

BAMBOO JOURNAL



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insertions images of the first IBRA Gathering 14/15 may 2005



Bamboo Journal issue 28 - January 2025

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Photo on page 2:	Stand IBRA - Chialamberto 2014
Photo on page 84:	Bamboo Day - Sansepolcro 2007



e left off shortly after the start of the 2024 fishing season, and it is difficult for me to attempt a summary of the fishing year for us fly fishermen with the bamboo syndrome. The impression is that this was a year characterized by very different personal cases, at least for those who fished in Italy, and I would certainly say that the weather did not help.

Copernicus, the Earth observation program funded by the European Union, lets us know that the summer of 2024 was the hottest ever. In the months of June, July and August, the average temperature of the planet was the highest ever recorded, $0.69 \degree C$ above the 1991-2020 average, beating the previous record of 2023 which had been +0.66 $\degree C$. In the Old Continent, however, the temperature during the summer was a good 1.54 $\degree C$ above the average of the last three decades, beating the previous record of 2022 (+1.34 $\degree C$). The summer months were also particularly rainy across Western and Northern Europe, while some southern regions had to deal with a long period of drought with very little rainfall. In Italy, rainfall split the country in two with peaks of up to 75% less than expected rainfall in the southern and island regions. This after the winter of 2023/24 had been extremely stingy with rainfall across the country, but the drought continued in the South until April, to reappear again in June/July and then again at the end of autumn.

February saw temperatures of 2 degrees above normal on average everywhere, up to 4 degrees in the inland areas of the Centre and in much of the North, and up to over 6 degrees in the Western Alps, particularly exposed, together with the Dolomites, to temperatures above the climatic averages throughout the winter. The anomalies in temperature and precipitation in the Alps have had a significant impact on the water conditions of many rivers and streams, and fly fishing has suffered as a result.

To change the subject: I had the impression, but I admit that I only surfed the web in search of updated news in a rather superficial way, that the controversy that exploded a few years ago on the Atlantic and Mediterranean brown trout, and more generally on non-native fish species of inland waters, or even on what can or should be considered truly non-native, has died down a bit. This impression comes above all from social traffic, and it also seems that the regions involved continue to move in no particular order. I wonder if the context of each Italian region is really so specific as to prevent a homogeneous approach. But then again, we are the country where, to fish outside your own region or even your own province, it is often necessary to go on a real "treasure hunt" of rules, payment slips, regulations!

Finally, let's get to the contents of this 28th issue of the Bamboo Journal: here you will find (in no particular order) the reports of two events in which IBRA participated and organized (and they were not the only ones!) signed by Angelo Arnoldi and Alberto Poratelli. The stage dedicated to hollowing that was held at the Castello di Belgioioso on November 30th and December 1st deserves a mention for the interest it aroused and for the number of participants that was truly significant. The BJ also hosts a contribution by Davide Fiorani dedicated to a legendary fishing destination: Colorado. In reality, it is an account of many trips that will not fail to arouse fantasies and fishing envy in many readers, but it also represents a useful guide for those lucky enough to go there! A journey into the legend of bamboo rodmaking is instead what Edward Barder tells us about, who visited in France what remains today of the machinery and stock of a historic name that is still very famous throughout the fishing world: Pezon et Michel. You will also read a contribution, I would describe as "surgical" by Valter Rigo that explores the characteristics of the vascular bundles, the power fibres, in the nodes of the culm. You will discover a truly unusual point of view that could help you understand some experiences in the construction as well as in the use of bamboo rods.

With the publication of the first part, this issue begins a report that is destined to become truly substantial in the next issues of the BJ for the variety of aspects it intends to address. It is dedicated to the tests that IBRA has carried out (and on which they are still working) with a variety of bamboo that has recently appeared on the bamboo rodmaking market. With almost 2000 pages published, in bilingual version, for about 300 articles of which 250 on purely technical topics, the BJ has now become a true encyclopaedia of rodmaking, and can be consulted today in a very efficient way thanks to the "intelligent indexes". However, we must not think that only great novelties or exceptional discoveries in the art of rodmaking are worthy of a new article: we must instead consider our newsletter as an opportunity to extend to the entire international community of rodmakers those experiences, even simple ones, small and large novelties of the market, practical discoveries, but also failures, and even criticisms, just as we usually do in person during our meetings and workshops. The newsletter, therefore, can increasingly become the tool to increase the pleasure of sharing, which is a founding feature of IBRA.

Enjoy the reading!

DISCLAIMER

Some of the images in the Bamboo Journal may be taken from the Web and have been mistakenly considered to be in the public domain. If the authors or other rights holders have any objections to the publication in this newsletter, they will only have to report it to the editorial staff, at the e-mail address editor@rodmakers.it, who will immediate-ly remove the contested content.



14 maggio 2005 Gabriele Gori opens the first IBRA gathering

THE HORIZONTAL FIBRES OF BAMBOO

by Valter Rigo





Introduction

Good morning colleagues, let me introduce myself for those who don't know me, I live in Dosson di Casier in the province of Treviso.

I have been fly fishing since 1980 and I mainly frequent the Piave. Only in 2010 after reading the book by Nirvano Franzoglio I became passionate about building bamboo rods and being curious by nature, I immediately started trying to understand how this wonderful material was made internally. I am an optometrist optician by profession and I use a 16x bio-microscope every day to observe the eyes of customers, I used this opportunity to go into the details of the structure of bamboo, focusing especially on the diaphragms, "nodes", a sore point for us builders. I would like to share this experience of mine as a simple curiosity, trying to describe, I hope in a simple and understandable way for everyone, what I saw, attaching some photos. In this article I try to highlight the internal structure of the diaphragms, their conformation or anatomy.

You may wonder why, given that it is the only part of the bamboo culm that builders are not interested in, in fact it is so annoying that some eliminate it altogether, while most split it... break it... we mistreat it because we don't need it. The reason is immediately explained: from the beginning I asked for information and opinions from the most experienced on why the nodes were staggered and not left there as nature had intended, everyone without exception told me that at the node level the fibres were interrupted and for this reason the nodes were considered weak points, hence the need to distribute them in different positions to obtain a better balance. This left me perplexed because I didn't see any logic in it. For this reason, ever since I started building, I have tried to understand how the inside of the bamboo is structured, especially at the node level. I did my research and experiments and consequently I made my choices, but that's another story.

These are just my observations, subject to errors and omissions.. if I wrote bullshit.. I'm happy to be corrected by someone who knows the structure of bamboo well.

Happy reading

Inside the nodes

Let's move on to the reason for this article where we will discover together the soul of the nodes.

The final inspiration for in-depth research was given to me by the photo of a split diaphragm, posted in the Ibra chat by our friend Jo Nese, who, highlighting the presence of dark spots inside it, hypothesized the presence of horizontally running fibres.

I immediately wondered... if they exist, there must be something about it in botany books and I went looking. Of the various authors, the only one who talks about them and posted a diagram (no photos at least from my research) is Walter Liese... so they exist... but how are they made and what are they for?

Here is how he represents them in his book "Bamboo Anatomy under the Microscope". You can see the Powers, the so-called vascular fascicles, vertically wrapped by other fibres that develop horizontally all concentrated after the crest, therefore at the beginning of the internode and this concentration of fibres in such a small section creates a swelling on the outside that we call a "hump" and it is also present and clearly visible on the inside.





I have to go look for them. No sooner said than done, I prepared two steel tips, one ultra-thin conical that helps me penetrate the most internal and difficult corners, the other with a very sharp side like a katana, a real scalpel, to cut and lift the edges of the pith and that I can use like a scraper.

The first horizontal fibres

I broke a diaphragm with my hands in an attempt not to cut the internal fibres but to obtain exposed and intact fibres. Below they are clearly visible, I was lucky.

We see some horizontal fibres that originate in the diaphragm and then enter between the vertical "Powers" fascicles. I started from here to scrape with infinite patience in the few free moments and after about three weeks "the book began to open".





It looks like a weave similar to wicker baskets; their function should be to reinforce the diaphragm making it more rigid and stable?

Should this avoid the possible ovalization of the trunk on particularly windy days or could it have other functions?

A rough idea... in the internal disk the future shoots are born, which must make their way between the Powers fascicles, if on a day with strong wind the trunk were to ovalize I imagine that compressions, crushing would form inside... even if they were just a few hundredths, could they damage the shoots???

I'll leave the answer to a botanist.



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Second rough idea... these annular fibres are concentrated immediately after the crest, therefore where the internode begins, for us builders where we see that swelling that we call the hump.



From under the crest come the shoots which in their path have to make space between the Powers, crushing them and deforming them from their straight path. We all see that where the shoot comes out... it emerges exactly on the hump... this creates a compression crushing the Powers, this makes me think of a weakening of the structure at that point.



Why you may ask... the node at the crest level is very rigid, at the beginning of the internode the Powers begin to bend when stressed, let's put the bud, or rather the "latent" buds there is one every 5 millimetres or so that modify the structure... here the interweaving of the annular fibres is logical. Increase the resistance to tractions and compressions in the area where the resistance is altered by the presence of the buds.

I think I have finished with my reflections matured after a work lasting over a year (just to highlight these fibres). I want to close with some photos that I consider exhaustive. After having discovered them... observed... admired them a thousand times, even at 64 magnifications, I continue to be amazed by their complex simplicity. These annular fibres are present in all the diaphragms, thicker and harder at the base of the stem, thinner and softer in the high diaphragms.



Here we see a piece of diaphragm with very thick fibres because this was at the base of the stem.

Seen from above



Seen from underneath

Intermediate diaphragm



above



view from above, then backlit

What I see is that the first crown of Powers "the innermost one" deviates in the diaphragm feeding two types of fibres, some form an arch... that is, they come out of the wall and immediately come back but creating branches with all the others, perhaps they are the ones that form the buds?

Others... the majority, always come out of the wall and continue towards the centre of the diaphragm creating different branches connecting with all the others. I do not see interruptions except those caused by me in trying to clean well, or those where the diaphragm has been opened.

These fibres seem to then go to form the "annular".



The progression is clearly visible in backlit photos by enlarging the image.

Same diaphragm seen from below





14 maggio 2005 the first IBRA Gathering

THE FRENCH CONNECTION

Edward Barder travels to the centre of France, where he discovers the fabled rod making equipment and bamboo of Pezon et Michel.

by Edward Barder



I have a French pen-friend, Nicolas Derouet, a passionate angler and lover of split cane rods. In the course of our correspondence, Nicolas told me about the current location of the Pezon et Michel rod making equipment and materials. As Nicolas now knows, I am a devotee of the work of this legendary French firm.

I was aware that they had finally closed their doors in 1999. My great friend Steve Negus was their last sales agent in the UK and he managed to obtain a single culm of their Tonkin bamboo as a souvenir before the factory closed its doors for the last time. He gave this culm to me and I shall always treasure it.

The Pezon et Michel name, remaining manufacturing equipment and stock of materials were purchased by François Hue of Brittany, who moved it to his home department. Sadly, a lot of the Tonkin bamboo had been disposed of by the new owners of P&M's old Amboise premises, but some was saved.

I understand that in 2007 the manufacturing equipment and materials were sold to Jean-Pierre Thébault, the famous maker of silk fly lines. Thereafter, Mr Thébault offered for sale P&M materials, a rod restoration service and rods made up on P&M stock.

Very sadly, Jean-Pierre Thébault died recently and his family wishes to find a new owner for the Pezon et Michel historic manufacturing equipment and remaining stock of bamboo. His son Denis Thébault is dealing with the matter and he did me the honour of meeting my wife Tina and I late last summer so that we could view the machines and bamboo. I have since met Denis Thébault and his brother Laurent on two more occasions and I can't thank them enough or praise them too highly for their patience, cooperation and kindness.

It was a very profound experience to see the world famous P&M machines. Tina, who is not remotely as fanatical about fishing and fishing rods as me, was moved by the experience. These were the machines used to fashion some of the finest split bamboo fly rods of all time. So many of the great names of fly fishing were proudly associated with the firm- among them Ritz, Sawyer, Hemingway, Creusevaut, Gebetstroither and Lambiotte.

Machinery & Equipment.

We looked at the original milling machine (which was made in Vierzon, the town of my friend Nicolas Derouet's birth), the gluing machine, the table saw for cutting culms into strips, another machine used for creating the metal patterns for the milling machine, a lathe, a belt sander for removing nodes and the hydraulic dipping system for varnishing rods. These were original P&M machines, built especially for their purpose, mostly in the 1930s.

Other machines we saw were more recent, including a precision metal lathe and a multi section powered varnishing rack.

Bamboo.

I inspected three hundred 1.5 m long Tonkin bamboo culms, thirty 3 m long culms and another three hundred 1.5 m long culms that had been heat treated, sawn in half and de-noded at the original P&M factory in readiness for milling.

The 1.5 m culms (5') were a good colour but many were quite small in diameter -40 mm, and displayed the cutter's marks and bruising that was commonplace before the late Andy Royer persuaded Chinese bamboo growers not to mark culms with sharp blades and to give up straightening them over burners which scorched and damaged the fibres.

The future of the Pezon et Michel machinery. Some thoughts and suggestions.

It is documented that the peak period of Pezon et Michel's production was from the 1930s to the late 1960s. During this time, they employed as many as three hundred people and the rods were produced with the help of purpose made machinery. Today, the market for bamboo rods is very different. It would be an interesting challenge for a rod maker to set up and run the Pezon et Michel milling machine, but it is the last machine of its kind in Europe, as far as I'm aware. In fact, because it was made especially for P&M, it is unique. They were rightly proud of it and its picture appeared in many articles about the firm. The same can be said for the gluing machine and the milling machine used to make the templates for the bamboo milling machine.

Once these machines have found a new home, I would do my best to help with advice for their restoration. I could explain how they work. I have been using machines that operate on the same principles for over thirty years so I understand them. They are, despite some superficial surface rust, cobwebs and dust, in good condition. There are numerous templates (we call them formers in the UK) stored in purpose made racking and a good quantity of carbide milling cutters that have been ground to the correct angles for the effective, efficient milling of bamboo.

In my opinion, the P&M machinery is absolutely magnificent. I am inclined to agree with their claim that it was the best of its kind anywhere in the world. I have closely examined quite a number of bamboo milling machines in the UK, including those used by Hardy and Allcock (the latter was used to make all Partridge split cane). The P&M machine is far more sophisticated in every respect than any other historic machine I know of. The same goes for the gluing machine, which is, frankly superb- magnificent, even! These machines are the last of their kind. They don't actually take up an enormous amount of space. One could set them up with room for viewing and demonstrations in a space equivalent to a standard two car garage. They are properly impressive, visually arresting pieces of contemporary European angling heritage.

I dare say that the majority of split cane rods used in Europe were made by Pezon et Michel with these machines. Their large scale production did not prevent them from making many thousands of high quality bamboo rods. These machines, whether actively used for rod building or simply displayed, must be preserved for posterity. If not, they will end up on the scrap heap, which would be a lamentable tragedy.

From a practical point of view, the services of a specialist firm of machine transporters would be required to move the machines from the district of Montluçon in the Cher department to a new home. This is not too difficult to organise in any EU country (machinery has to be collected and delivered all the time) and the machines are located in a large building that would enable a low-loader to enter and hoist up the machines for transportation. I would estimate the main milling machine to weigh 2-3 tonnes, so a strong hoist would be required. The specialist removers would be equipped to deal with this.

The bamboo - what is its potential?

From my inspection of the Tonkin bamboo, I would judge that perhaps 10% of it would yield material that would be usable (the sawn, linished and heat treated culms may or may not be of use to someone). However, as I machine bamboo, my requirements are very singular. It may well be that a maker who hand planes would find a greater percentage of usable material among the 300 1.5 m culms and 30 3m culms. In the interests of transparency, it should be remembered that a quantity of the original P&M bamboo was disposed of before it was removed from Amboise. This is quite old bamboo and it would have to be cleaned with hot soapy water and a Scotch-Brite pad. It has not suffered from any water damage and the careful rod maker should be able to glean a worthwhile amount of rod making material from it. There is no reason for the bamboo to share the same destination as the primary P&M machines, but it would be nice, if the milling machine is restored to working order, if it once again tapered some of the bamboo it lived alongside in its heyday.

It must be stated that the name of Pezon et Michel is not available from this source, so any sales and marketing of rods made with this equipment could presumably refer to the Pezon et Michel machinery but it would not be possible to use the P&M name for sales, marketing and branding of completed rods because the name Pezon et Michel, as a brand, is now owned by the French fishing tackle firm of Sensas.

For anyone interested in saving these remarkable machines, please contact Mr Denis Thébault.

His email address is: denis.thebault@gmail.com

It is not Mr Thébault's intention to make money from the disposal of these machines. He is, very nobly and correctly, enthusiastic for them to have a new owner who will save them from being lost for all time to the world of bamboo rod making.

As a resident of an ex-European country, it is not feasible for me to transport the machines to England and anyway, I have a small workshop that is already full of machinery. However, I believe that a resourceful and enthusiastic bamboo rod maker with a safe space in which to house these machines and bamboo would find the effort worthwhile. It would surely be an honourable mission to be the curator of Europe's greatest historical rod making equipment.

I would like to thank Nicolas Derouet for putting me in touch with the family who own the P&M materials and equipment, for his help with historical material and especially for his excellent translation into English of the article published in the July/August issue of Plaisirs De La Peche, which gives us an insight into the final decade of P&M's existence in Amboise



The P&M gluing machine.



The motorized drying rack



The milling machine









EB with the P&M milling machine, patterns rack & pattern forming machine in the background.

Links to useful source material. https://peche-mouche-seche.com/pezon.htm https://splitcaneinfo.com/wp-content/uploads/2020/05/Pezon-et-Michel-The-Story.pdf https://www.flyanglersonline.com/features/bamboo/part119.php https://splitcaneinfo.com/wp-content/uploads/2020/05/The-Split-Bamboo-Rods-of-Pezon-et-Michel.pdf



14 maggio 2005 the first IBRA Gathering

LO-O (DAMDUSA PROCERA) An Alternative damdoo For Rodmaking

Part 1

A complex test project and a test rod

di Maurizio Cardamone, Alberto Poratelli, Paolo Zetti

Introduction to the project

IBRA has been undertaking a structured testing project for several months on a new species of bamboo that has been available for rodmaking for some time. The material currently on the market has some peculiar characteristics and the aim of the project is to offer all readers of the Bamboo Journal a broad and documented examination on which each one can build, if they wish, their own personal experience.

A working group was therefore created within IBRA whose participants were provided with a sample of the new material and whose experiences and considerations were gradually collected and integrated. All the results will be presented in a series of articles that will be published in the Bamboo Journal and that will address the comparison with traditional Tonkin bamboo from many different points of view. Aspects related to the workability characteristics of the material will be taken into consideration, aesthetic and functional evaluations, physical measurements that are additional to those already available in the literature, and everything will finally be summarised in a comparative casting test, conducted by a panel of expert casters according to a standard protocol.

Two rods were prepared for comparison, not identical, but equivalent (according to criteria that will be discussed later in this article): one built in Tonkin bamboo (Arundinaria, or Pseudosasa, amabilis) and one in Vietnamese Lo-o bamboo (Bambusa procera).

For this comparison a taper by Alberto Poratelli was chosen: The Brook: a 7ft 6in in 3 pieces with bamboo ferrules, for line #4. The Tonkin specimen was already available and Alberto was happy to build the Lo-o specimen as well. The choice of a 3-piece taper was dictated by the perhaps most evident characteristic of the Lo-o, that is to have an internodal distance greater than 90 cm, which is also the length of the culm segments that are typically marketed. This particularity can be a plus for some creations, but could represent a limitation from a different point of view. All these aspects will be taken into consideration during this project.

Some preliminary theoretical considerations

This project starts from the article "Avoid nodes, use Vietnamese bamboo!", by Peer Doering-Arjes in Power Fibers, June 2022, which reports laboratory data collected by the Institute for Wood Science of the University of Hamburg on a database of samples of different bamboo species of various origins, including the Vietnamese Lo-o we are dealing with here, as well as the traditional Tonkin of Chinese origin. The average statistical values for the elastic modulus and density were extrapolated from the measurements available in the cited article and further calibrated with other historical values available in the literature. The table summarizes the values used in our models.

	Arundinaria amabilis (Tonkin)		Bambusa procera (Vietnam Lo-o)	
	oz/in3	g/cm3	oz/in3	g/cm3
Density	0.668	1.155	0.568	0.985
	Mpsi	N/mm2	Mpsi	N/mm2
MOE	5.300	36540	4.415	30450

When we talk about the material that makes up our beloved rods, we often tend to assume that bamboo is a homogeneous and monolithic material, characterized by a uniform and constant elastic modulus (MOE, Modulus of Elasticity) and density.

In reality, the proverbial rigidity and resistance of bamboo, which derive at a macroscopic level from its tubular geometry with many reinforcing partitions, are mainly determined by its microscopic structure. Therefore, a strip of bamboo is to be considered as a natural composite material, that is, a heterogeneous material made up of multiple phases with different physical properties, whose overall properties are better than those of the individual phases that make it up.

Below the outermost level of the enamel, the wall of the culm is made up of approximately 40% cellulose fibres, vascular fibres (approximately 10%) and parenchymatic tissue (approximately 50%), whose punctual distribution is very variable in the culm.

In detail, the vascular fibres that transport water and nutrients are wrapped in bundles of longitudinal cellulose fibres that provide the real mechanical resistance. These bundles (the Power Fibres) are immersed in the parenchymatic tissue, which acts as a matrix and ensures cohesion in the section. Some scientific studies have shown that the difference in tensile strength between the outer, intermediate and inner layers of the culm wall can be determined simply by analysing the percentage of fibre bundles visible in the section.



However, the distribution of vascular bundles is not only quite variable between different species, but it also changes from culm to culm of the same species depending on the growth terrain, and it is also variable in different parts of the same culm (basal, central or summit). Finally, it can even be different based on the orientation (due to exposure to prevailing winds, etc.). Together with the different distribution of vascular bundles, both the MOE and the density are variable. Furthermore, since these average parameters are also decreasing in the same strip between the external wall (where the vascular bundles are denser) and the internal vertex of the thicker strips (where the parenchymatic tissue prevails), the average values of the parameters also change when moving from the tip of the rod towards the butt. In fact, while in the tip the strips are practically made up of only the outermost part of the material, characterised by the greatest density of vascular bundles, as we move down towards the base of the rod the percentage of vascular bundles in the entire section of the strip decreases.



Example of the structure of the culm wall, in which the variation in the distribution of the vascular bundles between the external wall and the internal surface is visible.



Conceptual section of a strip (with strong exaggeration of the vertical scale) illustrating the concept of decreasing average density and MOE moving from the tip to the base of the rod, due to the different height of the strip.

The test rod

As part of the project, many objective measurements were made on samples of the two materials, which we will see later, but from the beginning it was believed that the comparison should be supported by a solid and detailed casting test, conducted by a panel of expert casters using a shared standard protocol. For this reason, it is obviously necessary to have two rods, made with the two materials, that are equivalent according to a predefined criterion and therefore effectively comparable in the casting dynamics.

The concept of equivalence cannot in fact ignore a careful a priori evaluation of the physical parameters of the two materials to be compared, which we know to be very different. Specifically, the average values reported in the literature show for Lo-o a MOE value about 17% lower than Tonkin, while the difference in density is about 15%.

We must therefore imagine that if we were to exactly duplicate a taper that has been optimized for Tonkin bamboo with a material (Lo-o) that we know a priori to have significantly lower density and MOE, we could only expect a rod with lower power and therefore not directly comparable with the first, at least not with the same line. On the other hand, we know that the use of bamboo of different species has not prevented rodmakers in regions of the world where the availability of Arundinaria amabilis is difficult (e.g. but not only, Japan and South America) from producing bamboo rods with remarkable casting and fishing performance. It is therefore necessary to admit that the concept of equivalence implies an adaptation of the taper to the different material used. We will base the equivalence of the two rods on the theoretical power, which is represented in first approximation by the load to be applied to the tip to obtain a deflection from the horizontal equal to 1/3 of the length. This is the so-called Intrinsic Power of Bill Hanneman, which is correlated to the weight of the optimal fly line for the rod (1). In fact, the rod must above all be able to accumulate energy, by flexing, and then return it to that line, which has a given weight and a given inertia.



Taper and stress curve calculated for the original "The Brook" in Tonkin bamboo. The graph on the right represents the flexion of 1/3 of the active length and the theoretical load (force) that determines it. Together with the tip angle these values parameterize the power and the action of the rod according to the Hanneman method (1)



Taper and stress curve calculated for the same taper "The Brook", but made of Lo-o bamboo. The graph on the right represents the theoretical bending calculated for the same load of the Tonkin version (50g). The arrow is greater by almost 10%. The Action Angle is also greater, meaning the rod would be less powerful and possibly suitable for a lighter line.

The rod made with Lo-o bamboo to be compared with the original The Brook in Tonkin (a rod already available built a few years ago), was therefore designed to compensate with an increase in the taper the MOE and density of the Lo-o which are respectively 17% and 15% lower than the Tonkin. It should be noted that the Lo-o bamboo was subjected to the same heat treatment that had already been used for the original version and which will be commented on in a subsequent article dedicated to the processing of the material.

The increase in the taper was designed using iteratively the static bending model implemented in HexRod, and resulted in +4.5%. The mathematical model tells us in fact that with this increase in the taper we will have in the Lo-o rod a theoretical bending identical to the Tonkin for the same load applied to the tip, which is compatible with the power needed to cast a DT4 line.



Taper and stress curve calculated for the Lo-o bamboo rod with adapted taper (+4.5%), the original taper is shown for comparison. On the right we see the theoretical static deflection, which perfectly reproduces the one (also theoretical) calculated for the Tonkin version.

Static measurement results

The two rods were first subjected to some dimensional measurements, weights and actual bending behaviour. The bending measurements were taken with the rod blocked in a horizontal position for three different loads applied to the tip of 25, 48 and 71 grams (3).

When evaluating the data reported in the tables, we must always consider possible random differences and systematic errors, linked to the accuracy and repeatability of the measurements allowed by the non-professional instrumentation that was used.

A perfect example: to measure the curvature of the rod with the different forces applied it is necessary that the rod at rest is perfectly horizontal: since the rod bends slightly even just due to its own weight, the horizontality can only be verified by precisely measuring the angle at the handle, which is not easy due to the presence of cork. A very small deviation from perfect horizontality at the base is greatly amplified when transferred (and measured) to the tip.

As we might expect, the difference in density, on average about 15% lower in the Lo-o, compensates for the greater volume resulting from the increased taper, and the three pieces ultimately result in almost identical weight, in pairs, in the two rods. However, although the handles with the reel seats are identical, as are the guides and their position, the difference in weight of the butt (less than 3.7g in the Lo-o) shifts the centre of gravity slightly forward (+ 2.5 cm), which also explains the slightly higher Swing Weight (+ 13 g) despite the total weight being much lower for the Lo-o rod.

		Tonkin	Lo-o		
		Arundinaria amabilis	Bambusa procera		
	UM				
MOE (notional average)	Mpsi	5.22	4.35		
Density (notional average)	g/cm3	1.15	0.98		
CG distance from rod base	cm	54.5	57.0		
CG distance from centre of handle	cm	37.0	39.5		
Swing weight (1)	g	312.0	325.0		
Volume of butt (2)	cm3	31.9	34.9		
Volume of center part (2)	cm3	15.3	16.7		
Volume of tip (2)	cm3	5.3	5.8		
Volume (total)	cm3	52.5	57.4		
Weight of butt (3)	g	71.6	67.9		
Weight of center part (3)	g	20.5	21.0		
Weight of tip (3)	g	9.1	10.1		
Weight (total)	g	101.2	99.0		
 (1) average of 5 measurements (2) taper volumes, ferrules not considered (3) effective weights, including all the fittings and varnish 					

As previously mentioned, the two rods were statically "loaded" with three different weights, respectively 25, 48 and 71 g. The average load between the three corresponds almost exactly to the Intrinsic Power predicted by the theoretical model. The device created allows for accurate adjustment of the horizontality at the base of the active section of the rod under test. Both rods show a "natural" flexion due to their own weight (6 cm at the tip for the Lo-o and 8 cm for the Tonkino, despite the weight of the segments being practically identical).



Examples of the original images of the rods in bending, with different loads. To reduce the small parallax error of the photographic images, the bending was also measured by directly detecting the X-Y coordinates at different reference points along the shaft of the two rods.

From the direct measurements, the curves were graphed, subtracting the "natural" flex (with no added load to the tip). The bending was also measured at different reference points along the shaft of the two rods in order to be reported in a single graph. The curves displayed are those net of the "natural" bending due to the weight of the rod itself.



Measured static rod deflection in Lo-o for applied loads of 25, 48 and 71 grams respectively. Values are net of natural rod deflection with no added loads.



Measured static flexion of the Tonkin rod for applied loads of 25, 48 and 71 grams respectively. The values are net of the natural flexure of the rod without added loads.

The difference between the two rods is visible above all in the distal portion of the tip, which flexes in the Tonkin version, compared to the Lo-o version, by an almost constant value of about 5 cm more for the three loads used. This identifies a lower Intrinsic Power value for the Tonkin version according to Bill Hanneman's CCS method, but both rods still fall within the parameters that classify them as suitable for casting a DT4 line.

A certain difference is actually already visible by comparing the "natural" flex due to the weight of the materials alone. This diagram highlights that the Lo-o rod flexes more in the basal part, while the Tonkin version flexes more in the central part and in the tip (but pay attention to the vertical scale which has an exaggeration factor of 10x in the image below).



"Natural" flex of the two rods without loads applied to the tip (WARNING: the vertical scale is exaggerated by a factor of 10x).

The AA (Action Angle), which is nothing more than the angle formed by the tangent to the tip when the rod is flexed by 1/3 of its length (CCS criterion for determining power), is finally 55 degrees for the Lo-o and 58 degrees for the Tonkin, values which in any case classify both rods at the limit of "medium" action.

Conclusions

When testing the static flexion, the real rod made of Lo-o is more "powerful" than the one in Tonkin, in fact it shows a lower tip flexion with the same applied weight force, even if it still falls within the notional range for a DT4 line. The difference in power, in addition to the slightly more advanced position of the centre of gravity, anticipate an effect, large or small, on the dynamics of the cast.

In reality, we must above all ask ourselves why both rods flex differently from what is predicted by the models, even if to a different extent.

As George Edward Pelham Box, a famous English mathematician of the last century, said, "All models are wrong, but some are useful". The same is true for the flexions we have calculated, which are precisely - theoretical and approximate. The mathematical model does not explicitly include the effect of the ferrules, both in terms of their weight and the stiffening they introduce in a segment of the taper. The weight of the loops and the paint are not considered in the model, nor the local stiffening caused by each serpentine with its bindings. Continuing in this line of thought we cannot even ignore that the ferrules can have different weight and stiffness, having different diameters in the two rods, as well as marginal errors of the taper and even a different contribution deriving from the resin used for gluing.

Having long experimented with small variations of the parameters of the static bending model I have however been able to ascertain how critical they are. Therefore, it is more than likely that MOE values and density of the particular culms used here, a little different from the theoretical values used in the models in addition to the often-overlooked variability of MOE and density along the shaft of the rod, due to the taper, may have determined the differences we observed.

However, the design of the "equivalent" taper has generally provided confirmation of the correctness of the approach used and it will be very interesting to verify it with the practical results of the casting tests, currently underway. Let's not forget that these are only the first static measurements and are not enough to characterize other important aspects of the dynamic behaviour of the rod. The tests on the lawn have just begun and seem to confirm what these data show us. We will soon be more precise and documented on this aspect of the tests in the subsequent chapters of the report, "stay tuned"!

Notes

(1) Intrinsic Power is a parameter introduced by Bill Hanneman with his articles dedicated to the so-called CCS (Common Cent System) method to evaluate which is the optimal line for a certain rod, measuring the weight necessary to bend the tip of the rod, fixed horizontally, up to 1/3 of its length. The translation of the measured I.P. into an ERN (Effective Rod Number) is finally based on a reference table obtained from a statistical interpolation of data collected on commercial rods of different lengths and line numbers. The method developed by Hanneman also classifies the "action" of the rod based on the angle formed by the tip when the reference bending of 1/3 of the length is reached (Action Angle). For several bamboo rods that I have examined with this method I have detected a tendency to underestimate the ERN determined with the CCS method. Probably the method should be recalibrated on a specific database of bamboo rods. However, the approach remains consistent from a methodological point of view and is certainly useful for comparing different rods built with the same material.

(2) The "swing weight", proposed by Yellowstone Angler (https://www.yellowstoneangler.com) in their shootout test is a parameter used especially for golf clubs, and represents a measure of the weight perceived during the rotation of the tool. In the fishing rod it is a measure of the torque on the wrist of the caster and depends on the relative position of the grip and the centre of gravity of the rod, as well as obviously on the distribution of the masses. It can be calculated on the table, knowing the weights of the individual parts and the centres of gravity, but it is much simpler to measure it with the rod assembled. On the Yellowstone Angler website you can find the description of a simple method to do so.

(3) To apply a variable weight to the tip, a handful of identical steel washers were used, inserted on a support rod. These "strange" weights are nothing more than multiples of the weight of a single washer, plus the weight of the support







by Davide Fiorani

In 2004 I took my first trip to Colorado with some fishermen friends, starting a long series of adventures in this fascinating land.

Colorado offers different landscapes and breathtaking scenery: sometimes they can remind us of the Grand Canyon in Arizona as in the case of the Colorado National Monument Park near Grand Junction, or other times the Swiss mountains of the Bernese Oberland, passing through the area of Ouray. Personally, I have always been fascinated by the origin of the name: Colorado comes from Spanish and was attributed to this state both for the river of the same name that crosses it, and for the colours that characterize its landscape, dominated by the shades of red of the rocks that draw its mountains.



I never liked organizing these types of trips with the idea of stopping one or two days in one place, then packing everything up and getting back in the car to grind out miles to reach another location. Unpacking suitcases and equipment again trying to "tame" time to be able to do as much as I could. Since then, I have adopted a slower and more profound approach: never hit and run, never forced stops, and paying particular attention to the signs!



I chose to dedicate myself to getting to know the places in greater depth, staying at least ten days in the same area, to fully immerse myself in all it had to offer. Some places I visited multiple times, and each time I discovered something new. In Colorado, there is so much water to explore that even local fishermen sometimes cannot provide precise directions to certain areas, simply because they have never been there.

Places and Waters

Colorado is a fishing enthusiast's paradise, and has become an increasingly popular destination in recent years, thanks to its impressive number and variety of year-round fishable waters.



In this country, streams and lakes where natural trout reproduction is encouraged are managed by the Division of Wildlife. These areas, which are not stocked with hatchery fish, offer anglers the opportunity to catch completely wild trout; these waters are known as Wild Trout Waters.



Additionally, sections of the rivers designated as Gold Medal Waters by Colorado Wildlife represent the highest quality fishing destinations. These waters must support a minimum standard of 60 pounds (27 kg) of trout, with at least 12 14" (35 cm) specimens, per acre (47 square meters). This designation is carefully considered and represents the highest quality aquatic habitat in Colorado and, in some cases, coincides with Wild Trout Waters.



Proper and adequate regulation is essential and necessary to preserve these waters: of over 9,000 miles of trout waters in Colorado, 385 miles are currently classified as Gold Medal Waters (as of August 21, 2024).



One recommendation is to be very careful in respecting private property, usually well marked along the borders with "Posted" and "No Trespassing" signs.



The first rivers I explored were those in the Gunnison Region of the Southwest. The Gunnison River was the first to win me over: the Gunny also has a 27-mile stretch of Gold Medal Water and Wild Trout Water, from the upper edge of the Black Canyon to the confluence with the North Fork of the Gunnison River



I then discovered real gems like the Taylor River, the East River, Lake Fork of the Gunnison River and more isolated streams like Cochetopa Creek and Cebolla Creek, where solitude and contact with nature are total.



Another remarkable river is the South Platte River, south of Denver, which boasts three 37-mile sections of Gold Medal Water. This tributary of the Platte River changes identity several times along its course. Among its most fascinating sections are the fast-flowing Cheesman Canyon and Eleven Mile Canyon, where the river resumes its course until it flows into Eleven Mile Reservoir.




Every corner offers new challenges. The incredible stretch called "Dream Stream" – a 3.8-mile tailwater that flows from Eleven Mile Reservoir and ends its slow flow in Spinney Mountain Reservoir – bewitches you with its apparent calm. There are trout of considerable size, that have learned not to be surprised.

Fishing the entire South Platte River would take more than a month!



Moving further south near the New Mexico border, the Conejos River flowing from Platoro Reservoir also offers 4 miles of Wild Trout Water from Aspen Glade Campground to Menkhaven Ranch.



This river runs through the canyon called "The Pinnacles" and then down again, collecting the tributaries of the South Fork and Elk Creek until it reaches Mogote after more than 40 miles. It is a tributary of the Rio Grande River, which it meets after another 52 miles. In the area, even a small stream like Elk Creek can be a pleasant surprise and offer an afternoon of fishing in the shade, immersed in a truly wild forest, in search of trout and char.



Heading north a little, we find the majestic Rio Grande River, with 17 miles of Gold Medal Water. This great river requires respect and preparation to be tackled to the fullest.



Next to it is the South Fork of the Rio Grande River, a beautiful tributary that winds through woods and small canyons, before joining the main course near the town of South Fork.



A little further west of the Conejos River you will find the Animas River, with even 4 miles of Gold Medal Water near Durango.

Maximum respect also for this imposing river, which hides large prey and can give you "the fish of the trip".



Its tributaries, such as the Florida River, promise a lot of fun. The slightly more distant Los Pinos River, where there are 2 miles of Wild Trout Water, Dolores River, San Juan River, San Miguel River and Piedra River will put you in a state of pleasant difficulty in deciding where to fish the next day.



My favourite places

Returning to Colorado is an almost irresistible call, which is renewed year after year. Each trip is different, each experience is new and enriches the memories and emotions experienced in previous trips.



Since 2004, I have returned fifteen times, for a total of 305 days, often traveling alone. Each time, a deep sense of belonging is renewed in me. My bond with these places has become so intense, that I now consider them "my places".

But it is in Central Colorado, between the valleys of the Fryingpan River and the Roaring Fork River, that I can say I have found my soul place.



Here I break with everything: I settle into a single log cabin and go fishing for at least three weeks, immersed in breathtaking beauty and the peace of nature.



I do it alone or with local people, who I have had the pleasure of meeting over the years and who have become my friends.



This passion that unites us leads us to share experiences, skills and notions that have also helped us grow together. Every year we find new spots to fish, we discover other places for the following year, we compare techniques and even improve our flies.



Fryingpan River

The 48-mile Fryingpan River has its most famous stretch in the tailwater below Ruedi Reservoir, a 14-mile segment classified as Gold Medal Water, ending its run at the Roaring Fork River in Basalt. The Pan flows through a narrow valley, past brick-coloured rocks that blend harmoniously with the green of the plants and low vegetation.



In autumn, birches, poplars, oaks, blackthorns and sagebrush transform into an explosion of colours: from light yellow to brown, through mustard and flame red, which are sprinkled among the green of the Colorado blue spruce pines and the red of the rocks.



Then, at the beginning of October, if the night decides to give you an early dusting of snow, the following morning, with the sun making its way, the valley lights up. The clouds open up and slowly thin out, revealing a clear, blue sky, a blue that gives you a feeling of purity and that you admire from almost 2000 meters above sea level: the entire valley comes to life, lighting up.



The water, as clear as gin, flows over a bed of stones that fade from green to red, embracing rocks with iridescent hues. The whole thing creates a painting of colours that seems like an irresistible invitation to dive in.

You can't wait to get out, grab your fishing rod and become part of that painting.



From late spring to late autumn, during the warmest hours of the day, the Fryingpan offers incredible simultaneous hatches of insects: BWOs, PMDs, caddis, midges and, of all, the undisputed queen, the spectacular Green Drake.



When this large mayfly hatches, even the big fish abandon hesitation and come out of their lairs to hunt this mayfly.

You have to be there, ready to seize the moment, where you know that big trout is, yours!



Roaring Fork River

The Roaring Fork River is a different story: it is a river with a changeable character, capable of transforming and changing its face many times along its majestic path. The most interesting stretch extends for more than 40 miles, descending from Aspen all the way to Glenwood Springs, offering a variety of breathtaking scenery and exciting challenges. There are no hatches here comparable, in size, to those of the Pan: it's all about the hunt!



Formerly called Thunder River, a name that evoked the thunderous sound of its current, the Fork boasts both Gold Medal Water—12 miles from the confluence with the Crystal River to the confluence with the Colorado River—and Wild Trout Water, which extends for 7 miles from near Aspen down to the Woody Creek Bridge.



This incredible river allows you to use all the different fly fishing techniques and sometimes it is better to tackle it with two rods to be able to fish it appropriately and profitably.



For me it was love at first sight: exciting to face those fast waters, broken by the rocks that create the pocket waters, fishing the currents dry hunting or letting the fly drift close to the bank downstream. Or with a nymph, probing the holes and the currents. And again, the adrenaline of casting a streamer, in the evening, or under a sky full of clouds or in the rain, with the hope that the big trout will come out of their dens to hunt.



Fishing for it from a boat is also a great way to discover and learn about the waterway, while also providing the opportunity to access areas that are otherwise difficult to reach.



This way, you can stop and fish a spot in peace while wading, and then move back downstream by boat and discover a new spot.





There are rainbows with fantastic colours!



In the middle-lower areas of this river, I noticed a significant presence of large stoneflies: with the first shadows of the evening, fishing with a generously sized stonefly can provide unexpected encounters.



Colours always dominate: the different types of environments that you find along the Fork bring with them different hues that accompany this freestone river (it has no dams or artificial basins along its course). The Fork transforms from a mountain torrent near Aspen, to a valley river at the end of its course in Glenwood Springs, at the confluence with the Colorado River, where it is possible to tackle it even with two-handed rods.



Eagle River

Mike and Stan introduced me to the lower reaches of the Eagle River, between Gypsum and Eagle, before it flows into the Colorado River.



The Eagle is also a freestone river, and from the confluence of Gore Creek in Vail to its confluence with the mighty Colorado River, it is considered Gold Medal Water.





The Eagle also offers hatches of different insects and is also interesting to fish for dry.

We have often encountered situations where the fish remains active on the surface for a long time, and landing a 50cm rainbow or brown in those situations is not uncommon, on the contrary!



Its slow meandering and flowing, alternating with fast scrapings, offers different situations and scenarios to try your hand at.





I've had great days on the Eagle, catching great fish and often staying out late, promising myself that this would be the last cast, the last current or the last hole to fish.



Colorado River

I have fished sections of the Colorado River both downriver and upriver by wading. I haven't travelled far from Glenwood Springs: upriver I have fished past Glenwood Canyon and downriver I have fished near New Castle.



I have always fished almost exclusively with streamers and nymphs. The Colorado River, already from its confluence with the Roaring Fork, transforms into an imposing waterway that requires respect and attention.



Upstream from Glenwood Springs, you can follow the river on the Glenwood Canyon Hiking Biking Trail. This convenient bike path makes it easy to get from one spot to another when wading, especially when spots are far apart, without having to walk on the rocky banks of the river.



In the Colorado River you can really encounter large trout and the equipment must be adequate. There are browns with fantastic colours and rainbows that have incredible strength and never give up.



Meetings and shared passions

Over the years, I have met some amazing people here who share my passion. Every day we spend together is an adventure, where we share techniques and experiences, savouring the time spent on the river with friends like Warwick, Jordan, Stan and Mike, Marty, Dylan, Trey, DJ and many others.











I also had interesting encounters with the local fauna and some even became good cabin neighbours....



".... but I did not get too friendly with others!



Evenings around a table at the ranch of friends Warwick and Robyn or those with the guides of the Frying Pan Anglers in Basalt for a beer...



...also spent tying some flies or simply planning to go hunting for that nice fish you saw a few days ago.





All this in a state of subtle euphoria waiting for the night to give way to a new day full of discoveries.



A love that never ends

Every trip to Colorado is unique, different and always unforgettable.



Every time I return, I discover new destinations, face new challenges and let myself be surprised by the beauty of this land.



No matter how much I plan, Colorado teaches me to let my spirit of adventure guide me, finding beauty not only in places, but also in people and the moments spent with them.



For me, it is more than a destination. It is the place where waiting is coloured with hope, where my heart always finds a new reason to return: a deep connection with nature, the places and the people I meet along the way.



Journeys that enrich the soul, fuel and renew the passion and desire to explore.



The connection I have developed with these places and people fuels a bond that is renewed each time. It beautifully captures the sense of adventure, calm, and wonder that Colorado inspires in me, enhanced by the vivid details of the landscapes and rivers I have explored. It is an authentic discovery of the intimate connection to a place that has become a part of me.



And every time, it seems to me that the last trip was the most beautiful one.





15 maggio 2005 the first IBRA Gathering



UNDER THE SIGN OF THE TROUT

by Angelo Arnoldi

Some time ago, at the end of April, I took part in a fly fishing meeting.

Nothing special, you might think, after a lifetime of twirling fly lines trying with poor results to hook something, it is quite normal that every now and then, like many fishermen, in their downtime, we frequent fishing meetings, market exhibitions or just markets.

But this spring meeting had, in my opinion, a characteristic that distinguished it from other similar events.

I think it was organized by a local fishing club, perhaps supported by some merchant or restaurant or bar, I don't know exactly.

But what I do know is that it took place in a beautiful place, a castle, or rather, to be precise, a Medici villa, that is, a rural architectural complex, once owned by the de' Medici family, a famous Tuscan family.

The de' Medici family, as everyone knows, was certainly the most important Italian noble family, and not only in Florence, where it originated, or in Tuscany, it was throughout Italy. This family included four popes, Leo XI, Clement VII, Urban VIII, and Leo XI, two queens in France, Mary and especially Catherine, the most famous, wife of Henry II, king of France, and involved in the massacre of the Huguenots. But it also included patrons who made their wealth available to the city. The renovation of the Basilica of San Lorenzo in Florence, with Brunelleschi's dome, a world-famous masterpiece, is due to the generosity of Giovanni Bicci de' Medici.

And the gathering I was talking about was held in one of the properties of that family, a property that since 2013, together with other Medici villas, has been part of the UNESCO heritage for Tuscany, together with San Gimignano, the historic centre of Siena, Florence and the Piazza del Duomo in Pisa



This splendid and imposing building, which stands in the middle of a large lawn, is also embellished by the presence of a river, the Versilia River, which flows next to the building. Even if a little tried by the drought, like many Italian rivers, for an old fisherman, it is always a vision of peace.



The gathering I am talking about took place in Seravezza, in the province of Lucca, a town near the more famous Forte dei Marmi.

As soon as you cross the portal of the villa, you enter a small courtyard, in the centre of which there is a marble well, white Carrara marble, and on the architrave of the well, the sculpture of a fish is proudly displayed. Fish, which at first glance could also seem like a carp, or at least to my eyes, it resembles one a little, but in reality, it represents a trout, and not just any trout, but a very famous trout, and about which many things are known.

This fish was caught in the year 1603, by a woman, the Grand Duchess Christina Lathorga of Lorraine, and when it was caught, it weighed 13 pounds, about 5.5 kilograms.

The Lorenas were an important noble family of French origin, and in the year 1589, with the marriage between Ferdinand I de 'Medici and Catherine of Lorraine, daughter of Charles III, Duke of Lorraine, they became related to the Medici family.

The Grand Duchess, a guest of the Medici villa and a fishing enthusiast, had hooked it in the Vezza river, in the Ruosina area, a couple of kilometres upstream.

Now we, children of the opulent modern civilization, when we catch a nice fish, before releasing it or frying it, depending on our sensitivity, we almost always take a photo that remains as a memento of the catch. But at the beginning of the 1600s, this was not possible, how could you have a memory? Simple, with a monument. And in fact, at the place of the capture there is a small monument that remembers the event after many years.



And to reiterate the concept, a copy of the sculpture was also placed on the architrave of the well at the entrance to the villa.

Anyway, after passing the courtyard you enter a splendid portico, and here various stalls were set up with rods, reels, flies and other trinkets that were the delight of fishermen. It was certainly not a huge display of stuff, it was probably the first gathering held in those parts, and perhaps it still has to grow, but that is definitely also why I liked it

Let's see some photos



Some representatives of the fairer sex were also present...



The stand of IBRA GG, an organization of which I am a member, which aims to promote and spread the use and knowledge of bamboo in the construction of fishing rods.



Old stuff...when I started fishing, about a million years ago, I used similar stuff.

Well tied flies



Anchovies in olive oil

The most anticipated moment ... the meal!

In conclusion it was a small, intimate gathering in an enchanting place. A place I didn't know and that I saw again in the summer.

I sincerely hope there will be an encore...

Thanks to Moreno, Silvano, Massimo, Simone, Claudio, the friends of IBRA GG, who shared this beautiful day with me.


15 maggio 2005 the first IBRA Gathering

The workshop on the topic of hollowing

by Alberto Poratelli



The IBRA tradition of studying rodmaking topics in depth by organizing themed workshops continued this year with a two-day meeting dedicated to hollowing.

The topic was defined after a "survey" among members who overwhelmingly asked to address the topic of hollowing. It is an operation that we all do but which deserved to be explored in depth both in terms of the various techniques but above all for the influence it has on the action of the rod.

The magnificent Hall of the "manica incompiuta (unfinished sleeve)" of the Belgioioso Castle hosted two intense days that saw the participation of as many as fifty rodmakers, both members and nonmembers, also from other European countries, in particular Switzerland and Denmark.

The morning of Saturday 30 November was spent with a report by Alberto Poratelli and Daniele Giannoni who, with a series of slides, tried to dissect the complex topic in order to prepare the "practical" part that in the afternoon saw the creation of the various types of hollowing on the tables. On the morning of Sunday 1st December, we focused instead on the details that the members requested to clarify. The traditional "convivial" part typical of IBRA meetings was not missing, both in the castle rooms with the lunchtime buffets magnificently organized by Danilo Marnati, Gabriele Ruggeri and Antonio Rezzolla.

The theme of the workshop is summarized in notes on the subject that you can download at the following link:

https://www.rodmakers.it/wp-content/uploads/2024/Stage-Handbook-on-Hollowing.pdf https://www.rodmakers.it/wp-content/uploads/2024/HollowcalcoloCave-Eng-v4-A-.xls https://www.rodmakers.it/wp-content/uploads/2024/Determinazione-punto-di-equilibrio_Determining-the-Balance-Point-of-the-Rod.xlsx

notes hollowing workshop









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Newsletter e Bollettino of Italian Bamboo Rodmakers Association

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