design the right behavior into a fly by adding lead for depth, a big hackle for high floating, and whole range of things in between.

My recommendation is to design every fly around behavior, or to buy flies with the right behavior built in.

SECOND, the size should be right. If the fly is too big, the trout often reject it. If too small, they may ignore it, and in any case you are making life difficult by using too small a hook.

THIRD, the shape can be important, though often it is not. We used to go to a lot of work to make nymphs with flat bodies, and they worked fine -- but I could never see that they worked

any better than round bodies. I'd be hard pressed to cite a case proving, beyond reasonable doubt, that trout are selective to the shape of flies fished deep. On the surface, though, the difference between a beetle-shape and a mayfly-shape seems to be important. That's an extreme example.

FOURTH, I think I've seen a few times when the trout wanted a particular color, but these cases are so few that it's hard to be sure. We do know that trout have the physical ability to distinguish between colors. It doesn't seem logical that they would have evolved with a skill they never use. On the stream, though, the most selective old fish rarely seem to care about color. If some misfortune made me fish all season long with a brown fly, I don't think that I'd have less fish.

But I'd have less fun. And that, I think, gets to the importance of color: trout don't care about it much, but humans do. We generally distinguish between insects by color (olive, black gnat, red ant, greendrake). We find it hard to believe that fish have a different classification system -- and so we have worked out a whole system of flies that you couldn't tell apart if you were color-blind. Or wouldn't want to tell apart, if you were a trout.

We call these flies "patterns." One book published in 1960 contained almost six thousand flies differing mainly in color, and the boom in patterns was just beginning. We love to wonder, over our coffee, why a clever old brown trout took an Adams when the flies that were hatching were Light Cahills. But these are

identical designs. Only the color is different.

And this is why I suggest talking to trout instead of people -- assuming that trout are what you want to catch. Humans, including me, will always be glad to talk about patterns, if it is humans you want to interest. Fussing over non-essentials is one of the pleasures of fishing. But the trout do allow you to by-pass human cultural overlays, if you are willing to cut out the middle man and deal direct.

If you think like a predator instead of an art critic, the importance of your quarry's behavior may seem obvious. Once on a pheasant-hunting trip I flushed a bird with a peculiar, uniform, buff color. There was no green head, white neck ring, or flaming breast. But the creature behaved like a pheasant and had a cock pheasant's size and shape, so I shot without hesitation. It was, in fact, a stocked pheasant, but I didn't figure that out till I picked it up. My prey would have escaped if I'd depended on color for identification. On the other hand, if I had been faced by a skunk colored exactly like a cock pheasant, I would not have shot, because skunks don't have the behavior I expect. They're terrible flyers.

When I look in my fly box, though, I'm still inclined to pick skunks ^{tells} instead of pheasants. That is to say, I'm inclined to look for a black pattern when I see black flies in the stream. I might do better to pick a slow-sinking design in any color.

I'm using the term "pattern" to describe flies classified by

color, but I didn't invent that. Fly fishermen have, for a long time now, been using pattern and color to mean almost the same thing. This is so obvious that it is difficult to ^{see} perceive, or was for me.

I will take responsibility for using "design" to describe flies that are . . . well, designed to behave in a certain way. Use any term you like. Design makes me think of structure instead of color, and a fly's structure largely controls its behavior.

Perhaps you're waiting for me to give pointers on talking with trout. Well, you get down on your tummy, with your head sticking out over a trout stream, and you listen. If you don't hear anything, you might at least see some flies drifting along. Of course, if you've already caught a trout, he'd better talk, or else. Or else you stick a special spoon down his gullet and pull out the last insects he's eaten. Then you pick a fly which, you ^{think} guess, will behave as they were doing when they became a trout's dinner.

You cast it to a fish and see what he says. If you did not, until now, expect trout to talk, remember that I warned you to expect miracles.

FLY DESIGN

Datus Proper

Introduction

Have been writing lately on the great explorers. Found that by chance -- or maybe not by chance -- our ancestors discovered the world and fly-fishing at the same time, and in the same sense. Of course humans had reached most of the world thousands of years before history began. And of course humans must have started catching trout on feathered hooks very shortly after iron-age technology made hooks available. But neither the world nor fly-fishing was discovered in a meaningful sense until the fifteenth century.

When the Portuguese explorers set out in their little ships, the world was supposed to be at the center of the universe. It was supposed to be flat, with waterfalls or something at the edges to catch unwary sailors. They had to perfect sextant and compass. Above all they had to develop sound maps, because the ones they had up till then were drawn from instructions in the Bible.

At the same time, fishermen were developing rods, lines, hooks, and above all flies. The flies in the Treatyse of Fishing with and Angle strike me as being just as sophisticated as the early Portuguese nautical instruments.

But there was one significant difference: navigation developed into a science, while fly fishing continued to be a combination of art and religion. In many respects, fly-fishing today is still based on wisdom revealed by our saints. We

anglers, unlike scientists, do not separate church and state. We mix revealed wisdom and scientific method in the same sentence.

Examples:

1. We call an insect Brachycentrus fuliginosus, which is a good scientific binomial, and then we tie a "nymph" to imitate it, even though the insect is a caddisfly. It is not a nymph. It has no nymphal stage. We call it a nymph because Edward R. Hewitt called it a nymph. He was one of our saints, and he may not have understood that caddisflies don't have nymphs. (If there is enough time, we'll get back to nymphs and such later.)
2. When we give directions for tying flies, we often use the term "pattern". It is a term of art, not science. Patterns do catch fish, of course, but most of them seem designed for a different purpose -- pleasing humans. I've done a rough survey of the angling saints and found that most of their patterns describe the attributes of a fly in this order.

CHART 1

Patterns

1. Color -- always described or implied
2. Shape -- often
3. Size -- sometimes
4. Behavior -- seldom

DESIGN

My subject today is not pattern^s but design. Design is a part of fly-tying -- and fly-fishing -- that is not much explored. Don't mean that there aren't lots of well-designed flies out there -- just that flies as a whole have evolved more as art than science.

Would like comments, suggestions, arguments from you.
There's a lot to learn.

Will start by making explicit my working definition:

DESIGN is the way a fly's materials are chosen and assembled to achieve a desired task. Usually the task is structural.

Architects, airplane designers, and boat-builders will not have much trouble with design. For fly-fisherman, the concept of design is upside-down. Let me show just how upside-down fly-design is by listing its elements in what I take to be priority order. Note that the order is REVERSED from that of patterns.

CHART 2

Designs

- | | |
|-------------|--|
| 1. Behavior | Soft landing (usually) on water |
| (Weight) | Float or sink to right level. |
| | No drag or just enough. |
| 2. Size | In range of trout's normal food-items. |
| 3. Shape | May matter if trout is more selective,
but many are not. |
| 4. Color | Selective fish occasionally concerned.
Mostly for humans. (If it's yellow, it
must be a sulfur.) |

HOOKS

What I'd like to do now is: Design flies from the core out. The core is the hook. After we've got the hook, we'll add as much of the rest of the structure as we've got time for, tying other components of a fly to the hook in such a way as to make it do what we want. (Sounds like a dull subject, but in fact it seems to raise those violent passions. A hook is like art: we don't know much about it, but we know what we like.)

The geometry of hooks is the same in all sizes, but I want to emphasize small hooks for two reasons:

- + I just like to catch big trout on little flies.
- + Small hooks are the most difficult to design. If you can make a good small hook, you ought to be able to make a good big one -- though there are plenty of bad big ones out there.

Hook history: Hooks are the only items of our tackle that are worse now than they were 100 years ago. Rods and leaders have improved greatly. Lines are more diverse and easier to use, though not better than oil-dressed silk. Hooks are worse. From about 1945 to 1980, they hit bottom. Almost all fly-hooks in this country were made by one big firm. Lacking competition, it paid little attention to design or quality. Over the last decade, competition has increased and quality has improved, but machine-made hooks are still not as good as the hand-made ones of the last century. When you put them side-by-side under a low-power magnifier, the differences are striking.

Odd thing is that the study of hooks has also declined. When I began to get serious about hooks in the 1970s, I found that the most of the work on them had been done a long time ago. There were works at the turn of the century with everything you'd need to know, but the knowledge dropped out of circulation.

Will look at the strength, size, and shape (as it effects leverage) of hooks. Will try to differentiate between fact and opinion.

Hook Strength

Opinion: you should never lose a fish because your hook breaks or springs. If there is a weak link in your tackle, it should be your leader rather than your hook.

In practice, this means that a medium-sized trout-hook (say size 14) should withstand a pull of about 3 lbs. You probably don't want to do your own testing, but here a method if you do.

(That's ~~big~~ enough to pull the point in beyond 2 lbs.)

CHART 3

Testing Hooks

(Worst-case scenario)

Hook engaged by point only. (That's how most fail.)

Hook fails when it breaks or springs 45°.

I'd rather have it break.

Conclusion: Difficult to get a 3-lb.-test hook in size 14 unless you do everything right.

Strength factors are:

CHART 4

Hook Strength (Factors)

(In order of importance)

1. Diameter of wire

(Don't go lighter than you must.)

(Forged shanks don't help.)

2. Temper

(Avoid springy hooks. Can release and spring back.)

3. Quality of steel

(Hand-made hooks may use stronger wire.)

4. Shape

(Next chart)

CHART 5

Hook Shapes

(All good if: (a) short points and (b) round top of bend.)

But each has pros & cons.

Round: Perhaps cheapest to manufacture

Square: Hardest to make. Has nice long shank. Saves weight.

Sproat: Best after penetration.

CHART 6

Hook after penetration

Discuss strength. Refer back to Chart 3.

Weakest point is top of bend.

Hook Size

More difficult to determine than you'd think. You can't believe what the box says.

Only one international standard: Redditch scale. Still in use in some countries. French insist on accurate sizing. In America we're casual, and the Redditch scale has fallen out of use in U.S. since Mustad took over the market after WWII.

There is no such thing as a Mustad hook standard. They size trout hooks by at least 3 different scales and won't publish any of them. Trout hooks in this country appear to be sized mainly by gape, and different sizes are applied to different models.

Chaos since Japanese entered market.

Recommendation: measure the hook, in mm. Write size in mm on the box. Use hook same length as natural fly being imitated -- less tail. Cheat a little at both extremes: use hook longer than natural for very small flies and longer than natural for large ones.

CHART 7

Measuring Hooks

Natural mayfly (measure less tails)

Hook (measure w/calipers, incl. eye.)

(Based on experience, not theory. 7 mm trico = 7 mm hook.)

Hooking Leverage

Definition: "Positional advantage; power to act effectively."

CHART 8

Hook Terminology

(p.88 book)

A hook's point is more likely to make contact with the fish's mouth if the gape is wide and unobstructed. That much is obvious -- right?

Problem: Once the initial contact has been made, a wide gape lessens chances of penetration. Must sound confusing, so take it step by step.

CHART 9

Hook Geometry

"Parallelogram of forces"

(p.98 book)

+ Note that I've added an eye to the hook. Have kept it flat (ringed) for the time being.

+ Imagine a rectangle.

Short side = gape

Long side = effective length of shaft

+ Penetration improves as pull gets more in line with point.

Leverage for 3 Hooks

(p. 99 book)

zero leverage

1:1

2:1

(Aim for shank about half again greater than gape)

DEMO here with model hooks.

Summary of Common extremes)

Show effect of down & up-turned eyes.

Bad: Extra-wide gape or extra-short shank (same)

Long point

Prominent barb

Up eye. Always bad in small hooks

Good:

Gape & shank in about 1:1½ ratio (for smallest hooks)

Short point

Small barb or none

Neat little eye turned slightly down

NOTE: Down-eye gives you more gape if done right. Small hooks should always use.

THE REST OF THE STRUCTURE

Of course, you can make any small fly into a bad hooker if you tie the wrong things onto it. Some things to avoid:

CHART 12

Bad Design

Deer-hair body blocking gape

Stiff tail/extended body

Stiff hackle

How to make a fly cock

Ask audience

Answer in sum: Wedges, in 3 dimensions.

CHART 13

Wedge Hackle

(Can also use parachute fly, or hair-wing)

CHART 14

Wedge tail

From top

CHART 15

Wedge fly

(Barb-wing dun, tail up)

Wings and hackle also form a wedge.

Can make wing of quill sections (no-hackle), hair (Swisher & Richards), wound hackle.

Making a fly visible

And now for something completely different:

Let's do a design with color. Purpose not imitation but visibility.

Question: what kind of fly is hard for both fish and fisherman to see on the stream?

Answer: Natural aquatic insect. Evolved for low visibility. Underside pale, for viewing against light sky. Top side darker, for viewing against dark water.

So what would be most visible to angler and trout? A fly that reverses natural colors, of course.

CHART 16

A contrary fly

You wondered why the Coachman (plain or royal) is so popular? It has a white wing for the angler. (Blaze orange would be more visible still if you could stand it.)

And it has a dark body for the trout.

It is contrary to nature.

Note that this is not the fly to use when trout are feeding selectively on little duns.

A Sinking Fly

Finally, let's design a sinking fly instead of a floater.

It's a little easier, for 2 reasons:

- + Fact: Hooks are heavier than water and will naturally sink rather float, assuming the other components of the design do not interfere with sinking.
- + Opinion: Trout grow somewhat less selective as the water grows deeper.

CHART 17

Selectivity

(Surface of water with one fly in surface, one high-floating, one near top of water, one deeper. The great dividing line for design comes not between dry and wet but between shallow-wet and deeper-wet.)

Define what we want in our sinking fly. Choose from a menu,
as with computer programs.

CHART 18

Sample sinking fly

Movement: Dead-drift or slight movement (induced take)

+ Wings and hackle not essential.

Level of drift: mid-water or deep

+ Wings and hackle would slow rate of sinking.

Size: medium, say 14

+ Not much room for doodads.

Weight: limited by size, but:

+ Stout-wire hook.

+ Add a little lead wire to shank.

+ To get deeper, use split shot on leader.

Materials:

+ Absorbent

+ Streamlined (little resistance to flow of water)

Competition: The wild card

+ Do something weird.

CHART 19

Conventional nymph

Wire under thorax

Dubbed hare's-ear for thorax

PT abdomen, ribbed for durability, pulled over thorax

Hackle: fibers of thorax or beard -- not full circle

Tail: collapsible